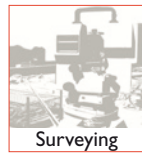




GIS DTM



Land Acquisition



Surveying



Road



Rail



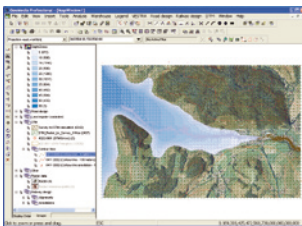
Sewer



Accounting

VESTRA®

VESTRA GIS GeoMedia



The VESTRA GIS digital terrain model for GeoMedia from Intergraph provides you with a wide range of calculation and analysis functions for a wide range of areas, including contour lines, slope aspects, intersections, excavation constructions, landfill surveillance, sloped areas, volume calculations and height zone calculations. Regardless of whether you need to perform routine work or complex tasks, you can work faster and more economically with VESTRA GIS DTM GeoMedia.



VESTRA GIS DTM GeoMedia

The application calculates a DTM with a high degree of performance and precision; even very **large datasets** (of different origins) pose no problem whatsoever.

All **GeoMedia databases** and data servers connected to the GeoWorkspace are available for use as calculation data. Alternatively, a DTM can be calculated directly from an ASCII file.

The calculation of the digital terrain model is based on **Delaunay triangulation**.

All 3D lines and curves that are selected for calculation are automatically recognized as break lines. A **graphical error analysis** checks the output data.

The application can be operated intuitively using **wizards**. It doesn't matter whether you are calculating contour lines and profiles, intersecting models and determining volumes or creating depth zones.

GIS and CAD

AKG's powerful specialized VESTRA GIS DTM module, which is fully integrated into GeoMedia, particularly benefits users in their day-to-day work. This is because, thanks to a database connection (Access, SQL, Oracle) and data server connection to other GIS and CAD systems, users can work across various different projects and specialist areas regardless of data source.

DTM calculation

The objects selected in GeoMedia or transferred directly to the DTM via data import undergo triangulation (in accordance with the Delaunay procedure) with an integrated graphical error analysis. 3D lines and curves included in the selection are automatically incorporated as break lines. It goes without saying that it is possible to subsequently integrate points and lines into the model, remove them from the model or swap the edges. Wizards support the calculation of contour lines in any intervals, including annotation, the generation of terrain profiles and quantity calculations. VESTRA calculation results are saved as attributes and can be used for further analysis in GeoMedia.

Verification and analysis

You can quickly obtain a correct assessment using VESTRA GIS DTM, be it of various planning variants, landfills, soil samples or terrain situations. For example, when run on terrain surveys, the error analysis function lists all irregularities in no

time at all, including points that have the same position but different heights, break line intersections and break line points without a height. Errors are highlighted in the diagram and automatically centered. The 3D view allows a visual check, displaying the diagram as an area or wire model. The task of assessing the terrain situation is additionally supported by a function to calculate contour lines and terrain profiles (along a line or alignment). When it comes to analyzing the model, users can also use slope calculations, high/low point calculations and height zone calculations.

Quantity determination

A wide range of tools are available to users for the purpose of planning waste heaps, excavations, landfills and other three-dimensional objects. You can calculate spatial intersections subject to the specification of base lines, height information and slope values. A DTM can be calculated for the finished construction. Cut and fill areas and volumes are then calculated based on the intersection with the original terrain.

Difference calculation

DTM difference models that are divided into height levels and contour lines can be used, for instance, to display flooded areas and depth zones or to generate hazard maps.

VESTRA GIS DTM GeoMedia



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Model creation

- The application can be used in multiple specialist areas, as the data required in order to calculate the DTM can be taken from databases connected to the GeoWorkspace (Access, SQL and Oracle) as well as from the GeoMedia data servers (e.g. for AutoCAD, Microstation, ESRI, etc.).
- Alternatively, in the case of large data quantities such as aerial survey data, terrain models can also be calculated directly from an ASCII file, without having to import the data into GeoMedia first.
- DTMs are created in accordance with the Delaunay procedure, calculation occurs as a DTM triangular network with the automatic incorporation of break lines; any number of inside and outside boundaries is possible, thanks to prior data selection in the GeoWorkspace.
- 3D lines and curves are automatically recognized as break lines. Every break line side becomes the edge of a triangle.
- Graphical error analysis and reporting allow break line intersections, points with the same position but different heights and other error sources to be quickly located.
- DTM triangles are stored in a separate file (*.dgm) so that several terrain statuses can be managed and loaded as required; the graphical display can be based on feature classes or a query.
- Optional: adoption of original point names and reports in triangulation (e.g. as calculation evidence)
- An optimized algorithm allows point volumes of any size to be processed with outstanding performance.
- Various functions are available for incorporating points into the model or deleting existing points.
- The function for importing and exporting various models supports an optimum project structure.
- Triangle geometries are adopted as a VESTRA DTM without recalculation.
- Surfaces can be imported from REB 22.013, GAEB 22.114 and GAEB 20.404, and can be exported from prisms to REB 22.013 and GAEB 22.114.

Properties

- Triangle edges can be subsequently swapped.
- Calculated triangles can be classified by color, for instance as roads, terrain, slopes or water.
- DTM height change: the imported or calculated DTM can be raised or lowered.
- Additional points and break lines can be incorporated into or removed from a DTM.
- Points can be output from an imported DTM with or without point numbers, break lines, and inside and outside boundaries. *This function is often needed when a customer supplies a DTM without the corresponding topography.*
- Triangle lists or Excel spreadsheets can be output.

Analyses and profiles

- Contour lines can be calculated in any interval, with individual annotation based on the current model or the calculated prismatic volumes.
- Profiles and cross sections for alignments or lines can be created with the support of a wizard; the interval, special stations and distances are freely definable, an intersection at break lines can optionally be included; results are displayed and checked in a separate window.
- The calculated profiles can be saved on any horizons in the cross section database. Additional information regarding an alignment, line, DTM or terrain is displayed.
- Colored slope maps are available for adjustable slope classes, while slope arrows and high/low points aid presentation.
- A list of sloped and projected areas can be output, optionally with triangle or focal point coordinates.

Visualization

- Terrain visualization as 3D view for checking calculations; viewpoint, lighting and type of display can be defined as required.

Model intersection and quantity determination

- Two digital terrain models can be automatically intersected to form a joint new model without user intervention.
- The quantity calculation wizard offers various calculation variants: either between two models, between a model and a reference horizon or as water volumes between a model and a fill level. The results are the colored display and the prism calculation report.
- Calculated cut and fill areas can be output and saved as separate DTM models.
- A quantity calculation that has been performed can be saved and loaded at a later stage.
- Triangles can be annotated with triangle numbers and point numbers for independent verification.

Differential DTM

- Automatic creation of depth/height zones by means of the creation of differential terrain models; dynamic presentation of attributes on thematic maps
- Differences can be output as a contour line.

Constructions

- Generation of a point raster (e.g. 5m x 5m) from a loaded DTM; selection section either graphical or using an existing polygon; points saved in a freely definable feature class or as a query regarding the project-specific DTM feature class
- Flexible point constructions based on the intersection of two or three sloped planes with a horizon (NN height)
- Calculation of (excavation) edges based on the slope and the horizon height
- Calculation of excavation edges as inter-

section lines with the current DTM

- User-defined height formation: the heights of existing points and lines can be transformed into a sloped area. The sloped area can be defined based on the absolute height, DTM height or slope values. Points located within this level can be selected and are assigned the interpolated height from the previously defined level. This function is excellent for planning the bottom of excavations or landfills.

Special features

- Height assignment of terrain heights from the DTM to points and lines in the database
- Soil samples: measured points with relative height specifications (e.g. -0.20 m) and an existing DTM can be used to generate new points that are assigned the difference between the original relative height and the available DTM height as their new height. The plus/minus sign for the relative height can optionally be taken into account.

DTM as a list and in Excel

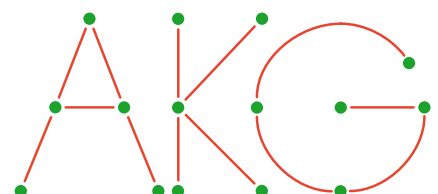
- Output of detailed construction accounting information either in the form of a list or in Excel format: number of triangles, triangle information, maximum and minimum slope, 2D and 3D areas

Display

- Model as triangulation in a separate feature class or based on a query regarding the project-specific DTM feature class
- Automatic generation of important attributes such as the slope for further processing in GeoMedia
- Triangle information as a window: height, slope, area and edge length

System requirements

- GeoMedia® or
- GeoMedia® Professional
- Windows® XP
- 2 GB RAM (recommended)
- 700 MB ROM for the programs
- CD-ROM drive



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