


Integrating the Geospatial Workplace


New Features in TerraScan

GeoCue User Group Meeting
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Version 012.001

- Released 7th February
- Permanent licenses require computer ID in addition to computer name
- No change to network license or temporary license principles



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Various Improvements

- Saves settings when you close **Settings** dialog
- **Settings** tool supports creation section templates based on elements drawn in a section view
- Option in **Cut overlap / Cut by range** to use either **3D range** or **Offset range** as the range criteria
- **Copy from class** setting in **Copy from reference**
 - makes it possible to copy only specific classification (for example building class) from an older data set


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Trajectory Order Block Numbering

- Block numbering can be based on order in which trajectories visit the blocks (=driving order)
- Better than 'South to north' type order for road/rail networks in cities




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Project Import

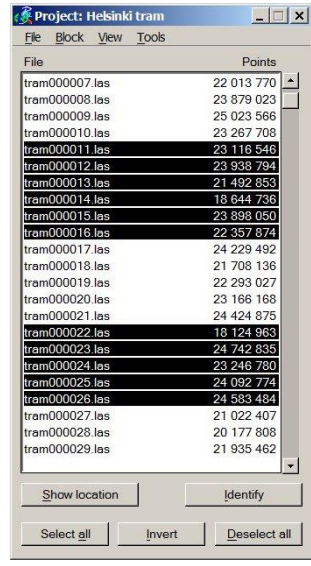
- **From file name** option for assigning line numbers – takes the last number from file name
- **From file name** option for assigning scanner numbers – takes the first number from file name


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Project Improvements

- **Tools / Validate blocks** menu command for finding
 - Duplicate block names
 - Very small area blocks
 - Overlapping blocks
- **Select all, Invert** and **Deselect all** buttons in long list dialog



File	Points
tram000007.las	22 013 770
tram000008.las	23 879 023
tram000009.las	25 023 566
tram000010.las	23 267 708
tram000011.las	23 118 546
tram000012.las	23 938 784
tram000013.las	21 492 853
tram000014.las	18 644 736
tram000015.las	23 393 050
tram000016.las	22 357 874
tram000017.las	24 229 492
tram000018.las	21 708 136
tram000019.las	22 293 027
tram000020.las	23 166 168
tram000021.las	24 424 875
tram000022.las	18 124 963
tram000023.las	24 742 835
tram000024.las	23 246 780
tram000025.las	24 092 774
tram000026.las	24 583 484
tram000027.las	21 022 407
tram000028.las	20 177 808
tram000029.las	21 935 462


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Buildings

- **Accept using** setting to control how easily point groups should be classified as buildings
- Dividing polygons in building vectorization
 - Polygons which separate buildings from each other
 - Useful when buildings are constructed very close to each other
 - You can use land property polygons as dividing polygons

Classify buildings

Ground class: 2 - Ground

From class: 5 - High vegetation

To class: 6 - Building

Inside fence only

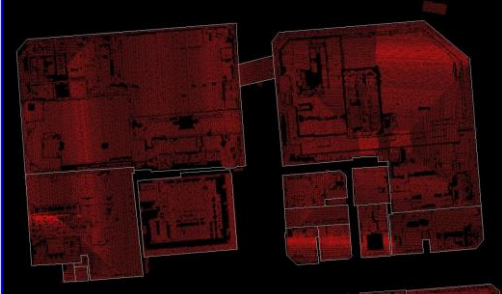
Accept using: Normal rules

Minimum size: 40 m² building

Z tolerance: 0.15 m

Use echo information

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Classify by Range

- Range can now be computed as:
 - 3D distance
 - Xy distance
 - Dz from scanner
- Use **Dz from scanner** with mobile data to classify:
 - Points clearly below the ground
 - Points clearly above the ground – 'vegetation'

Classify by range

From class: 1 - Default

To class: 5 - High vegetation

Use: Dz


Range: -0.5 - 9999.0 m

Inside fence only

OK Cancel

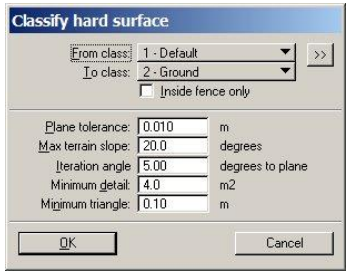
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Classify / Hard surface

- Classifies dominant, median surface points
- Alternative for ground classification
- Better performance on paved surfaces
- You may need to draw polygons for paved areas to be able to classify terrain using **Ground** and paved area using **Hard surface** routine





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Ground vs. Hard surface

Ground	Hard surface
<ul style="list-style-type: none"> • Classifies local lowest points • Right result in terrain • Too low on asphalt • Cuts curb stones • Requires that you eliminate low points with other routines 	<ul style="list-style-type: none"> • Classifies median surface • Right result on asphalt • Keeps curb stones better • Does not require elimination of low points


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Any Vectors In Danger Points

- Classify / Wire danger points** macro action can use linear elements on given levels as objects which falling trees may hit

Classify Danger Points

From class: 5 - High vegetation >>

To class: 8 - Model keypoint

Compare against: Any linear elements

Wire levels: 10-12


Find using: Falling tree logic

Within distance: 1.0 m

Within offset: 15.0 from wire


Ground class: 2 - Ground

OK Cancel
- Use A:**
 - Use power line design software to model worst case wire sag
 - Import into design file as vectors
 - Find danger trees
- Use B:**
 - Create 3D vector for a railroad track
 - Find trees which would fall on the tracks



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Lever Arm & IMU Misalignment

- Scanner system definition now has IMU misalignment angles for more accurate lever arm computation
- You can now add a lever arm when drawing trajectories to the design file
- You can add a lever arm to trajectories

Scanner system

System name: []

System type: []

IMU misalignment

Heading: [] deg clockwise

Roll: [] deg clockwise

Pitch: [] deg clockwise

Scanner	Right	Forward	Up
1	-3.180	+3.340	-0.300
2	-3.270	+3.340	-0.300

OK Cancel

Draw trajectories

Draw: All trajectories

Color by: Flightline colors

Thin positions

Accuracy: 0.50 m

Add lever arm

Lever X: 0.016 m right

Lever Y: 2.000 m forward

Lever Z: -3.730 m up

OK Cancel

Add lever arm to trajectories


Apply to: All trajectories

Lever X: 0.016 m right

Lever Y: 2.000 m forward

Lever Z: -3.730 m up

OK Cancel




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Cut Linear Element

- Deletes parts of linear elements if there are:
 - No laser points closeby
 - No other linear elements closeby
 - Other linear elements closeby
 - No image closeby
 - Images closeby
- You can use this to mark places where:
 - There are objects too close to rail tracks or wires
 - We are missing images
 - We have images


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Smoothen Transitions

- New setting in **Extract color from images**
- Smoothen color/brightness differences between images



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Construct Roof Polygons

Buildings

- Creates 3D roof polygons from selected 3D roof lines
 - Determines closed polygons from line work
 - Tries to determine which elevations to keep and which to ignore

View 1, Default

View 1, Default

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Create Buildings from Polygons

Buildings

Create Buildings from Polygons

Lower classes: Classes 2-3 >>

Random wall color

OK Cancel

- Creates 3D building models from selected roof polygons
- Uses laser points to get base elevation for walls
- Polygons should share segments:

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Rail Section Template

- Uses rail section template to locate rail extents and adjust rail centreline based upon the laser data.

Horz	Vert	Level		
-0.556	0.000	-0.500	0.000	Low
-0.500	0.000	-0.498	-0.023	Low
-0.498	-0.023	-0.496	-0.047	High
-0.496	-0.047	-0.468	-0.047	Medium
-0.468	-0.047	-0.466	-0.023	High
-0.466	-0.023	-0.464	0.000	Low
-0.464	0.000	-0.443	0.000	Low
-0.495	0.000	-0.469	0.000	High
-0.495	-0.015	-0.469	-0.015	High
0.469	0.000	0.495	0.000	High
0.469	-0.015	0.495	-0.015	High
0.443	0.000	0.464	0.000	Low
0.464	0.000	0.466	-0.023	Low

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Finding Rails

Railroad

Find Rails

From class: 8 - Model keypoints

Rail section: Helsinki tram

Trajectories: 0.65535

Step: 0.050 m along alignment

Max offset: 0.150 m from alignment

Max dz: 0.100 m from alignment

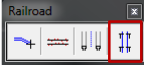
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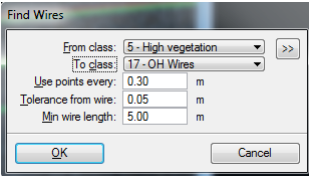
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Finding Overhead Wires

- For vectorizing overhead wires
- Designed for tram project





Find Wires dialog box details:
From class: 5 - High vegetation
To class: 17 - OH Wires
Use points every: 0.30 m
Tolerance from wire: 0.05 m
Min wire length: 5.00 m

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