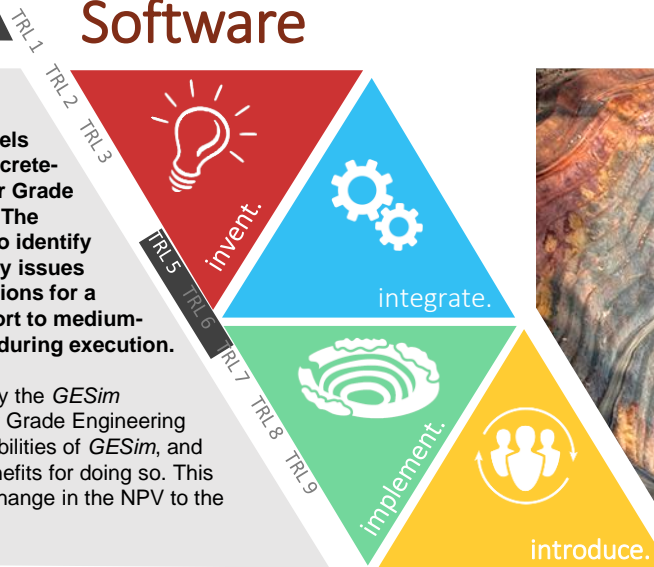


Value Model for use of GE Simulation Software

PROJECT P2-012

GESim is a framework of models and methods designed for discrete-event simulation modelling for Grade Engineered mining solutions. The objectives of the models are to identify potential bottleneck or delivery issues before implementing GE solutions for a given operation and to aid short to medium-term mine planning activities during execution.

The aim of this project is to apply the *GESim* framework to a recent or current Grade Engineering project to demonstrate the capabilities of *GESim*, and where possible, quantify the benefits for doing so. This could involve demonstrating a change in the NPV to the base case mine plan.



Research collaboration

Mining3 is the leading research organisation directed by the global mining industry to develop and deliver transformational technology to improve the productivity, sustainability, and safety of the mining industry.

Mining3 brings to this project expertise in Mine Process Modelling, Complex Simulation, Integrated Mine process design and implementation for future mining systems. Mining3 developed the original *GESim* discrete-event modelling framework.

Collaboration is a key to this project as Mining3 works closely with CRCORE to transition the technology to the industry, through training and demonstrating the value of the framework for a new case study.

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Project Leader: Erik Isokangas, Mining3
Timing: July 2020–November 2020
Participants: Mining3, CRC ORE

Background

Novel Grade Engineering® solutions such as in-pit crushing and screening, add a level of complexity to resource management and the decision-making process in a mine. Complexity is introduced through material transport time, equipment resourcing, and planned and unplanned delays. Ore is typically mined from multiple faces, potentially impacting on heterogeneity and the value of the GE solution. These all affect the characteristics and stability of the material delivered to the ROM and the total value achieved.

GESim was developed as a framework of methods and models to improve the understanding of material flows and resource utilisation in complex operations and allow for development of appropriate operational methods for Grade Engineering® solutions. Modelling methods will also be developed to use these models during operation of the mine for short-term scenario planning, identifying the actions which will maximise the value of the final product.

Focus on outcomes

- Demonstrate the capabilities of *GESim* with a recent set of data from a Grade Engineering project.
- Train CRC ORE staff in the use of the model.
- Capture learnings as to how to best incorporate *GESim* models into Grade Engineering processes.
- Capture the benefits of using the *GESim* approach for use in CRC ORE publications to promote uptake of the technology. If possible, use a value model to show the differential value of the GE Sim mine plan relative to the base case mine plan, and hence quantify the value of using the *GESim* methodology and models.

