

Going Local – Innovating Resource Estimates to Improve Investment Decisions

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ABSTRACT

A mineral company's resource models are the foundational assets that determine provide the basis for forward looking statements of corporate value and cash-flow estimates. Accuracy of the estimation process underpins corporate legitimacy.

Traditionally, resource models use estimation parameters that are based on statistical patterns and spatial variability within a geologically informed volume constraint ('the domain'). The variogram, block size analysis and determination of search parameters are assessed from the data within the geologically delineated domain. The set of parameters so determined are then applied to every estimation block within the domain.

We challenge this notion and approach and offer a more locally responsive philosophy and approach that seeks to improve the quality of each block, hence the quality of the final resource model that feeds into mine planning and cash flow expectations. The philosophy we adopt here is to 'go local'. As technology continues to improve, our approaches to estimation can seek smarter ways of providing better local accuracy.

In 'going local' we analyse the efficacy in improvements in methods that:

1. Allow locally varying the orientation within the variogram calculation that aligns with geological expectation;
2. Locally optimise the block size to ensure a target confidence;
3. Locally optimising the search neighbourhood parameters (Local Kriging Neighbourhood Analysis);
4. Localise top-cutting; and
5. Local recoverable resource estimation.

As a composite, we examine automatic integration of quality metrics in the classification system to inform application of modifying factors and enable local mine planning responses to the local resource quality.

This paper seeks to demonstrate how local improvements in estimation process can translate into improvements in mine planning, and ultimately better-informed investment decisions.