**Product:** iCON office

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From: Torgny Israelsson

iCON office release of version 2022.1.4

We are pleased to announce a release of iCON office, version 2022.1.4. The point cloud module has got a total make over and the framework is new. Most of the old tools are re-implemented, and if you are working with surface extraction from point clouds, you will save a lot of time by using the new user-friendly tools to extract TIN surfaces from point clouds.

3D graphics has also been improved and large files e.g., terrain models and point clouds are rendered considerable faster, and terrain model can be drawn with transparency.
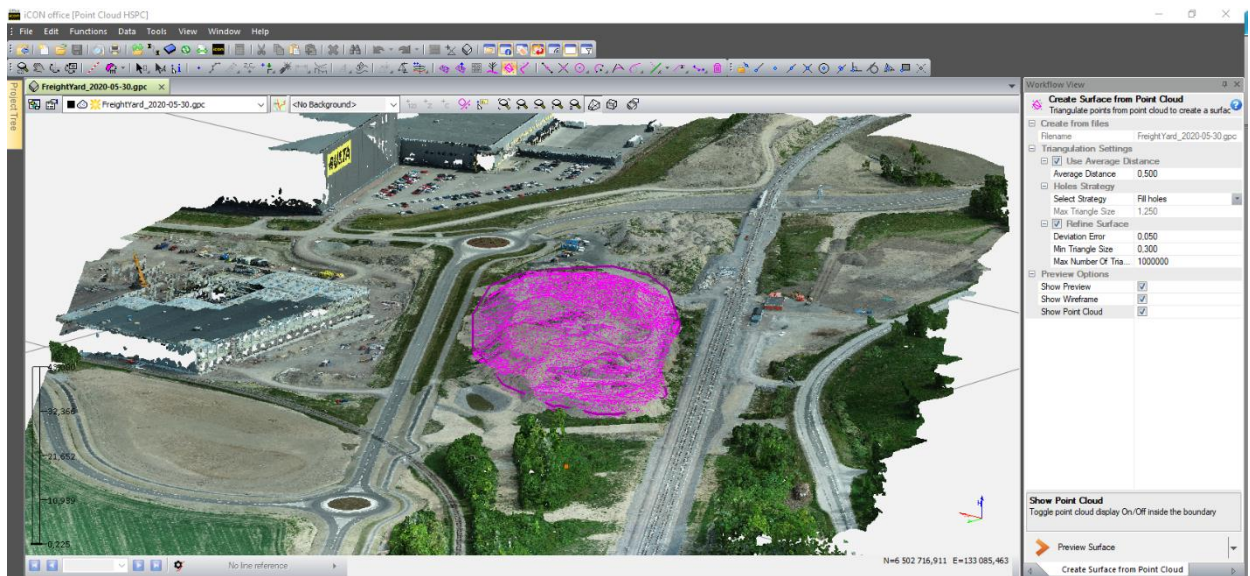
There are more improvements and maintenance updates in this version, and they are described in more details in this document. All users with a valid subscription (Update Service) will be able to install and run this new version.

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1 New Functions and Improvements

1.1 *Point Cloud*

A new modern framework for point cloud is developed:

- Larger point clouds can be imported.
- Multiple point clouds can be opened at the same time.
- Zoom, rotate and pan are working faster.
- Point clouds (gpc) created in version 2021 or earlier, are not supported from version 2022 and onwards.
  - If the old point cloud engine is installed on the computer, the legacy gpc-files can be converted to the new gpc version.

1.1.1 *Generate Surface from Point Clouds*

Two new tools to generate surfaces from point cloud are implemented. For both tools you just select the tool and draw a polygon in the graphics to define the area of interest, where a surface should be extracted.
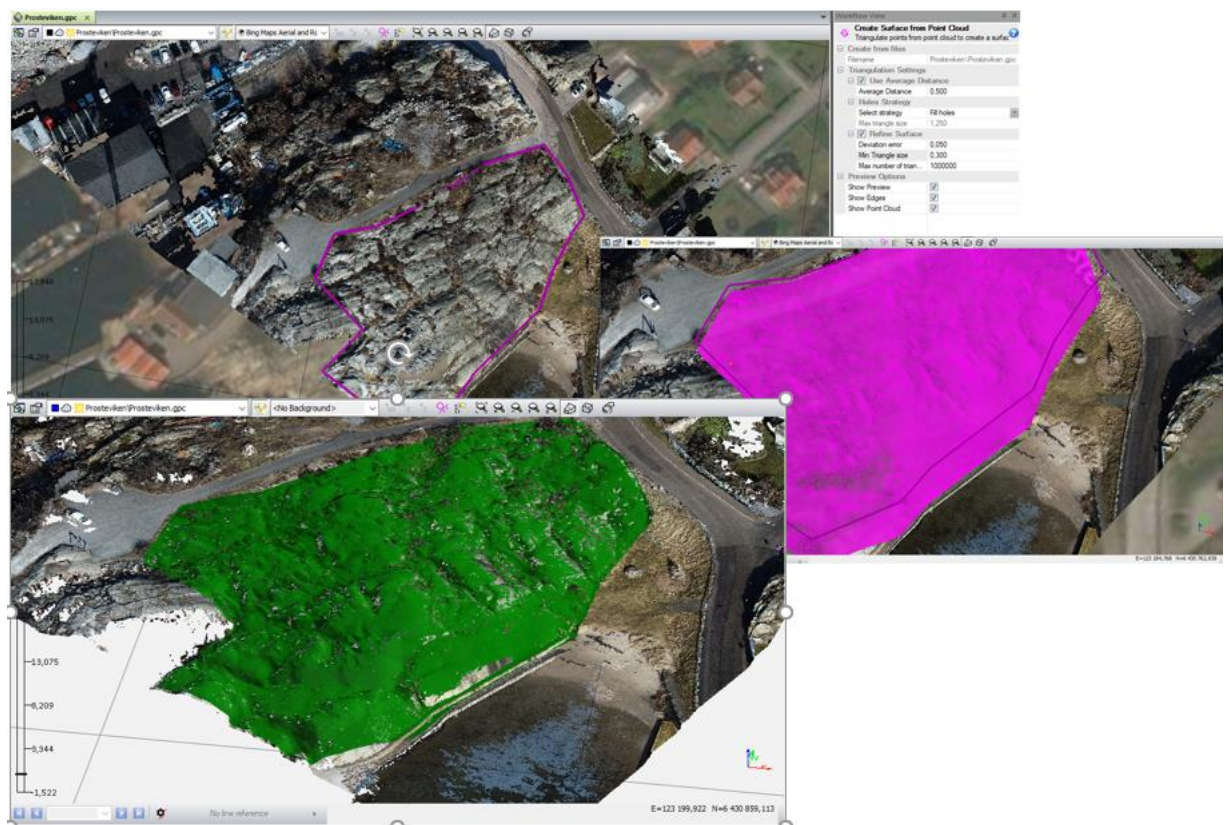
- 1. Extract ground surface
  - Easy to use – Basically only two settings are important.
  - Points considered as ground points are automatically collected.
  - The result is a triangulated surface describing the ground.

o The user can try different settings and when satisfied, the surface can be saved as a terrain model.
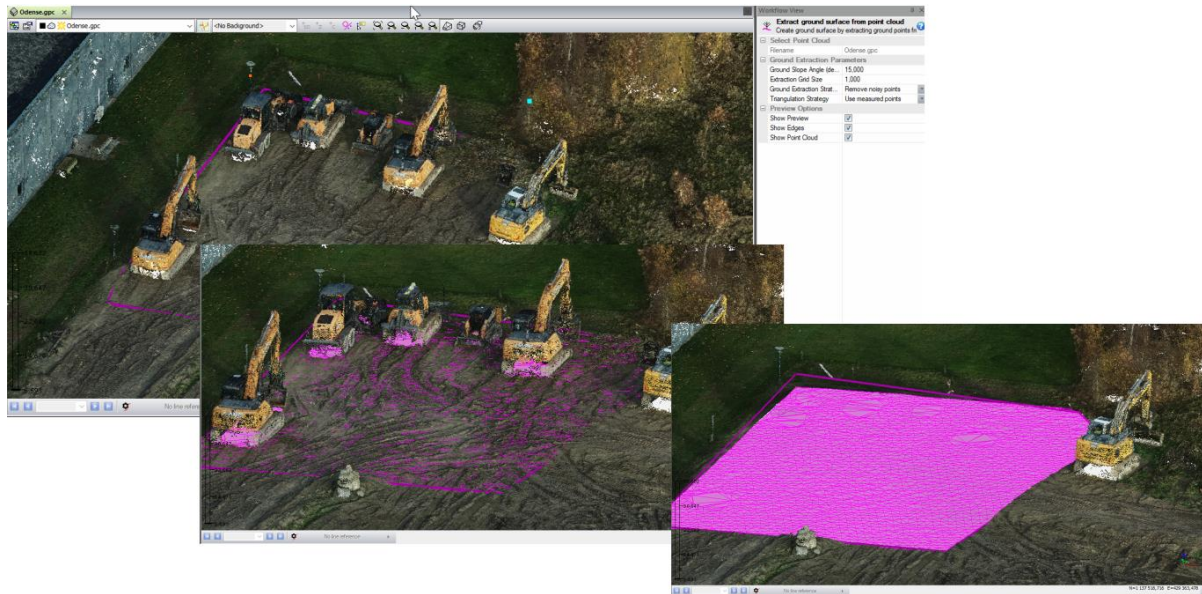

The machines are automatically removed in the example above

- 2. Create surface
  - o The user has more options to control how to create a surface.
  - o The point cloud should be cleaned from non-wanted objects.
  - o The user can try different settings and when satisfied, the surface can be saved as a terrain model.

### 1.1.2 Extract Edge Lines

A new tool, Extract Edge Lines, to generate lines from a defined area of a point cloud. The workflow is like the surface tools i.e., the user defines an area in the graphics and in the workflow view to the right, the user can change settings and trigger the function to extract lines.
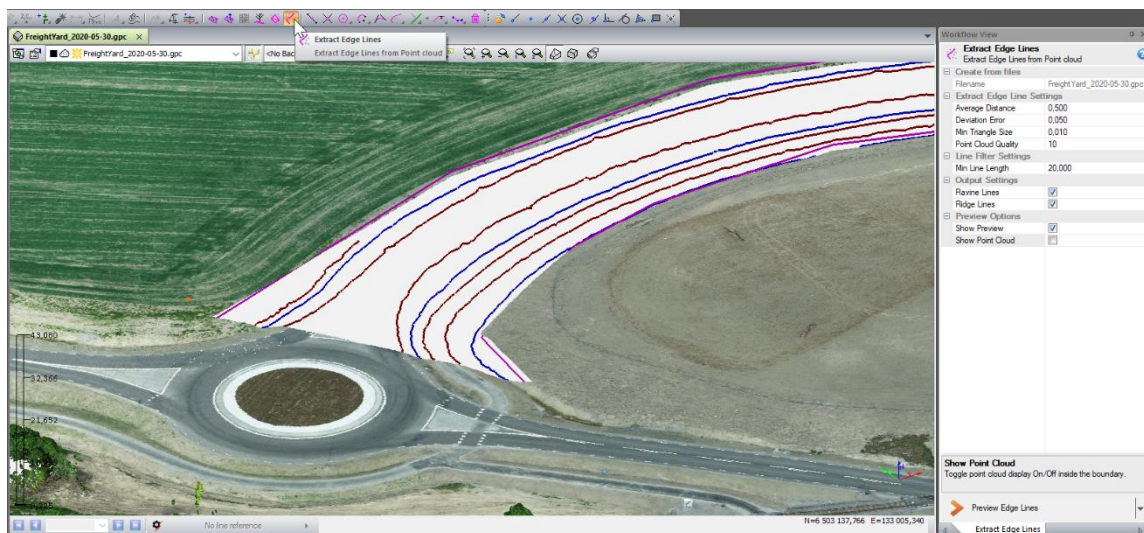
Both ravine (blue) and ridge (red) lines can be extracted and saved to a coordinate file.

1.1.3 Cross Sections from Point Cloud

New method to generate cross sections from a point cloud, both in tunnel models (*.tbs) and in general. The option to generate cross sections direct from point cloud also requires a road line, because the cross sections are defined in relation to the line.
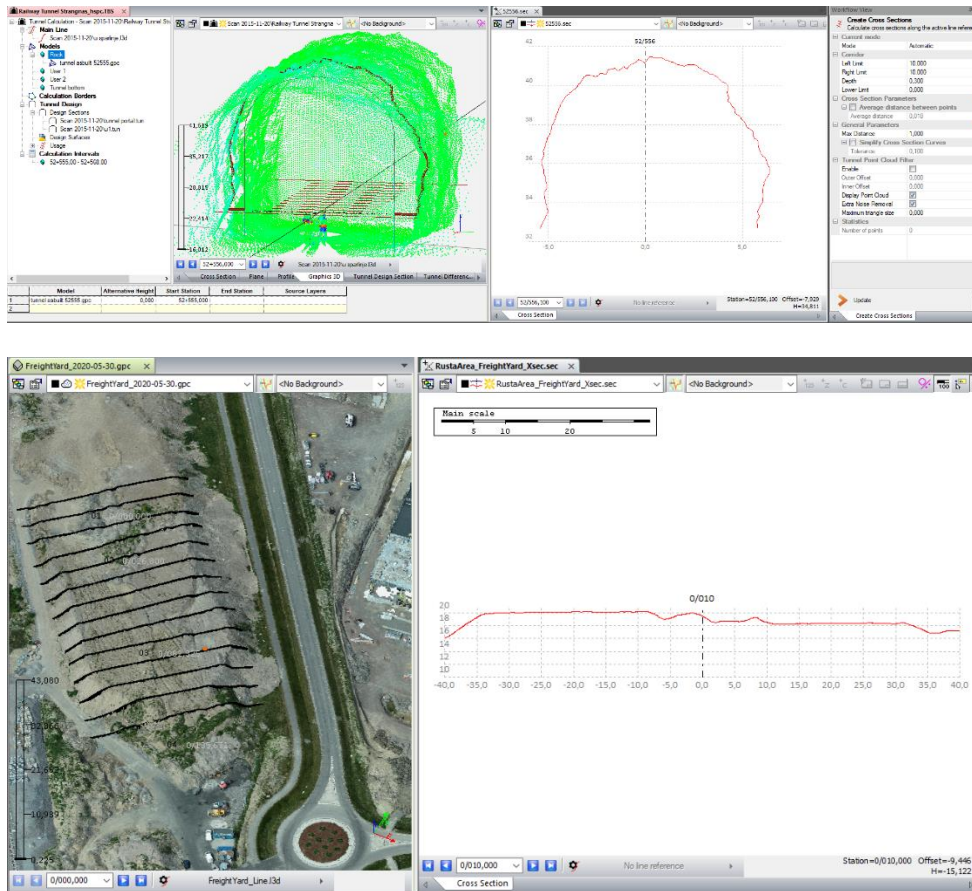
### 1.1.4 Transformation of Point Clouds

Wrong coordinate system – Point clouds can now be transformed to correct coordinate system during import:

1. Select the Transform option in the import dialog.
2. Select "To" and "From" coordinate systems.
3. Hit [OK]

If a coordinate system is defined for the active iCON office project, this coordinate system is pre-selected as "To-system" but can be changed.
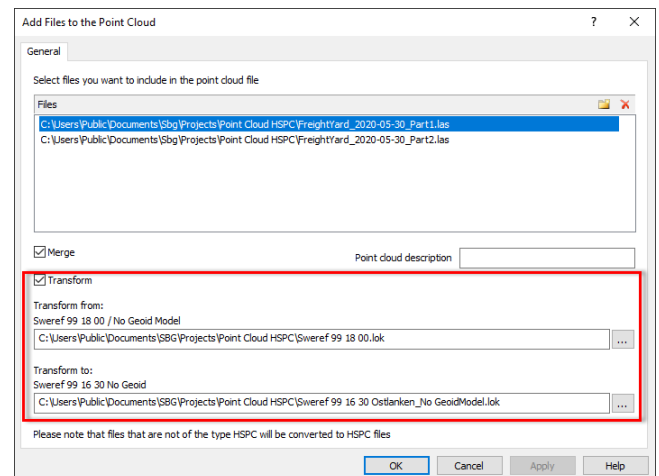
1.1.5 New Point Cloud Properties Dialog

The property dialog for point cloud is new and updated with more settings.

- It's possible to toggle individual scans on/off, to easily identify different scans.

- New option to color by source

- Possible to add a description for each scan.
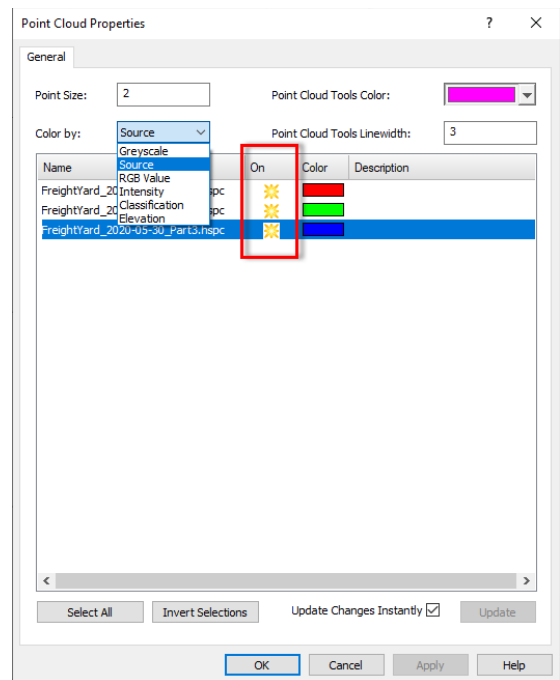
1.1.6 Edit Point Cloud File - Add and Remove

The option, Edit Point Cloud File, is moved to the workflow view to the right, so the graphic is not blocked when point clouds are added or deleted from the point cloud file (gpc).

- Remove point clouds by using the red cross to the right.
- Add point clouds by using the green plus sign.
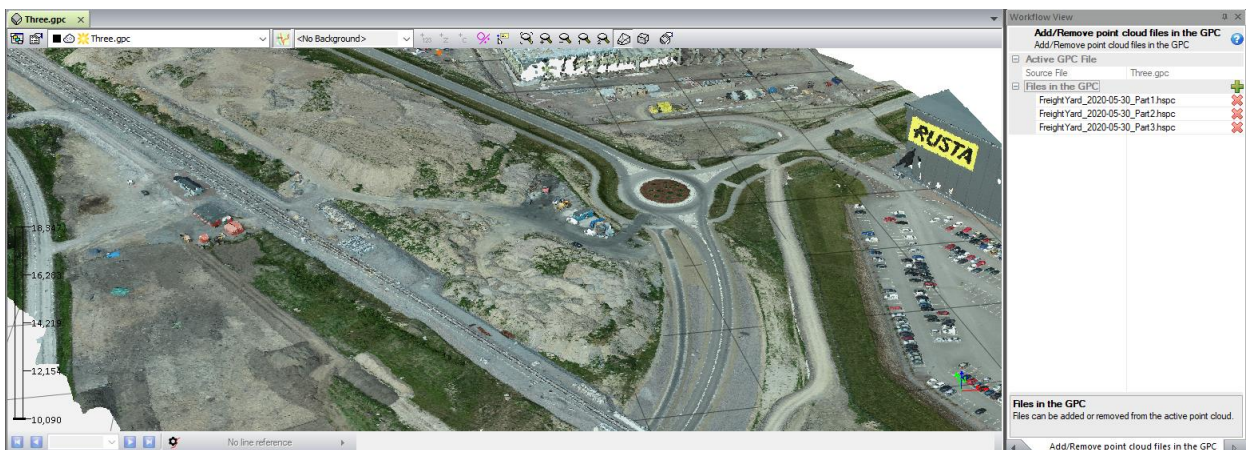
1.2 Graphics

1.2.1 3D

- The 3D graphic is improved and large files e.g., terrain models or point clouds are rendered considerable faster.

- Terrain models can be drawn with transparency in 3D.

1.2.2 2D

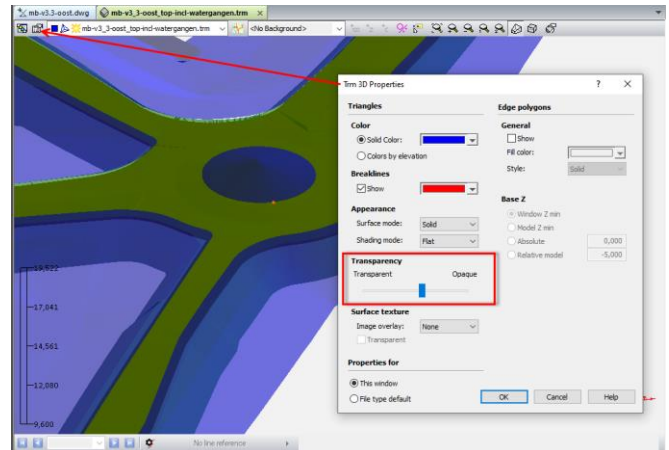The user can define the station interval to be visualized in 2D window for road lines. The setting can be found in the document property dialog for road lines (l3d).
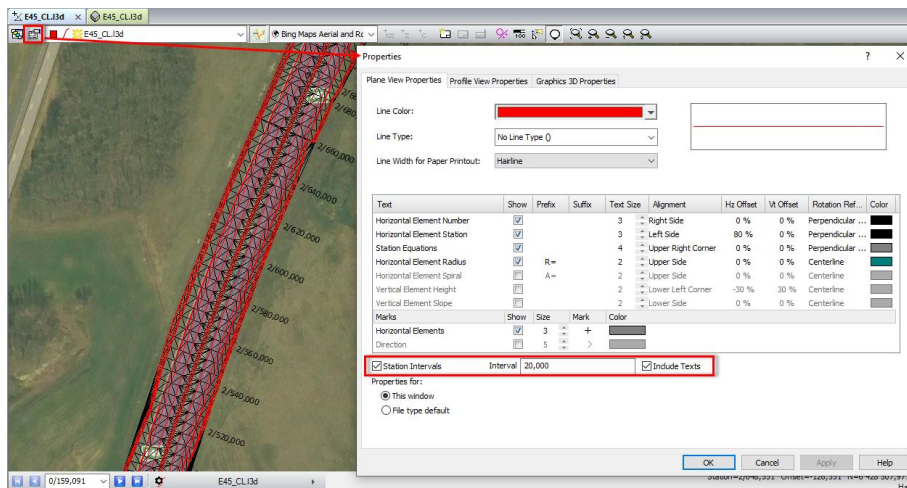
1.3 Terrain

1.3.1 Improved Cross Section Preview

- The cross-section preview is now limited according to how the user has defined the cross section in the graphics:
    - From two points → The displayed cross section is limited by the two points.
    - From one point and a reference line → The distance from the point to the line is used on both sides, to limit the cross-section view.
- Point cloud is supported in the cross-section preview.
    - Useful tool to verify extracted surfaces from point cloud, see screen shot below.
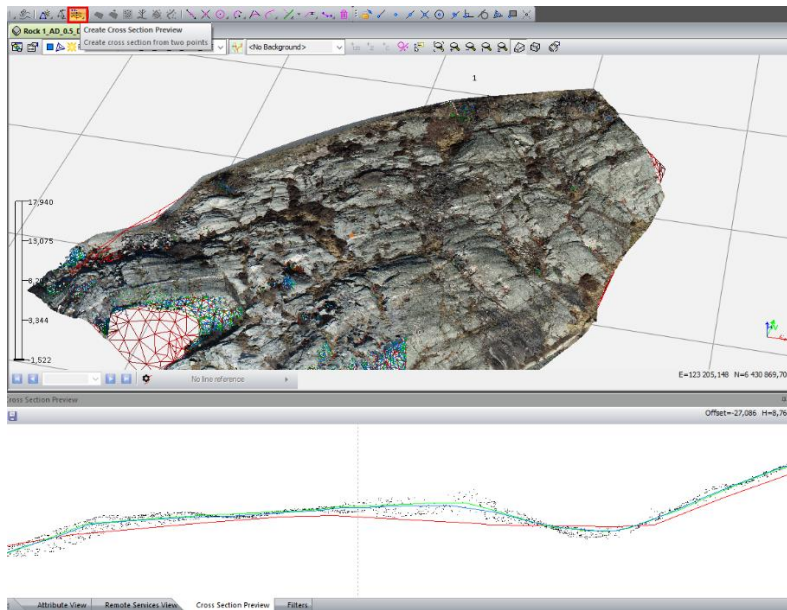
1.3.2 Create Terrain Model

- Create Terrain Model - Coordinate files that are open in graphics but turned off in Documents in Window, are not pre-selected in the workflow view
- Updated triangulation method when terrain models are created from points and lines.

1.4 Tunnel

- For tunnel model (tbs) with point cloud, a new method to generate cross sections from point cloud is implemented.
- Compare Survey to Design - New setting called, Minimum Spacing, so the user can define the spacing to be used when a tunnel difference model is generated from a point cloud.
- Point clouds (gpc) created in version 2021 or earlier, are not supported in version 2022. If the old point cloud engine is installed on the computer, the legacy gpc-files can be converted to the new gpc version.
- Leica Communication - New Leica DBX Tools version 17.0.0 for iCON office 2022.1.4

1.5 Surveying

- HeXML - When survey data with tilt information is imported, the tilt values are set as attribute in the plm-file (Leica AP20 AutoPole).
- When tilt attributes are present in a measurement data file (*.plm), the distance, horizontal and vertical angle reflector height and prism constant columns are read only in the numerical view.
- Leica Communication - New Leica DBX Tools version 17.0.0 for iCON office 2022.1.4

1.6 Export to Agtek SmartDirt

- Support for export of SmartDirt adf-files, running on Android devices.

1.7 Bug Fixes and Maintenance

- Failed import of LandXML with plan features from Magnet Office (Topcon). Fixed
- Issue with import of LandXML from Bentley containing alignment with station equations. Fixed
- Lines didn't get names/ID after import from Trimble DC. Fixed
- USB transfer to iCON site - The folder for coordinate systems was not created automatically if missing. Fixed
- Faulty warnings when importing HeXML survey data is removed.
- Fixes for Web Map Services - Some links didn't work and problem when coordinate system was changed

- Color attributes for lines were lost when transforming local to local. Fixed
- Trench model - If multiple models with offsets were used, the height offsets were nor displayed correctly in the report. Fixed.
- Information about used center line was not saved to sec-files generated from the function, Coordinates to Section/Offset, from l3d-data menu. Fixed
- Clear list in the dialog, Open Project, was broken. Fixed
- Min and max side offsets didn't work for in mbs with dwg as soil model. Fixed

2 iCON office modules

iCON office requires the **Core** module, which enables import/export of data, 3D visualization, COGO calculations, coordinate system handling, visualization in Google Earth and generating of drawings etc.

Add-On modules:

- 797956   **Road** – Advanced road line calculations
- 797957   **Terrain** - Volume calculation model to model
- 906348   **Trench** – Underground utilities module (requires Terrain module)
- 797958   **Volume** - Volume calculation by sections
- 797959   **Tunnel** – Tunnel functionality
- 797580   **Net Adjustment** - Network adjustment and calculations
- 832546   **Point Cloud** – Import and filtering of scanning data

Provide serial number of the license or the hardware lock ID, when ordering add-on modules.

Available packages Single HL (Hardware Lock):

- 6007380   iCON office Core pkg, includes installation pkg with USB hardware lock
  Core
- 6007381   iCON office Terrain pkg, includes installation pkg with USB hardware lock
  Core, Road, Terrain
- 6007382   iCON office Volume pkg, includes installation pkg with USB hardware lock
  Core, Road, Terrain, Volume
- 6007383   iCON office Tunnel pkg, includes installation pkg with USB hardware lock
  Core, Road, Tunnel

Available packages NET (Single Network):

- 6017083   iCON office Core pkg NET
  Core
- 6017084   iCON office Terrain pkg NET
  Core, Road, Terrain
- 6017085   iCON office Volume pkg NET
  Core, Road, Terrain, Volume
- 6017086   iCON office Tunnel pkg NET
  Core, Road, Tunnel
- 6017087   iCON office Trench pkg NET
  Core, Terrain, Trench

3 License Update (Subscriptions)

- 849563, iCON office Update Service 1-year, Single HL

- 947556, iCON office Re-activation 1-year, Single NET

Provide serial number of the license or the hardware lock ID, when ordering Update Service or Re-activation.

Single HL users must run Dongle Tool to update the hardware lock with the latest license information.

4 Leica myWorld

Please use Leica myWorld to find the latest version of the software. Access Leica myWorld by using the following link:

https://myworld.leica-geosystems.com/

- Hasp driver
  If it is a new iCON office installation the HASP driver must be installed so the computer can recognize the USB hardware lock.

- Point Cloud utility
  Point cloud utility is the point cloud engine and must only be installed if the point cloud module is purchased.

5 Dongle Tool (only for Single HL)

Use **Dongle Tool** to update the hardware lock with extended subscription, Update Service, for Leica iCON office or to unlock new add-on modules purchased for the license.

Place an order using your normal order channels and when the logistics has processed your order, you can run Dongle Tool and update the USB hardware lock.

1. Insert the HASP hardware lock into the USB port.
2. Start Dongle Tool.
3. To change the subscription date or to add/remove modules it is first necessary to check in the current license to the license server. This is done by pressing **Check In**.
4. Switch to the **License Server** tab. Select the modules open for use and then press **Check Out**.

This will give the hardware lock a new certificate containing the updated license information.