

DTM

Digital Terrain Model

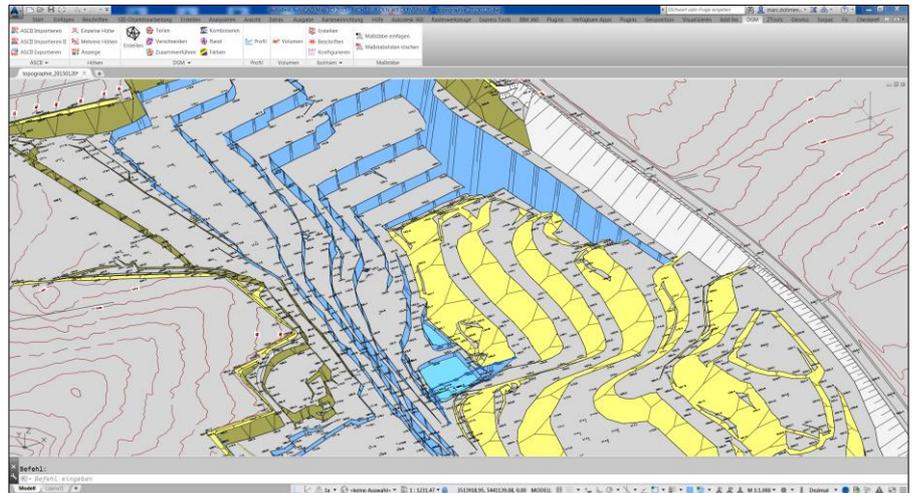


Project planning in the sectors of raw materials, surveying, landscaping, infrastructure and dump construction becoming a more and more complex task. Therefore a three-dimensional editing and illustration of the topography, deposit or mine plan is increasingly required. The AutoPLAN module DTM provides a wide range of editing and analysis tools to work with surface models.

DTM

The AutoPLAN module DTM is an independent application for the generation, visualization and analysis of surface, deposit and mine models.

The calculation base of a DTM are random distributed points, lines or polylines containing x-, y- and z-values whereby the z-value do not have to represent an altitude, but can also display information like groundwater level, thickness of the deposit or other individual data. Data import is executed using structured ASCII-files. Thereby all line connections, symbols and point cloud information can be transferred into a dwg-drawing-file.

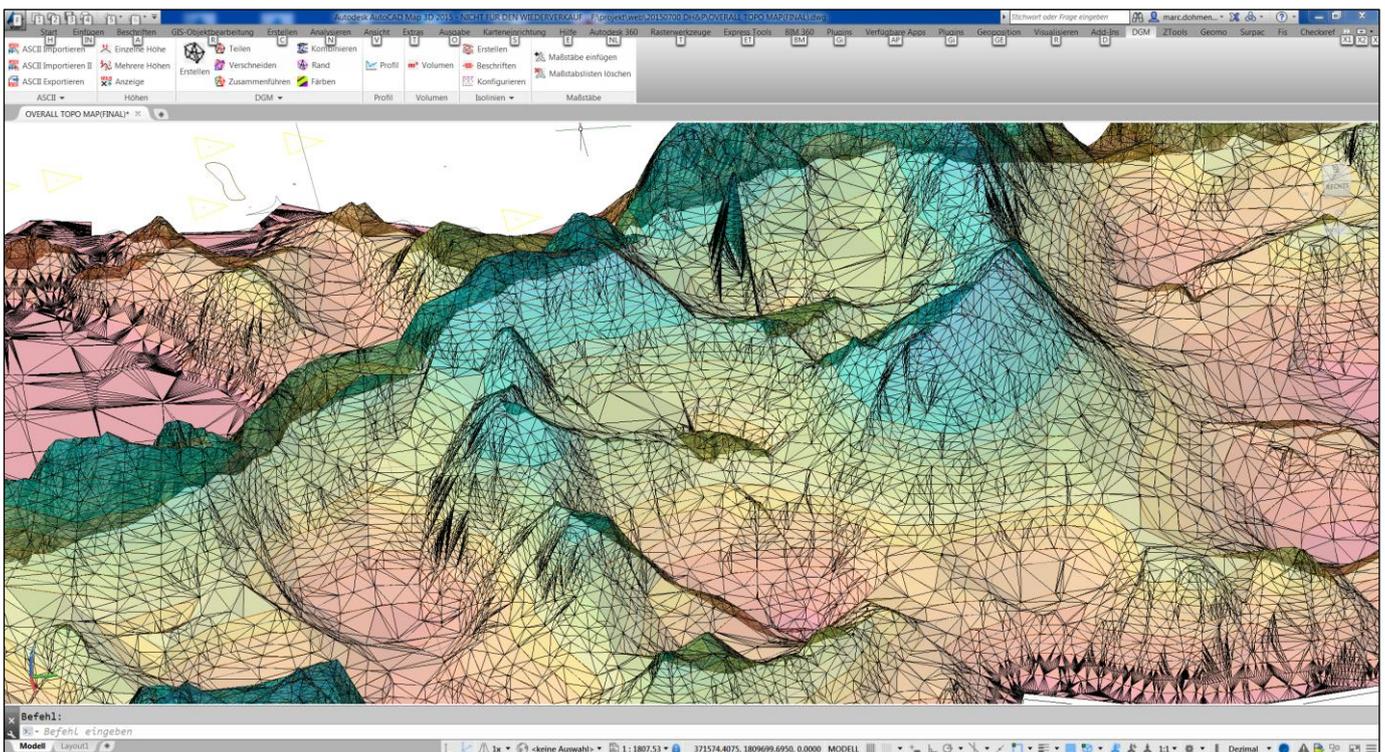


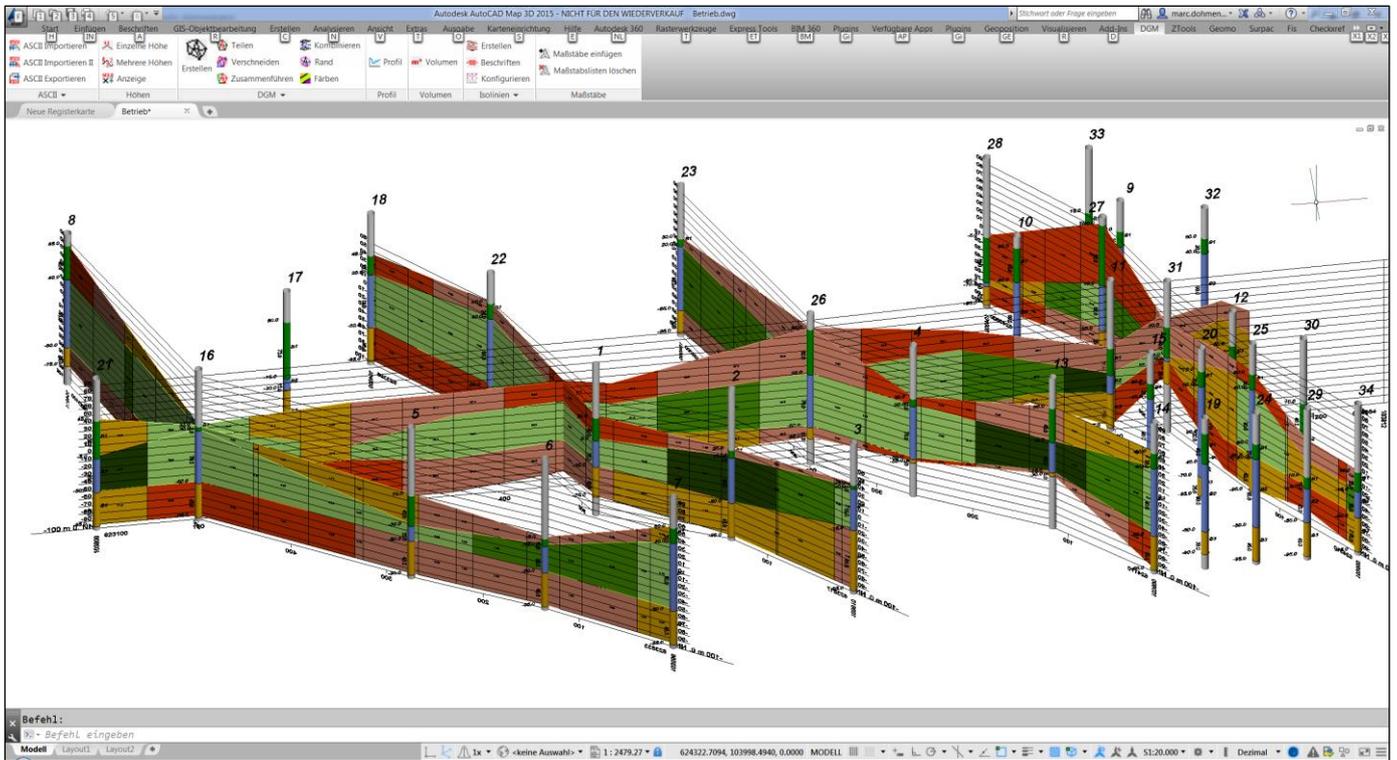
Additional line connections using point numbers or coding can be done subsequently.

The three-dimensional surface model is based on TINs (Triangulated – Irregular - Networks), which uses the geodetic points to form triangles but also take into account

breakerlines (slopes, road, etc.).

Beside topographical surfaces the AutoPLAN DTMs may also represent a geological layer boundary (e.g. overburden or mineral base) using information from exploration drillings. Groundwater modelling and analysis can be realized as well.





For mine plans, quarry and dump models or any other kind of landscaping constructions can be simulated by constructed slope systems.

Major analysis functionality for the DTM models are 2D and 3D surface constructions and volume calculations based on the prism method. Calculations can be done optionally up to a reference level or between two surfaces and for part-areas. By blending of various DTMs cutting and filling of several parcels can be calculated in one single work step.

Practical examples are the calculation of royalties, supervision of the yearly or daily amount of extraction and dumping. Especially important when collaborating with external companies e.g. for the overburden removal.

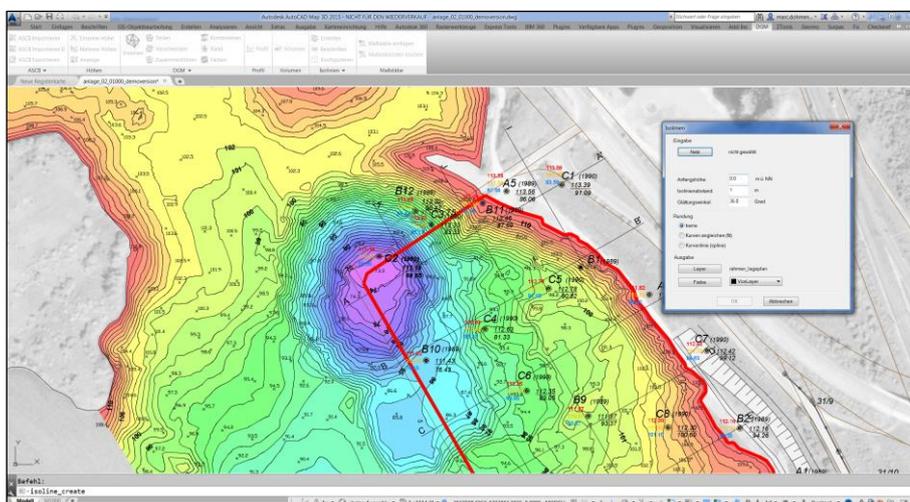
An appealing visualization of the 3D models is possible using the construction tools isolines and profiles. Therefore 2D and 3D profiles can be realized. Moreover map sheets can be generated for the illustration in licensing procedures.

Further tools for DTM coloring depended on the inclination, exposition and elevation are available.

The amount of points, lines and polylines used for the DTM generation is unlimited. Due to an efficient algorithm AutoPLAN is able to handle a huge amount of points in short time.

Beside linear triangulation between points further grid points can be calculated using interpolation methods like inverse distance.

Further surface model associated construction tools are available with the AutoPLAN application DTOOLS. Lowering of points and polylines onto a 3D surface or the development of a slope system with ramps dependent on geological boundaries can be realized.



For the application DTM the following editing tools are available:

ASCII

- Import of points, lines and polylines using arbitrarily structured ASCII file
- Automated height labelling of points, lines and polylines
- Additional point editing applications e.g. combining, automated reduction or interpolation of points
- Calculation functions for point groups: division, subtraction, multiplication and summate of the z-coordinate e.g. for ratio calculation
- Automated scaled visualization of point labels and heights

DTM

- Generation of surface models via triangulation under consideration of breakerlines (e.g slopes)

- Cut out or combine of surface sub-models
- 2D and 3D surface calculation
- 2D and 3D DTM boundaries
- DTM coloring dependent on the elevation level
- Identification of intersecting DTMs

Volume

- Volume calculation optionally up to a reference level or between two surfaces and for subareas
- Automated volume calculation for real-estates (calculation of mineral royalty and rent)
- Graphical visualization of cutting and filling areas
- Calculation of the cutting and filling thickness

Isolines

- Calculation of isolines (also with rounded curves)
- Automated labeling and coloring of isolines
- Manual editing: trim, extent, break
- Automated layer and illustration assignment dependent on the isoline height

Profile

- Arbitrary orientated 2D and 3D cross-sections
- Selectable illustration options: profile title, exaggeration, compass direction, 2D, 3D, unlimited number of DTMs
- Automated and configurable height labeling

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