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Technical Note
(tcpmdt_en_v7_ext001_Pix4D)

Exploitation of Results from Pix4D with MDT

Update

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Requirements

MDT Versions: 7.0 onwards
CAD Versions: All supported
Operating System: Windows XP / 7 / 8 / 10

It also requires having installed version 7.0.36 or higher of Grid, you can check in
*MDT7 > About TcpMDT*, and an update of the grid format conversions.

Dialog screen: About

Objective

This document describes how to exploit the results generated by the Pix4D Mapper Pro
version 2.0 application using MDT Standard or Professional, without additional
extensions.

In all cases we assume that you have successfully entered the data of control points and
conducted local processing of images with no errors in its three phases: initial,
densification and generation of DSM and orthomosaic.

1
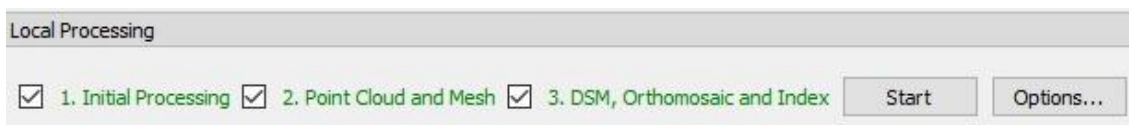
Following the description about how you can use the products generated:

[Ortophotos](#)

[Digital Terrain Model](#)

[Contour Lines](#)

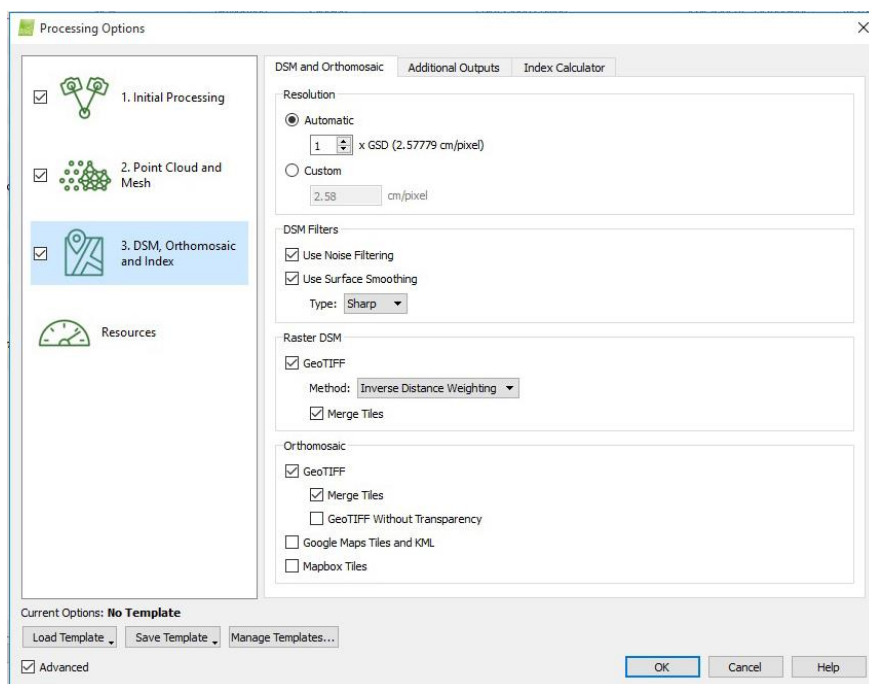[Point Clouds](#)

[Oriented Images](#)

Details

Recommended Configuration

In Pix4D, run **Process > Options**, enter in **3. DSM, Orhomosaic and Index.**

Enable **DSM and Orthomosaic** tab, and check that the following options are enabled:
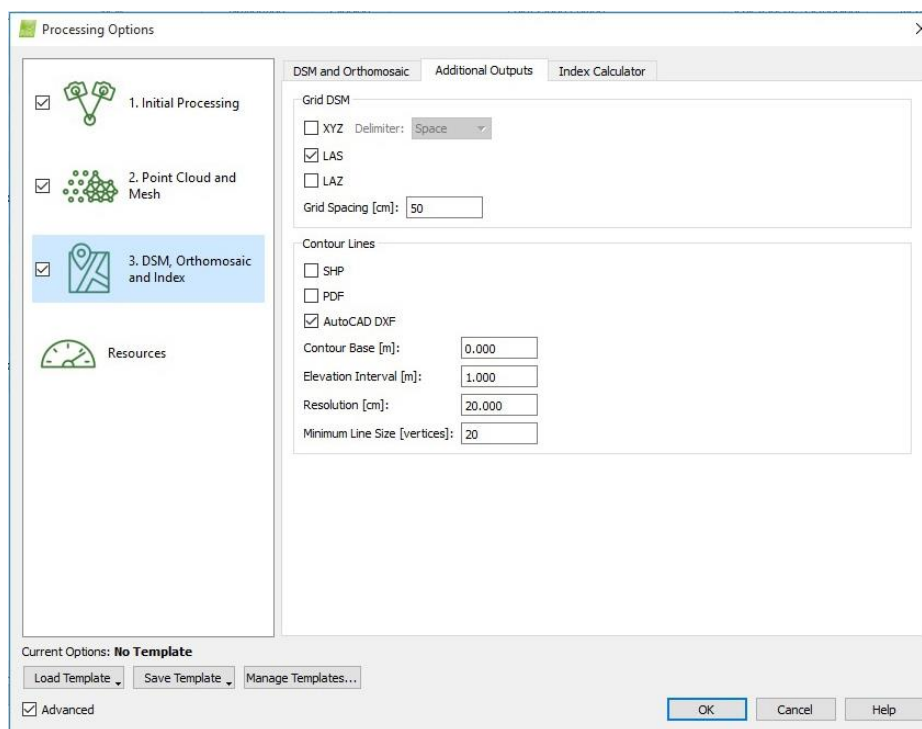
- Within **Ortomosaic**, mark boxes **GeoTIFF** and **Merge Tiles**

MDS processing options and ortomosaic of Pix4D

Enable **Additional Outputs** tab, and select the following options within the framework Contour Lines, adapting the numerical values to the needs of the project:

- Enable *AutoCAD DXF* box

- In *Elevation Interval* specified 1 m.

- In *Resolution*, specified 20 cm.

Additional processing options results of Pix4D

Ortophotos
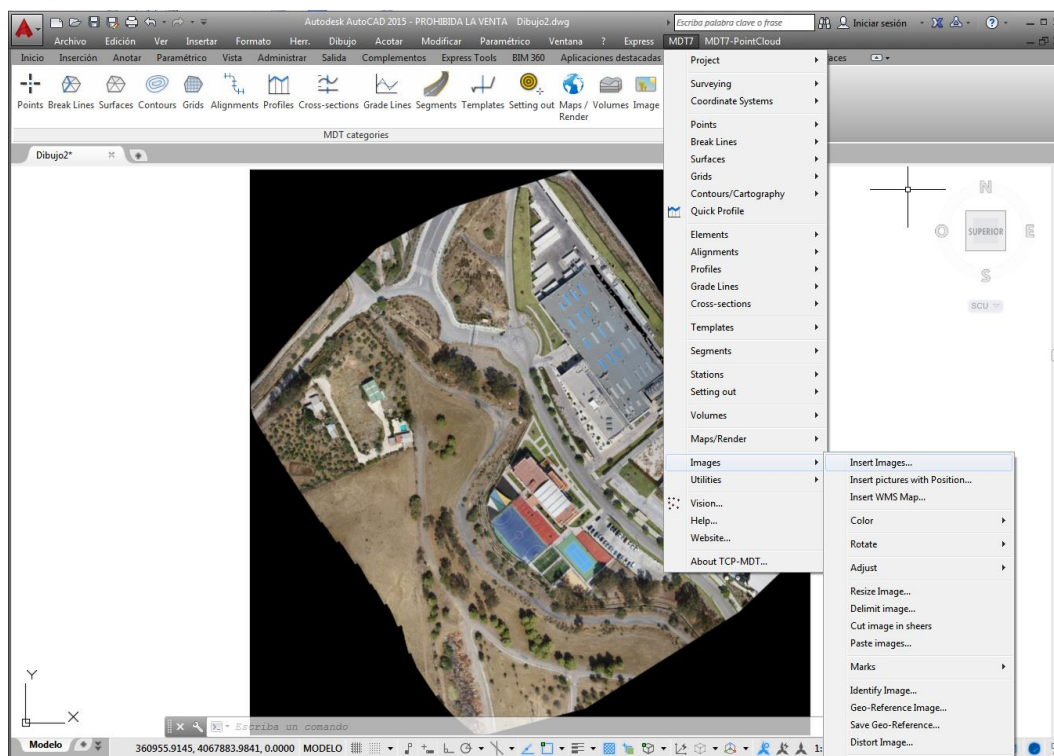
In MDT, execute the command *MDT7 > Images> Insert images*, and choose the orthophoto from following folder::

```
<project>
      3_dsm_ortho
            2_mosaic
                  <project>_transparent_mosaic_group1.tif
```

where `<project>` is the project name. For instance:
```
demo\3_dsm_ortho\2_mosaic\demo_transparent_mosaic_group1.tif
```

The image will be automatically located at the coordinates on the drawing.
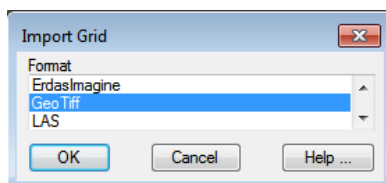
Orthophoto inserted with MDT

Generation of digital terrain model

In Pix4D is necessary to have previously generated the Digital Terrain Model, proceed as follows:

- Run *Process > RunTerrain/Object Point Cloud (beta)*
- Run *Process > Generate DTM (beta)*

Importing the MDT

In MDT, run the command *MDT7 > Grid > Import grid*.

Format Selecion from Import grid command

Select *GeoTIFF* format and select the following file:

```
<project>
        3_dsm_ortho
                dtm
                        <project>_dtm.tif
```

where <project> is the project name. For instance:

```
demo\3_dsm_ortho\dtm\demo_dtm.tif
```

Set output file with the same name but .MDE extension, such `demo_dtm.mde`

MDT Version 7 can be use as current surface file, not only surface files (extension SUP) but also binary grid (MDE extension). For this reason run **MDT7 > Surfaces > Current Surface** command, choosing the previous grid file.

IMPORTANT: As a representation option, select **Boundary**, because if you try to draw a grid formed by millions of cells in the CAD, will overflow capacity, and probably changes will be lost in the current drawing.
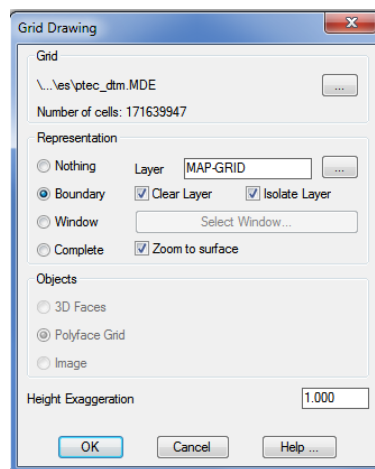
Dialogue screen of Drawing Grid
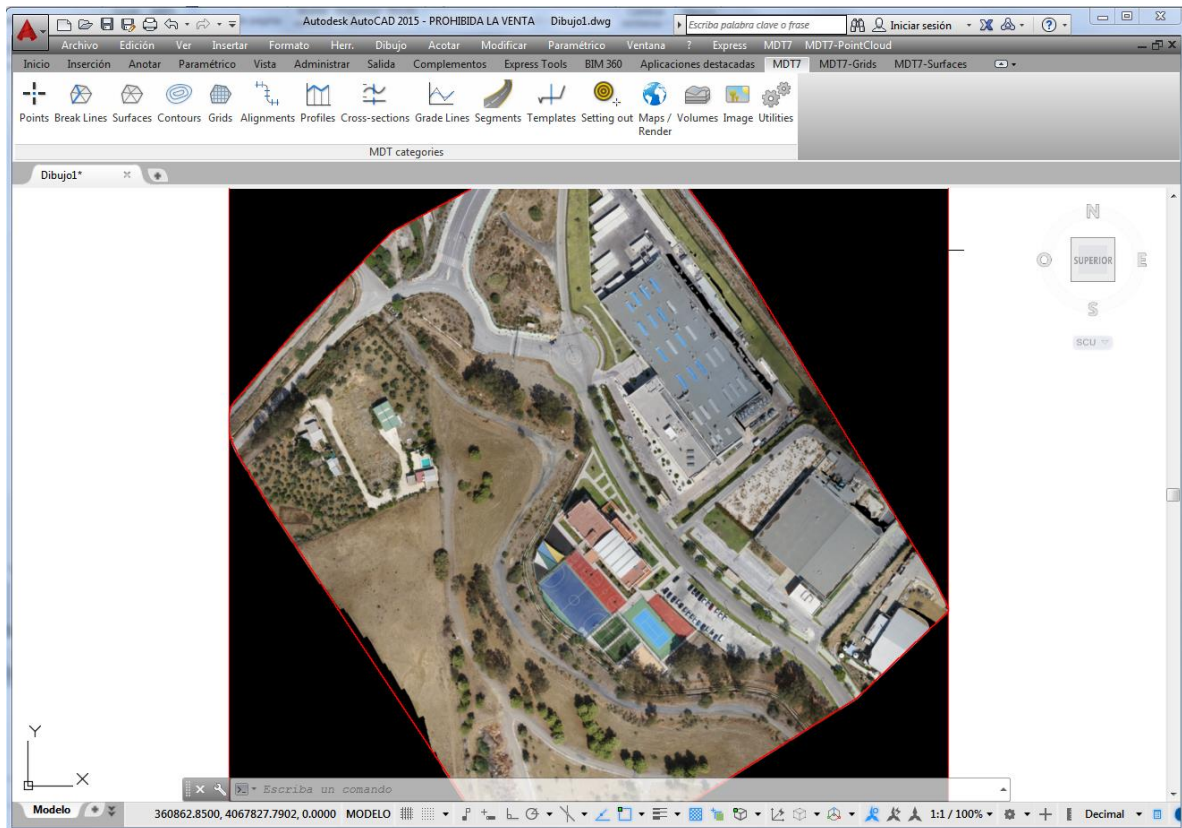
Boundary line of the grid drawn on the orthophoto

After establishing the grid as current surface, appropriate MDT commands can be executed to generate contours lines, get profiles, etc.

Contour Lines generation

In Pix4D it is necessary to have previously generated the Digital Terrain Model and the contour lines, proceed as follows:

- Run *Process > RunTerrain/Object Point Cloud (beta)*

- Run *Process > Generate DTM (beta)*

- Run *Process > Generate Contour Lines*

Since we previously set the contour lines are generated in DXF format, it is enough open with CAD the following file:

```
<project>
    3_dsm_ortho
        extras
            contours
              <project>_elev<interval>m_res<resolution>cm
              _size<size>.dxf
```

where `<project>` is the project name, `<interval>` is the interval of generation of contour lines, `<resolution>` is the resolution and `<size>` the minimum number of vertices specified in configuration. For instance:

```
demo\3_dsm_ortho\extras\contours\demo_elev1.0m_res20cm_size20.dxf
```
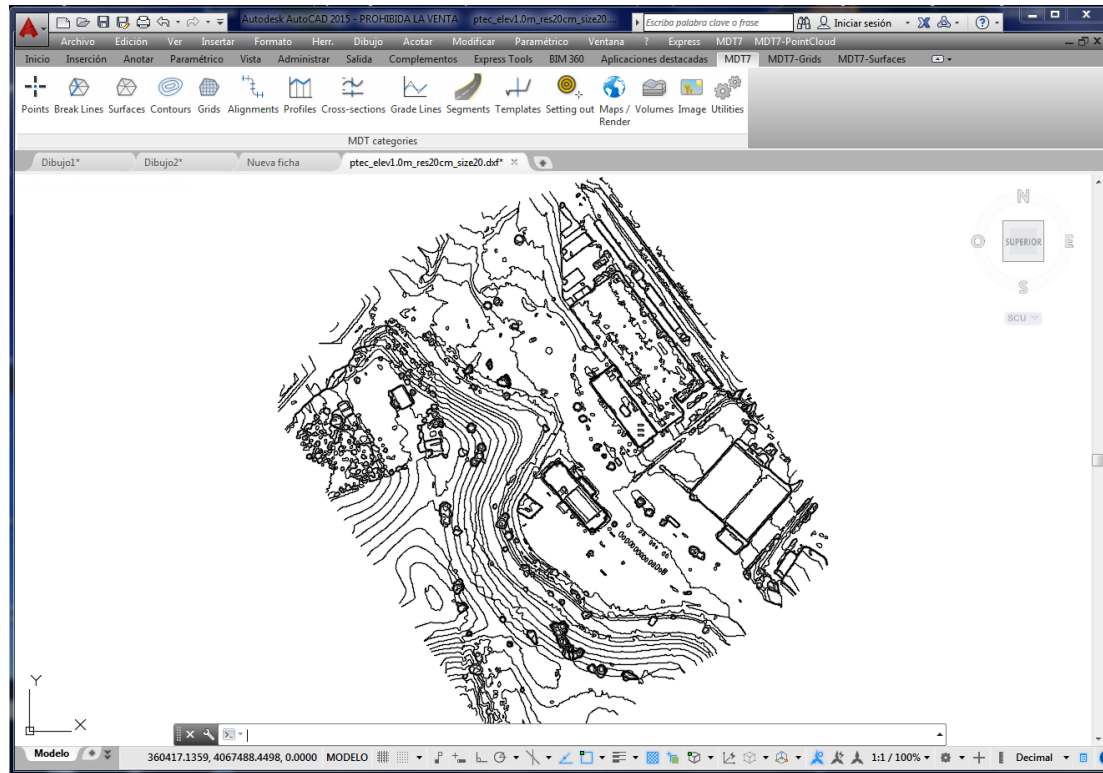
Contour lines drawing in DXF

Digital model creation from contour lines

MDT allows create longitudinal profiles and cross sections without creating a surface or grid. But in any case following we explain how to do it.

In MDT, to create a surface from contours proceed as follows:

- Run *MDT7 > Surfaces > Create Surface*, and assign a name to the surface to create

- Activate the *Contour* box, and then press the *Select* button after *select Layers* button, choosing the layer *0*. It is convenient to activate the *Boundary Line* box, although the process will take longer.
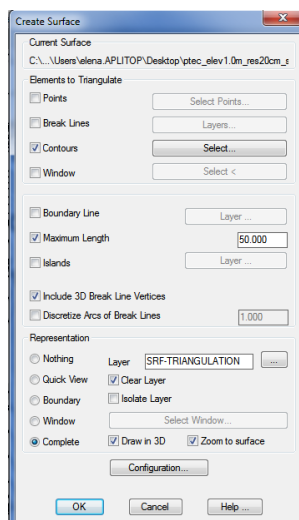
Creating surface from Contour Lines

Accept the dialogues and the surface will be created, making it possible to employ a large number of MDT commands: obtaining profiles, volume calculation, etc.
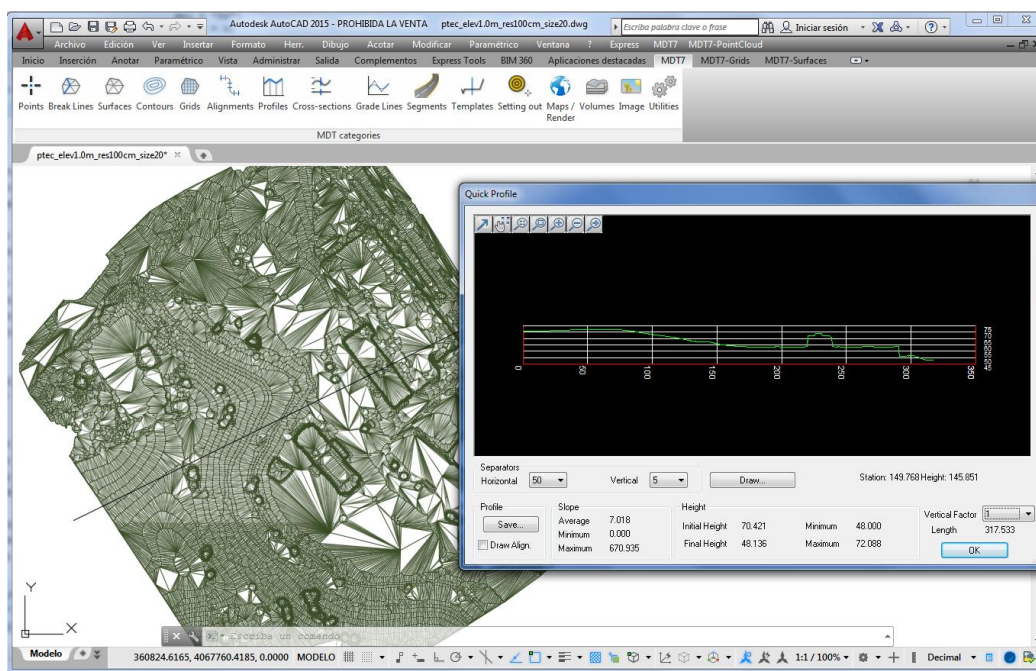
Surface and quick profile

Point Cloud

MDT, being based on a CAD platform, cannot handle the millions of points that comprise dense point clouds generated by Pix4D.

To view and process these files, the MDT Point Cloud module is recommended.

See product page and technical note on the use of data generated by Pix4D with MDT PointCloud below.

Oriented images

Another product generated by Pix4D that can be used by APLITOP applications are distortion-free images with the coordinates and orientation of the cameras.

With them it is possible to view stereoscopic models and make restitution for CAD, using TcpStereo. See product page and then technical note.

References

Video

MDT Point Cloud: product page

MDT Point Cloud: technical note about Pix4D explotation results

TcpStereo: product page