TcpMDT
Digital Terrain Model – V8
Standard

Introduction

This application is ideal for all kind of surveying projects, modeling the terrain, drawing profiles, calculating volumes and visualizing the terrain in 3D. Its main users are public administrations, construction companies, engineering, architecture and town planning studies and companies involved in earthworks, running quarries, mining, the environment etc. as well as free-lance professionals.

MDT is an application that is installed as a plugin on AutoCAD, BricsCAD or ZWCAD. It offers a powerful set of tools for easy learning and has a modular structure.

It shows great versatility through the import and export of files in the most common formats, such as LandXML, DWG and many more. In addition, APLITOP is a pioneer in the integration of topographic and road data in OpenBIM workflows, through the IFC format and the extensions IFC Alignment and IFC Road.

Topographic Points

The program starts to run from coordinates obtained by total stations or GNSS receivers, converting files from field applications. If TcpET or TcpGPS has been used, in addition to the coordinates, the raw data of the observations are imported, as well as the linked photographs and voice notes.

It is also possible to create new points from CAD entities drawn by other programs.

If codes have been assigned to points in the field, the program will automatically draw the planimetry and blocks defined by the user.

In addition, we can run all kinds of editing and filtering operations.

Surfaces

Break lines can be defined graphically, by sequence of points, codes or by importing files. Triangulation can be created from points, with or without break lines and by applying angle or maximum length controls. There are also options for flat triangles minimization and automatic gap repair.
Topographic surfaces of natural terrain and geotechnical layers can be created from survey data or seismic profiles.

There are commands for interactive editing of the surface, and it also offers tools to detect and repair errors.

The surfaces can have multiple boundaries or islands, and can be drawn as lines, 3D faces or meshes.

The program includes the import and export of the most common formats, including CAD applications, BIM, machine control, 3D modeling and virtual reality.

**Contour Lines**

MDT can generate contours with an interval or at special elevations and they are updated automatically with each change in triangulation.

The contours can be labelled manually or automatically with style, size and layer customization. Another command allows additional labels to be placed anywhere on the surface.

There are also other commands for interpolating, breaking and joining contours, adding vertices, editing contours, discretizing polylines and splines, detecting elevation errors etc.

Other tools make it possible to import files in shape, GML and other standard formats.

**Meshes**

Meshes may be created from a surface, contours, 3D entities or mesh files in various known formats (Arc/Info, LAS, GeoTIFF, etc.).
It also has commands for mesh processing such as joins, filtering and resampling, conversions etc.

They may be represented as 3D faces, polyface mesh or image, all being suitable for export to realism and animation programs.

**Alignments**

The horizontal alignments which will be used on longitudinal profiles and cross sections may be created interactively by means of lines, circular arc or clothoid segments and from polylines, numeric input or importing files in the most usual commercial formats.

MDT includes tools for interactive editing as well as for dimensioning alignments with customizable styles, labelling of alignment data etc.

It also includes options for obtaining reports of points at intervals, calculating distances and intersections between alignment etc.

**Profiles**

Longitudinal profiles and cross sections may be calculated from a surface, 3D cartography or by regression of points near the alignment.
The profiles may be updated automatically when the original alignment or surface have changed. Furthermore, it has a powerful profile interactive editor.

The drawing is totally customizable: model or paper space, sheet templates, text style and size, labels and numeric data, customized blocks etc.

You can simultaneously draw several profiles on different layers to show the different evolution stages of a terrain.

It also has tools for projecting 3D polylines or points in the profiles, viewing in real time of cross sections based on the position of the cursor on the ground plan and many more tools.

**Volumes**

Cut and fill volumes can be calculated from a comparison between meshes, surfaces or cross sections.

The results of meshes and surfaces are represented by areas using color palettes, with a customizable legend and interval.

Calculation by profiles allows the application of the curvature corrections in line with the geometry of the alignment on the ground plan and excluding intervals that do not take part of the measurement.

**Images**

MDT has commands for inserting georeferenced images and orthophotos in their real position on the terrain and assigning them to a surface or assigning predefined textures to surfaces, and place photos with position at their real location on the map.

It also allows access to the web map services (WMS, WMTS) provided by public and private entities in such a way that the user must only specify a window, choose the service and the program will automatically insert the image in the right place on the drawing.

Another utility enables the user to export points, surface and layers of the drawing to Google Earth.
**Maps**

MDT can draw a 3-D mesh based on contours or surface and maps of heights, slopes, orientations or visibility from a point can be generated.

It includes a powerful terrain viewer in which the lighting conditions can be changed and simulate phenomena such as fog, rain, wind, etc.

It includes a ready-to-use library of textures to apply to models, and another of 3D objects with trees, vegetation, rocks, signs, street furniture, etc. useful to enhance presentations.

Another interesting feature is the total immersion in the field through Virtual Reality technology, using Oculus Rift headset and moving freely with the X-Box gamepad.
Plots

This menu includes options for creating and editing plots and buildings. It also has tools for plot division by area, parallel and perpendicular to one side, azimuth, length of facade, etc.

You can also generate various types of reports, export to GML and shape formats, etc.

BIM

APLITOP is actively collaborating with buildingSMART International for the development and implementation of the IFC Alignment and IFC Road formats, which aim to simplify the exchange of road and infrastructure data through the BIM methodology.

MDT® can import IFC (Industry Foundation Classes) format files having surfaces and alignments. The export makes it possible to use data generated by MDT in applications such as BIM Vision, Solibri Model Checker, Revit, ArchiCAD, Navisworks, and more.

Likewise, it is integrated into collaborative platforms such as BIMserver center, making it possible to manage and share all the files of a BIM project, making easier the organization and communication among authorized users working in the project.

Utilities

MDT has multiple additional tools for the presentation of drawings such as the numbering of objects, draw coordinates and grids, slope drawing, division onto sheets, layer control, entity elevation etc.
**Reports**

The results offered by MDT can be customized by the user, including its graphic representation and reports.

In these you can define the header and footer content, font types, sizes and colors, add company logo, configure margins, line spacing…

In addition, the reports can be exported directly to Word, Excel, text, PDF and drawing as a table in the CAD itself.

**Requirements**

| **CAD**                  | AutoCAD versions 2007 to 2020 and compatible versions  
BricsCAD Pro/Platinum versions 12 to 19  
ZWCAD Professional/Enterprise versions 2012+ to 2020 and Classic |
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<tr>
<td><strong>Operating System</strong></td>
<td>Windows XP / Vista / 7 / 8 / 8.1 / 10 in 32 and 64 bits (2)</td>
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| **Peripherals**         | Mouse or pointing device  
CD-ROM Reader                                                                                           |
| **Graphic Card**        | 1024x768 pixels, compatible with OpenGL  
Nvidia or ATI chipset recommended                                                                    |
| **Drive**               | 1 Gb free space                                                                                           |
| **Memory**              | Minimum 1 Gb                                                                                              |
| **Processor**           | Dual-core 2 Ghz or superior                                                                               |

(1) Consult the website for further details  
(2) Operation via a remote desktop and similar services are not guaranteed, nor on virtualization platforms. Write to support@aplitop.com to ask about these special cases.

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