

New Features in TerraScan

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Version 006.xxx

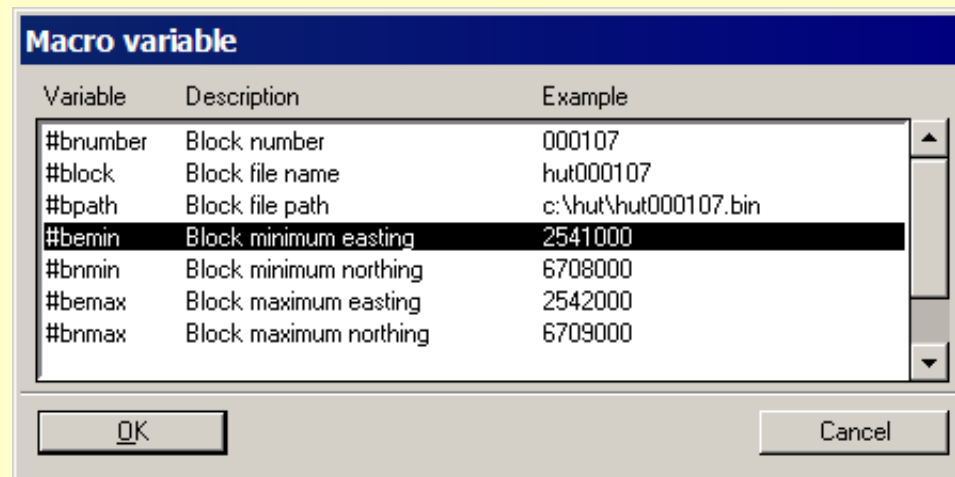
- Released at start of January 2006
- Requires new license keys
- All applications

Various improvements

- *Classify Using Brush* fixed not to leave a trail
- **Only every** setting in **Draw into design** for drawing only every n:th point
- *Load Airborne Points* and *Load Ground Points* keyin command accept a parameter specifying file to load
- Increased maximum number of attachments per cross arm from 8 to 12
- **Output points** in macros allows selection of multiple classes
- **Tools / Renumber trajectories** menu command for renumbering trajectories with increasing numbers

Coordinates into output file name

- **Output points** action in macros can incorporate block bounding coordinates as part of file name



The image shows a dialog box titled "Macro variable" with a table of variables. The table has three columns: "Variable", "Description", and "Example". The row for "#bemim" is highlighted.

Variable	Description	Example
#bnumber	Block number	000107
#block	Block file name	hut000107
#bpath	Block file path	c:\hut\hut000107.bin
#bemim	Block minimum easting	2541000
#bnmin	Block minimum northing	6708000
#bemax	Block maximum easting	2542000
#bnmax	Block maximum northing	6709000

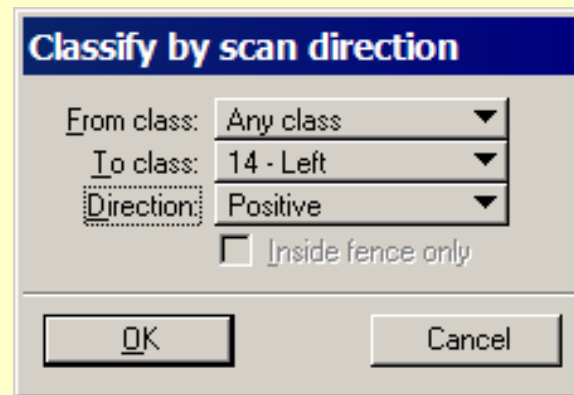
At the bottom of the dialog box, there are two buttons: "OK" and "Cancel".

Sorting in control report

- Sort control points:
 - By deviation – most different first
 - By dz – largest positive dz first
 - By magnitude – largest absolute dz first
 - By number – numbering order
 - By easting – easting order
 - By northing – northing order
- Find unusable control points fast

Classify / By scan direction

- Classifies points in negative scan direction, positive scan direction or edge points
- Requires LAS format as input



Create Span Tiles tool

- Creates tile rectangles for powerline tower spans
- Options for both orthonormal and rotated tiles

Create Span Tiles

Draw rotated tiles Level: 21 ■

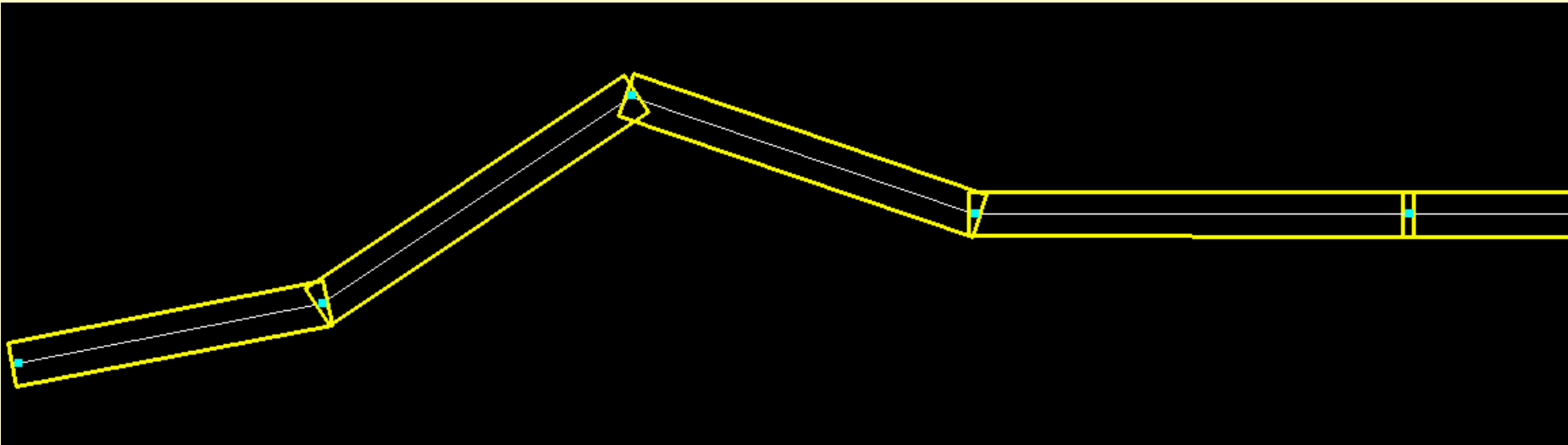
Draw ortho tiles Level: 22 ■

Width: 20.00 m on both sides

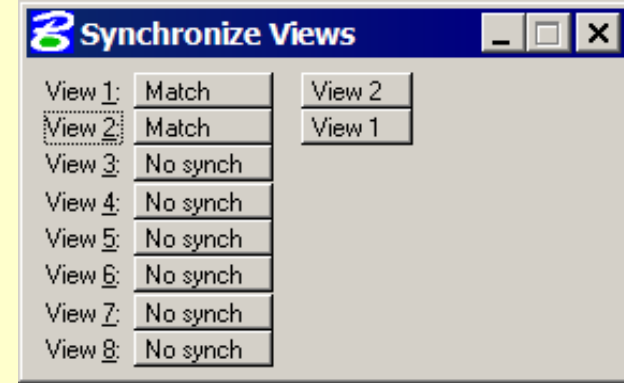
Extend: 5.00 m past tower

Pixel size: 0.100 m

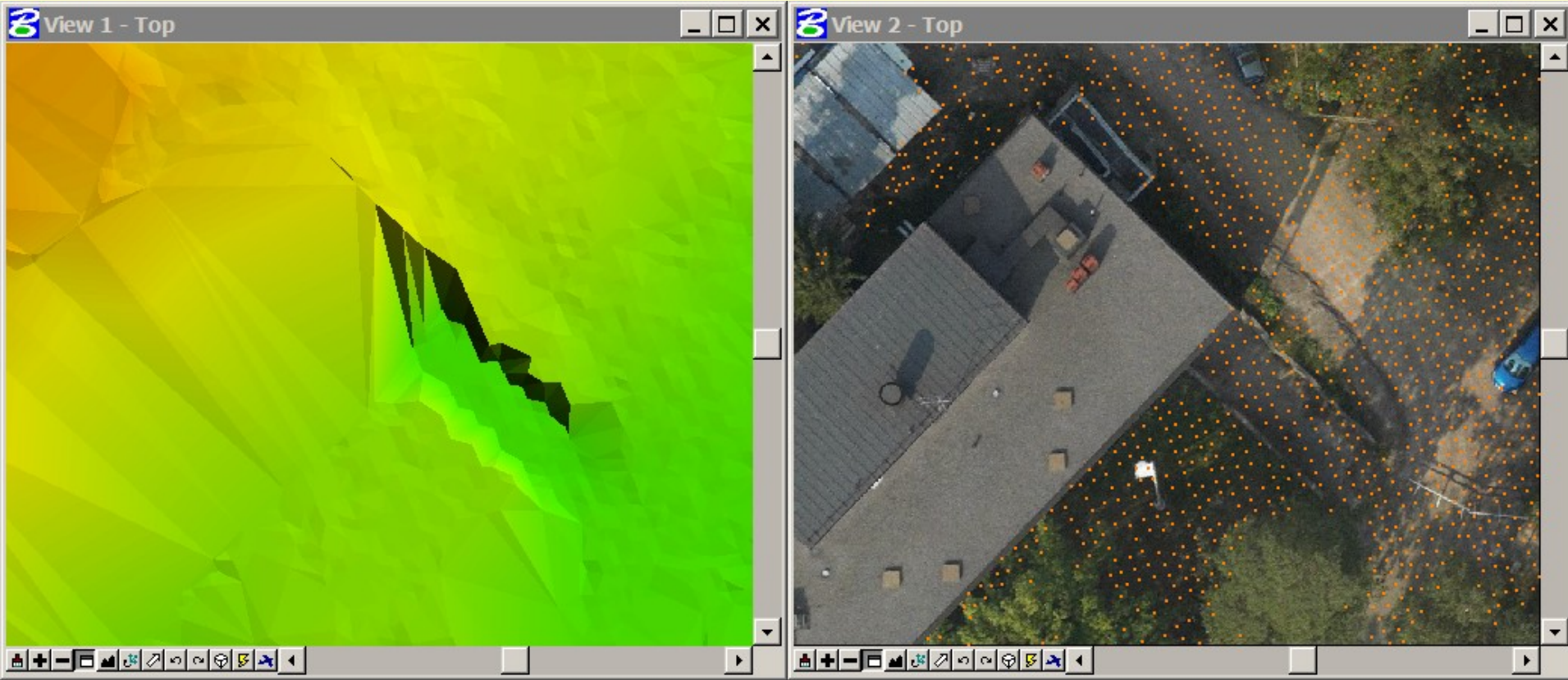
OK Cancel



Synchronize Views tool



- Set up views to automatically display the same location possibly using different view rotations



Define Project improvements

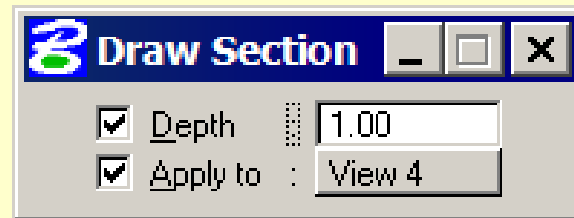
- Two window sizes: **Short list** or **Long list** from **View** pulldown menu
- **Draw boundaries** can place block number or name as text element
- Ability to import points into selected blocks only
- **Identify** pushbutton lets you select multiple blocks graphically (CTRL key down)
- **Identify** can select blocks overlapping selected polygons (select polygons before clicking **Identify**)
- Sort project blocks **By name**, **By number**, **By point count**, **North to south**, **South to north**, **West to east** or **East to west**
- **West to east** and **East to west** numbering directions

Define Project improvements

- Upto 5000 vertices for block boundaries
- Project definition can specify a trajectory directory to be loaded automatically together with the project
- **Transform boundaries** menu command for applying a coordinate transformation to project block boundary vertices
- Support for read only blocks
- Support for block files located in different directories
- **Deduce using time** option for assigning flightline numbers when importing into project

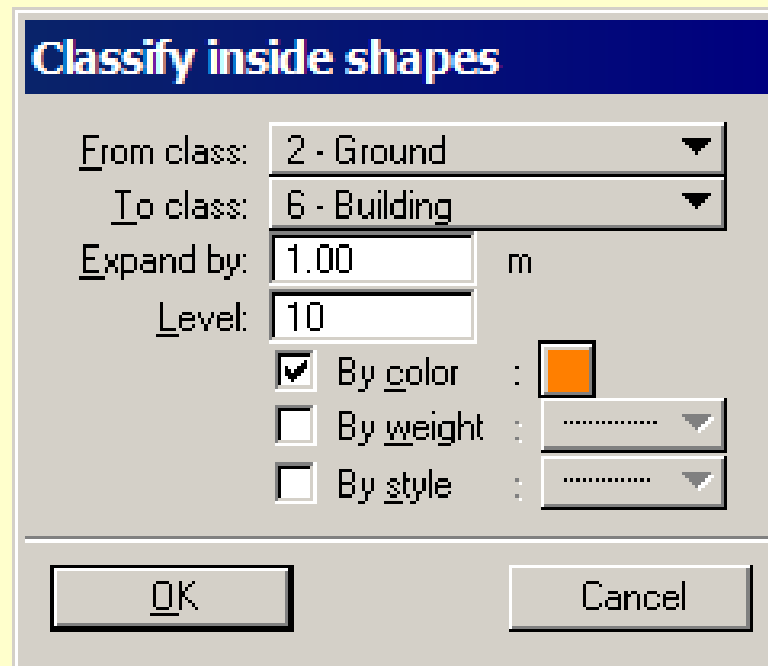
Draw Section improvement

- **Apply to** option reduces one mouse click when repeatedly drawing a cross section into same view



Classify / Inside shapes macro step

- Classifies points inside closed elements on a given level in the active design file
- Optional element filtering by symbology



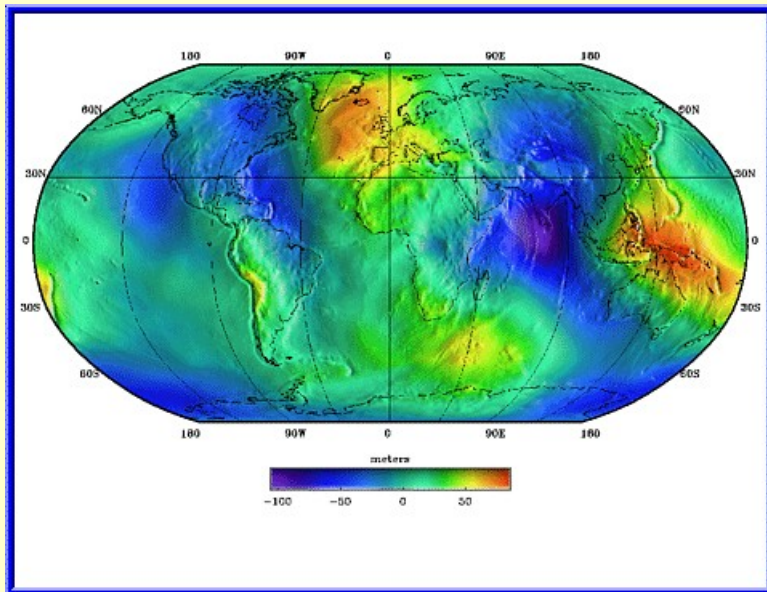
Classify Inside shapes keyin

- Classifies points inside selected shapes

`Classify Inside Shapes from=5/to=6/expand=1.0`

EGM96 support

- **Tools / Convert geoid model** extracts geoid correction information from EGM96
- **Download ww15mgh.dac** from <http://earth-info.nima.mil/GandG/wgs84/gravitymod/egm96/binary/binarygeoid.htm>



Convert Geoid Model

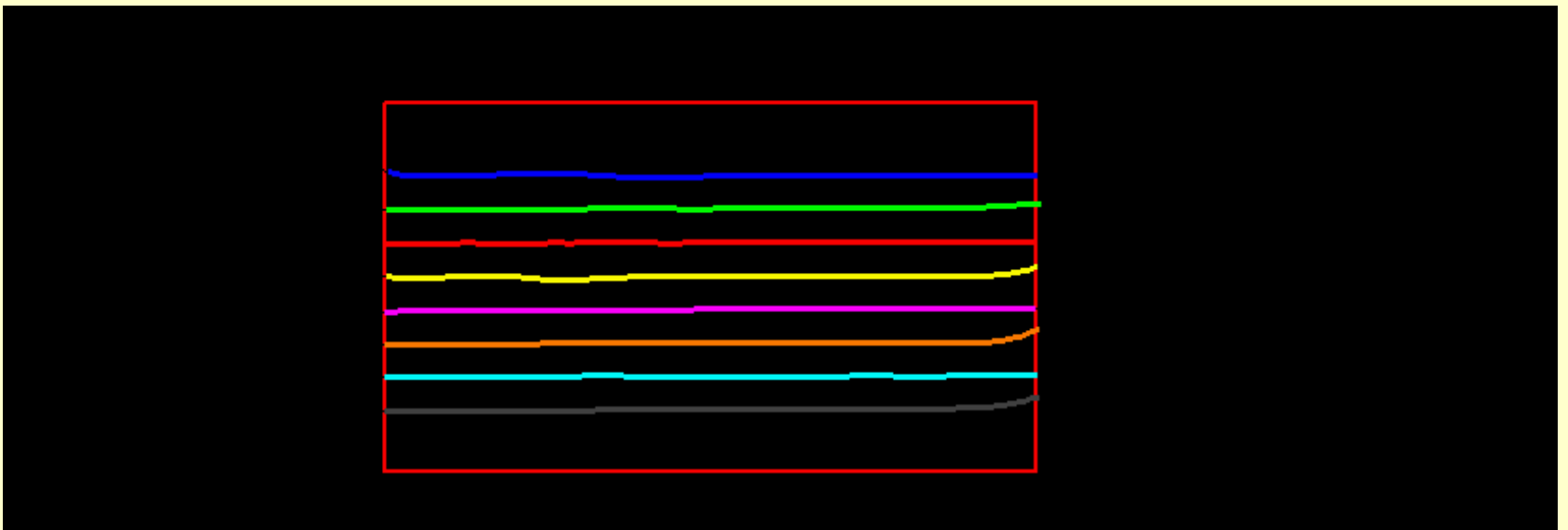
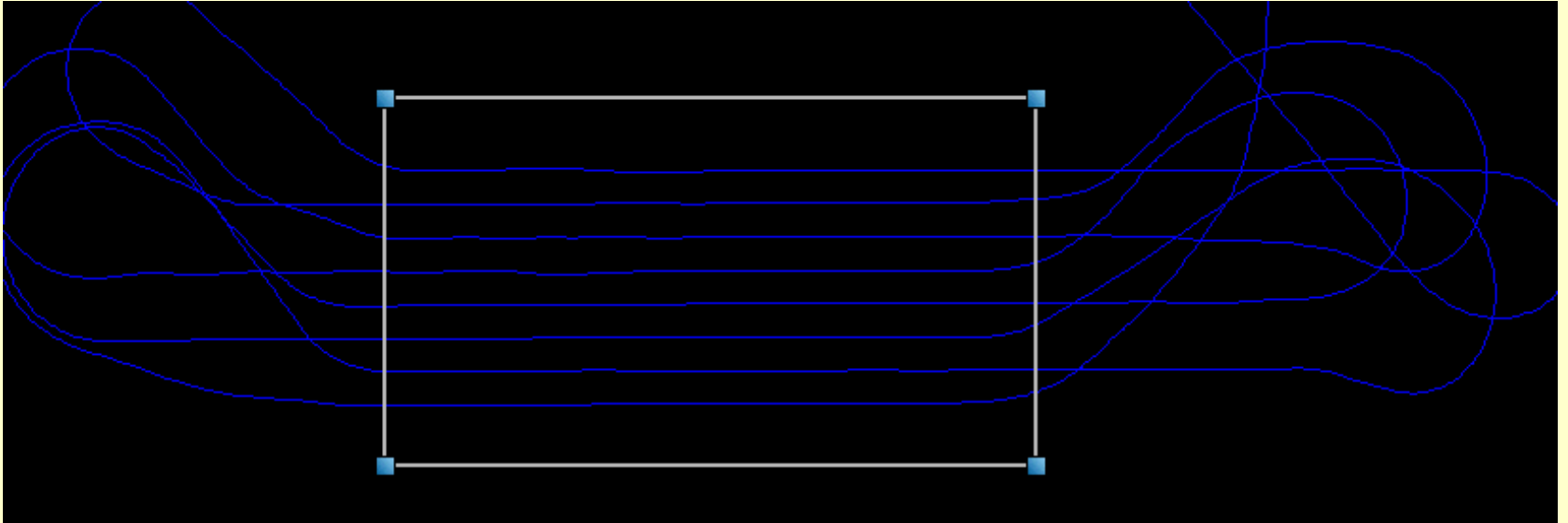
Source: EGM96
Input: C:\data\egm\ww\15MGH.DAC

WGS84: KKJ2
Transform: None
Add dz: 0.000
 Inside fence only

Output: c:\geoid.xyz

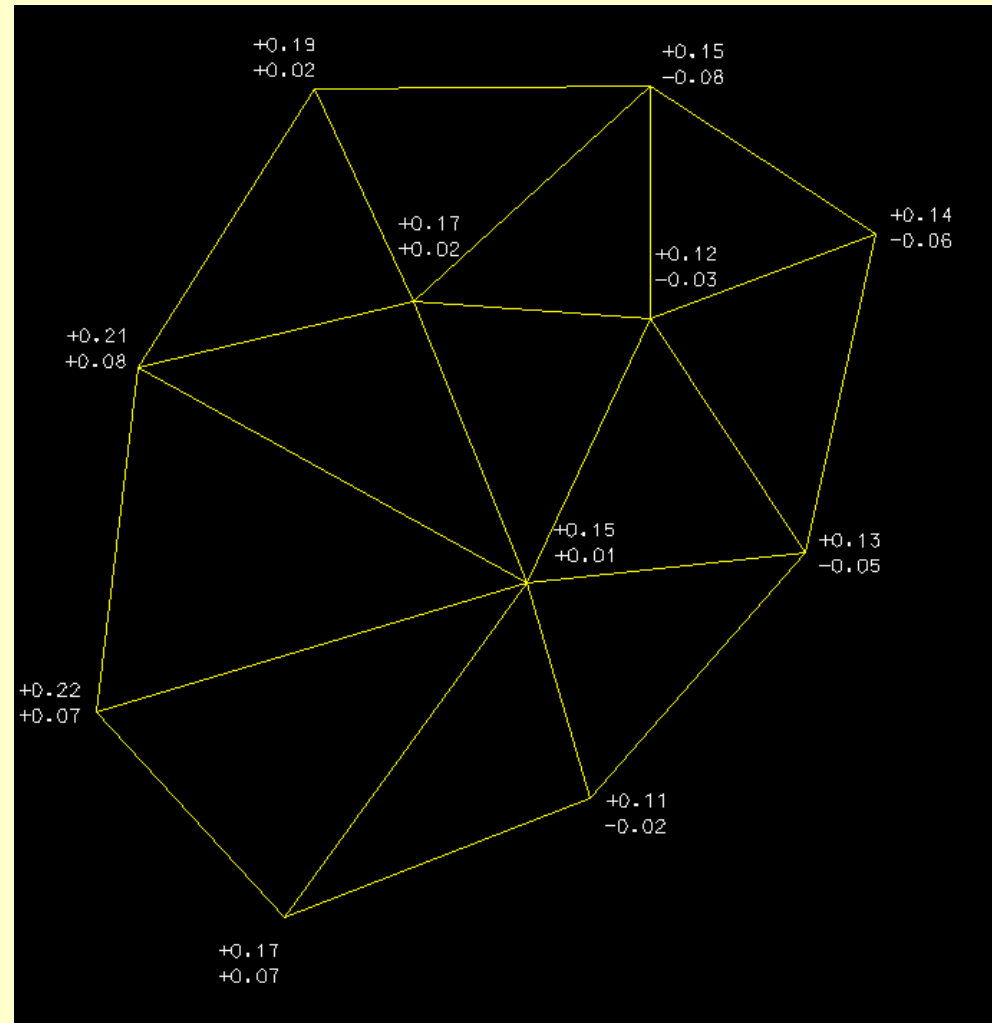
Cut outside polygons

- Splits trajectories using bounding polygons



Adjust xyz

- **Adjust xyz** command in project window for applying a varying xyz correction
- Correction model is defined by a text file containing rows with five fields: X Y dX dY dZ
- Same step in macros as **Transform points** action with **Dxyz** type



Improved building classification

- More reliable results
- Classifies hits on the roof
- Does not classify hits on walls, antennas etc
- **Z tolerance** most important parameter --> planarity
- Set **Use echo information** on if you see echo coloring

Classify buildings

Ground class: 2 - Ground ▼
From class: 5 - High vegetation ▼
To class: 6 - Building ▼

Inside fence only

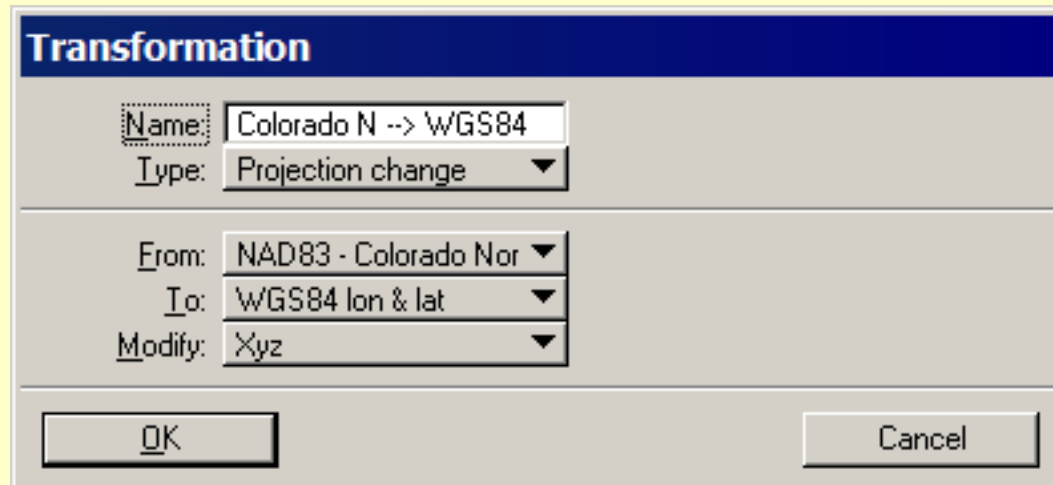
Minimum size: 40 m² building
Z tolerance: 0.12 m

Use echo information

OK Cancel

Conversion to longitude & latitude

- User defined file formats:
 - longitude and latitude field types
 - degree format selection: dd.ddddddd, ddmms.ssss or dd°mm'ss.ssss
- **Projection type** transformation can have WGS84 as target



First point ID

- For producing output where each point in a project has a unique identifying number (64 bit integer)
- Used when outputting using:
 - Id E N Z
 - Id E N Z Pulse
- Pulse value is:
 - 1 = first of many / only echo
 - 2 = intermediate echo
 - 3 = last of many echo

Project information

Description

Scanner: Airborne

Description: Otaniemi 200m

First point id: 1

Storage: Scan binary 8 bit

Store time stamps

Store color values

Require file locking

Data file location

Data in: Project file directory

Directory: C:\data\hut200\laserout\

Point classes and trajectories

Load class list automatically

Class file: C:\data\hut200\hut200.ptc

Load trajectories automatically

Directory: C:\data\hut200\trajectory\

Block size

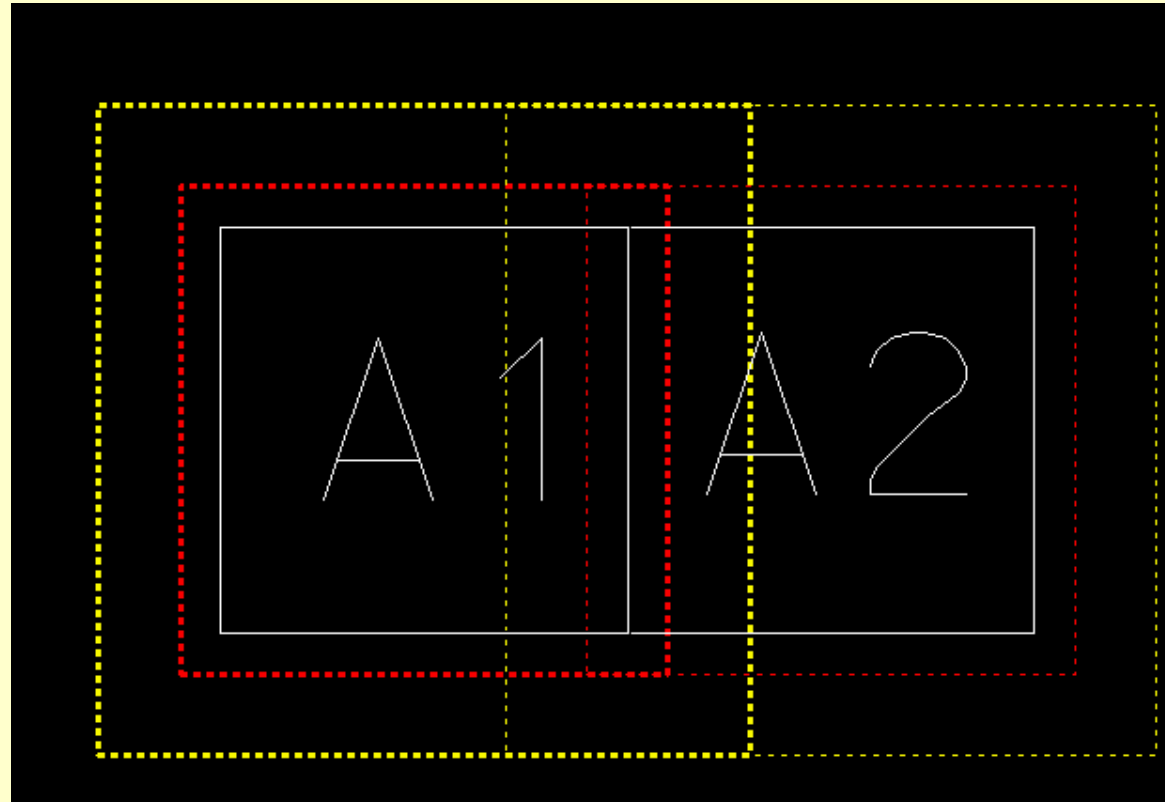
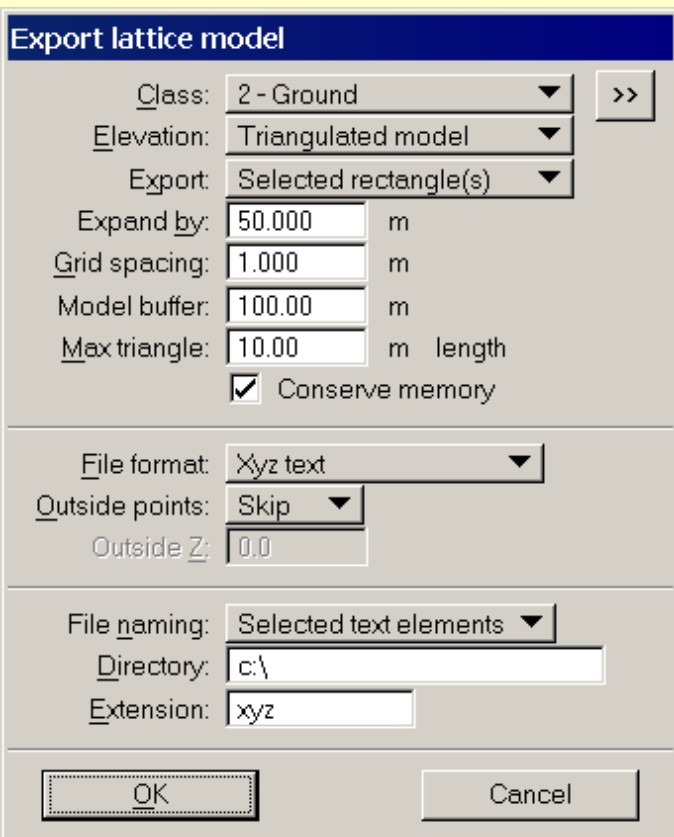
Default: 500 m

Preferred: 4000000 - 6000000 points

OK Cancel

Lattice output from project

- **Conserve memory setting**
 - Runs slower
 - Less likely to run out of memory
- **Model buffer** setting when using triangulated model



Full waveform

- Waveform data stored in separate read-only files
 - easy to support different manufacturer specific formats
- TerraScan uses flightline number and time stamp of a laser point to find waveform data
 - trajectory specifies waveform files for that flight pass

Trajectory information

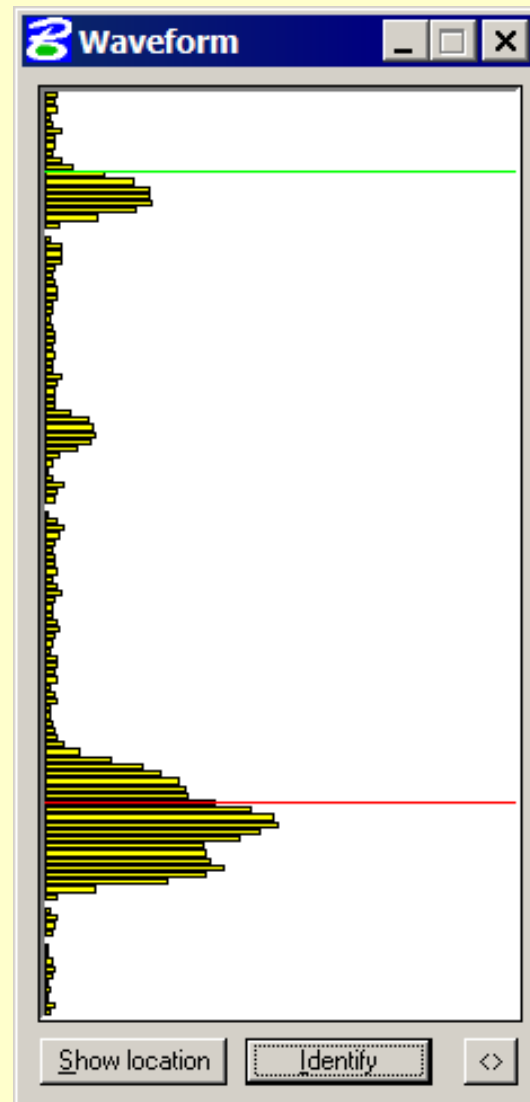
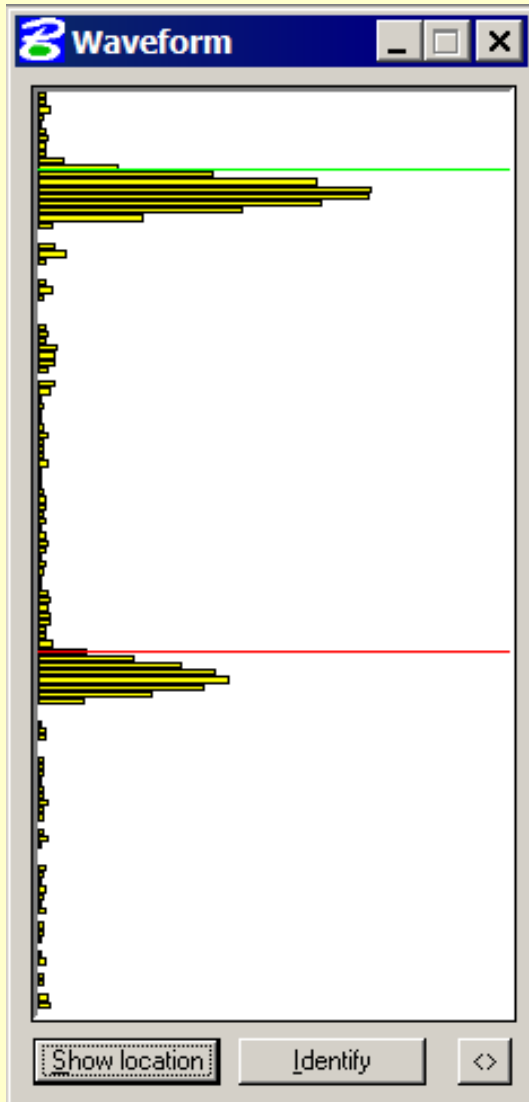
Number: 1
Quality: Normal
Description: 041028a_4_07f02.cte
Start time: 392900.9998 sec
End time: 393041.9998 sec

Video 1:
Start time: 0.0000 sec
End time: 0.0000 sec

Video 2:
Start time: 0.0000 sec
End time: 0.0000 sec

Waveform: ..\waveform\20041028_151011_*.tew

Full waveform



Full waveform benefits

- Generation of additional points
 - user selects an area where more points are needed, for example a powerline location lacking wire hits
 - software analyzes waveforms and uses a more eager routine to extract points
- Generation of more accurate points
 - user selects an area and a surface material specific echo extraction logic
 - software generates new points or modifies the coordinates of system extracted points