THE RISE OF 3D SEISMIC IN HARDROCK MINERAL EXPLORATION

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3D seismic has been a cornerstone of the coal and petroleum industries for decades. And yet, its adoption by the hardrock minerals industry has been much slower. This delay has many causes, with the most obvious being the sheer complexity of acquiring and processing seismic data in a hardrock setting. Fortunately, this topic is the subject of much ongoing research.

A less obvious cause is the limitations of the available software for visualising and interpreting the processed data. Hardrock miners have long enjoyed the flexibility of general mining packages (GMPs) for displaying, analysing, and modelling everything from first-pass geochemical sampling to optimised long-term production scheduling. But these applications are optimised towards massive numbers of drillholes, block (voxel) models, and triangulations, and they perform poorly when asked to display 3D seismic. The result is a massive file, with a long loading time and slow graphics interaction. On the other hand, petroleum software is optimised towards seismic data, but can't handle massive numbers of drillholes.

These limitations can be overcome by incorporating modern gaming graphics technology and efficient file storage platforms within an application, and this presentation concludes by illustrating the results of applied research and development carried out at MICROMINE towards producing a fluid real-time seismic visualisation environment.