3D-Norge: a new project to build a nationwide 3d bedrock map of Norway

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3D Norge is a new project at NGU which will create a full 3D model of the bedrock geology in Norway, with 3D line shapefiles and mesh surfaces. Several reasons exist for making a 3D bedrock model of onshore Norway. Firstly, from a mineral resource viewpoint, the state of surface mapping of resources has perhaps reached a stage where the discovery of new deposits is increasingly more unlikely without utilising a 3rd dimension. Secondly, in the last 5 years there has been a marked increase in the interest and investment in mineral resources, both from government funding to the NGU and from the minerals industry. Thirdly, Norway doesn't have one.

The 3D modelling package *3D MOVE* was chosen for its user friendliness and ability to model complex structures. We use a 10m x 10m DEM created by the national mapping authority in Norway. A 1:2M bedrock surface was used as a geological basis. and then used to create a simplified 8-fold tectonostratigraphy, which would form the basic units for the creation of 3D shapefiles and mesh surfaces in 3DMOVE. Geologist-constructed geological profiles, both 50K and 250K, are the basis for the 3D modelling. 110 250K and 549 50K profiles have been imported and georeferenced in the model. Additional structural data is supplied from a recently compiled structural database of the whole of Norway, containing over 26000 points. Regional scale seismic profiles are also included in the model.

This project is an initiative of the Mineral Resources Division at the Geological Survey of Norway and several key Norwegian mineral deposits will be integrated seamlessly into the 3D model. These deposits have been modelled in 3D previously in *TARGET* for ArcGis. It will then be possible to zoom from a national scale into these individual deposits, with their detailed geology, boreholes and ore volumes. The Geomatics division at the Geological Survey of Norway will facilitate the systematisation and standardisation of the 3D data which will be inputted into the model and has begun to assess the possibilities for a web-based user interface. We plan to create a web-based service, accessed through the NGU website, where the user can call up the 3D model anywhere in the field on their phone and visualise themselves within the model. This project is seen as a method development project, to understand and develop the workflows and databases to allow the creation of the 3D model, organisation of the different data types and databases and a web-based interface. Towards the end of the project we will assess the connection to other areas of geology in Norway and at NGU, for example landslides and onshore-offshore relationships and how this model can be extended to make more complex models for mineral deposits and specific places of interest in sub-areas.