

Goldilocks: Value of information for geoscience applied to tactical time horizons

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ABSTRACT

Brownfields geoscience measurement such as drilling and surface geophysics can be costly and it is often difficult to weight the cost of data collection and processing against the value it unlocks at the time of extraction. This makes it difficult to prioritise geoscience expenditure and find the optimum intensity of geoscience activity across competing assets.

Additionally there are multiple options for managing resource uncertainty and spatial variability through mine planning and resource engineering such as varying marketing strategy, adjusting stockpile or other infrastructure design and product blending. Consideration of these alongside increased data collection further complicates finding a comparable value of geoscience programs to determine the right blend of geoscience measurement and uncertainty mitigation.

Building on previous work in which the concept of Value of Information (VOI) was applied to quantify the value of geoscience measurement to orebody and pit sequencing at strategic timescales, a similar approach has been developed to quantify the benefit of improved resource definition alongside tactical planning considerations.

This involves the quantification of resource uncertainty and prediction of Expected Monetary Value (EMV) of through extraction simulation both with and without proposed geoscience programs and mine plan uncertainty mitigation strategies. This paper outlines this process and demonstrates its use to prioritise geoscience at multiple BHP Coal Assets. The projected value of various infill drill programs has been quantified and compared to value projections for multiple engineering scenarios.

This study supports that idea that the application of the VOI method to bulk mineral mining at tactical time horizons has potential to inform geoscience planning and resource engineering not just separately but as part of a unified strategy for managing resource uncertainty.