New software for visualizing 3D geological data in coal mines

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This study developed new software to visualize 3D geological data in coal mines. The Visualization Tool Kit (VTK) library and Visual Basic.NET 2010 were used to implement the software. The software consists of several modules providing functionalities: (1) importing and editing borehole data; (2) modelling of coal seams in 3D; (3) modelling of coal properties using 3D ordinary Kriging method; (4) calculating economical values of 3D blocks; (5) pit boundary optimization for identifying economical coal reserves based on the Lerchs-Grosmann algorithm; and (6) visualizing 3D geological, geometrical and economical data. The software has been applied to a small-scale open-pit coal mine in Indonesia revealed that it can provide useful information supporting the planning and design of open-pit coal mines.