

Leica Geosystems Release Notes

Product Leica Cyclone 9.3
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From HDS Software Product Management

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What's New

Support for the new Leica RTC360 laser scanner

Cyclone now fully supports data collected by the RTC360 laser scanner and Cyclone FIELD 360 activating the full power of their scanning solution to **reduce processing time and increase accuracy**.

- Cyclone REGISTER will conduct automated Registration from the scanner's Visual Inertial System (VIS), or Cyclone FIELD 360 pre-registration links
 - **Reduce processing time** by taking advantage of the RTC360's sensor array and on-board processing power.
- Cyclone supports the import of Cyclone FIELD 360 Tags and Assets as well as their viewing and publishing as GeoTags and Assets for downstream consumption
 - GeoTags and Assets are transferable downstream to TruView and JetStream product families for **smarter data access**.
- Cyclone fully supports HDR imagery for panoramas
 - Take full advantage of the RTC360's camera array for **unparalleled image fidelity** and use downstream in the TruView and JetStream product families.
- Cyclone fully supports HDR for point clouds (supported in JetStream Viewer)
 - Leverage the camera array for **improved point cloud visualization** in both Cyclone and JetStream Viewer.

Support for LGS, Leica Geosystems Universal HDS Digital Reality File

Leica Cyclone now supports the publishing and consumption of LGS files, Leica Geosystems' new universal HDS digital reality file. LGS files contain all project information for a single-file solution for downstream consumption in all Leica Geosystems HDS software. The LGS file is perfect for storage and transfer between all Leica Geosystems' HDS software products. The LGS file is a true single file, to simplify file sharing.

LGS files require a Cyclone PUBLISHER Pro License. LGS files can be consumed by Cyclone, TruView Enterprise and Cloud, JetStream Enterprise and Viewer, and 64-bit CloudWorx plugins to allow for seamless data migration between the Leica Geosystems HDS software products. With the LGS file, users can access all their digital reality data, anywhere, with a single file.

LGS files may contain the following information based on the hardware used for data capture and the user's publishing settings.

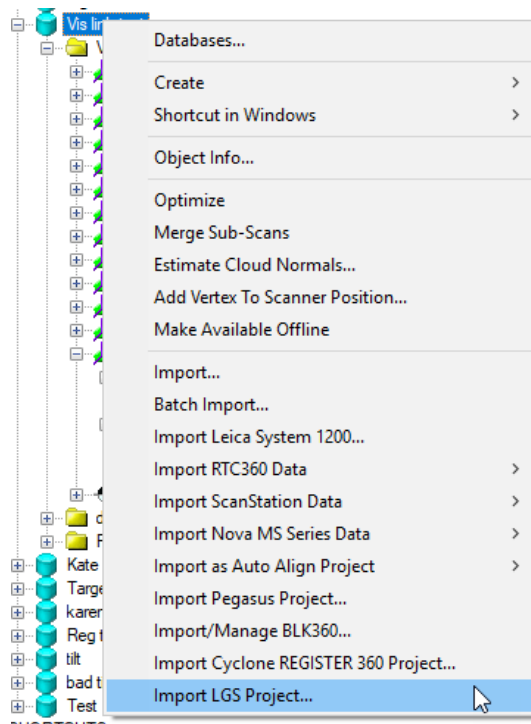
- **PROJECT METADATA**
 - Name
 - Thumbnail
 - Coordinate system
 - Publish date
 - Creator/Company info
 - # of SiteMaps
 - # of points
 - # of setups
 - Imagery metadata and #s
- **PROJECT SITEMAPS + METADATA**
 - SiteMap image(s)
 - Hyperlinks (between SiteMaps)

- Setups
- **PROJECT SETUPS + METADATA**
 - Name
 - Timestamp
 - Targets + metadata
 - RGB pano imagery
 - HDR pano imagery
 - Intensity Hue pano imagery
 - Intensity Grayscale pano imagery
 - Modelled Geometry pano imagery
 - IR pano imagery
 - IR temperature scale
- **POINT CLOUD + METADATA**
 - RGB colours
 - HDR colours
 - Intensity Hue colours
 - Intensity Grayscale colours
 - UCS
 - Clips
- **GEOTAGS + METADATA**
 - 3D position
 - Type
 - Category
 - Label
 - URL
 - Timestamp
 - Associated assets (e.g., images, PDFs, videos, audio, etc.)

Users may choose to publish an LGS file with or without a point cloud. When publishing specifically and only for consumption in TruView, it is recommended that the LGS file be published without the point cloud to reduce file size and prevent extended upload times.

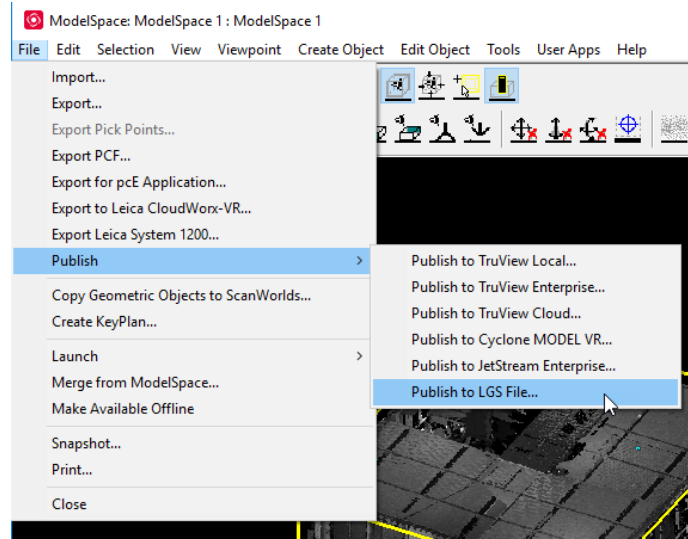
LGS Import:

From Cyclone Navigator select a database or project folder under a database and then go to **File | Import LGS Project**.

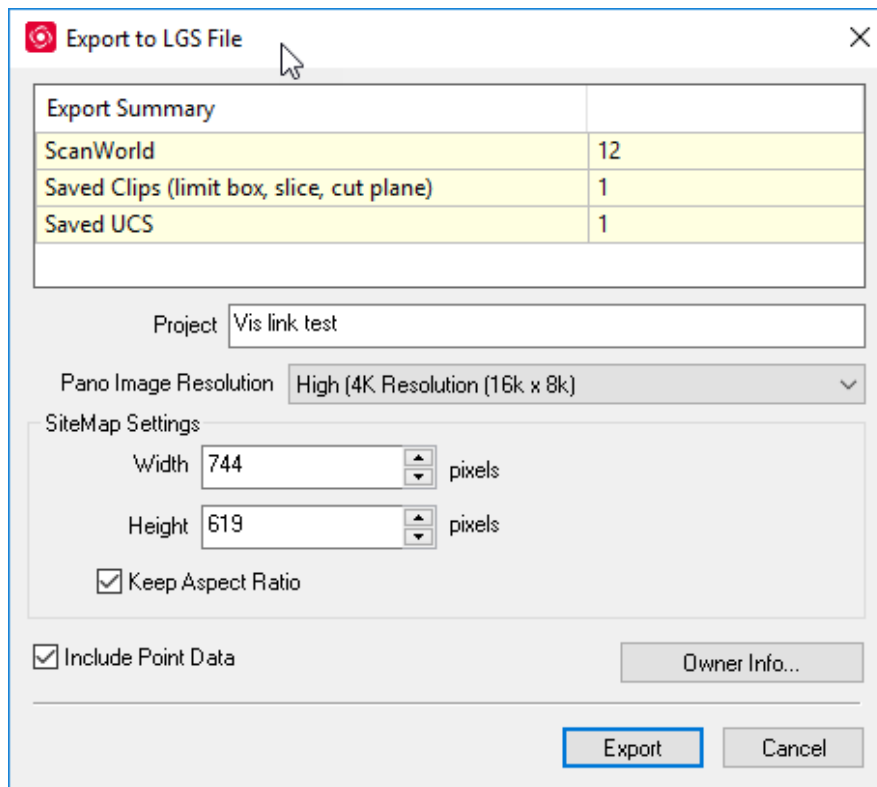


LGS Publishing

1. Open a ModelSpace. Then from the top menu go to **File | Publish | Publish to LGS file...**
 - a. View must be Top down and orthographic to publish

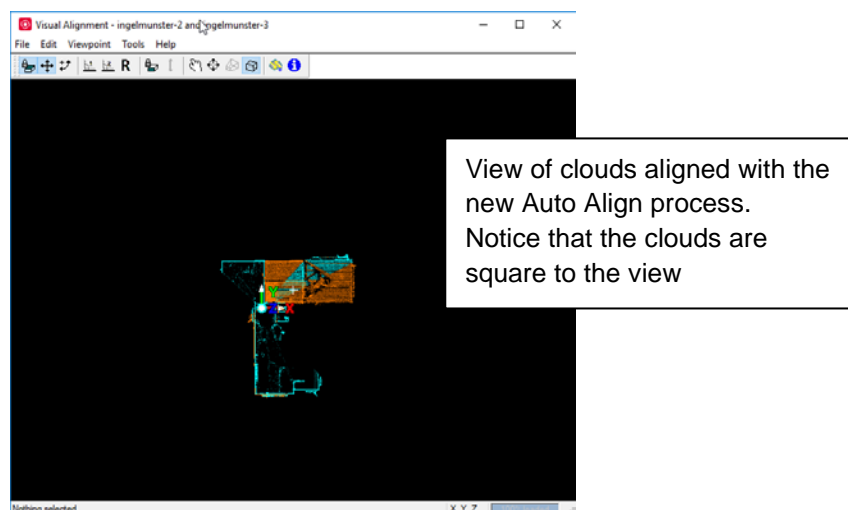


2. Then select the options for export:

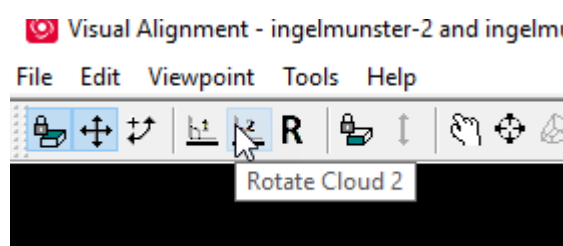


Auto Visual Alignment

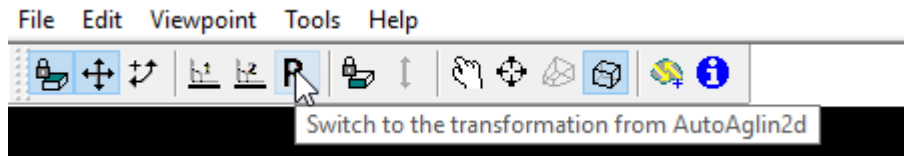
Visual Alignment has introduced a new process that automatically tries to align the scans imported into Visual Alignment. The first view of the ScanWorld in Visual Alignment is after the Auto-Aligner has run.



- After import the user can rotate each scan 90 degrees to quickly align one scan to another, if necessary.



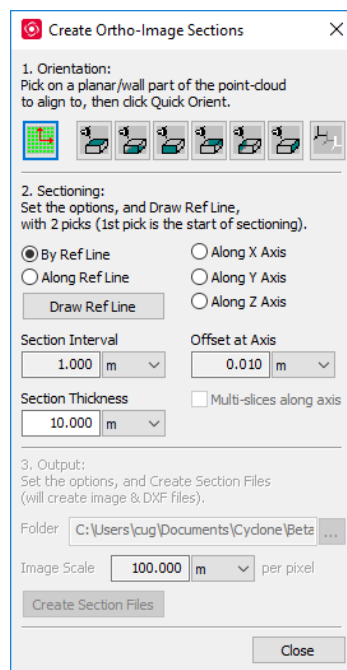
- The user can also view the un-aligned version by click the un-matched version of the alignment by clicking the R icon:




Ortho-Image Sections

This new tool creates an orthographic image section from a point cloud in the ModelSpace. The ortho image section is then attached to a DXF file for easy loading into most CAD systems. Sections can be created by drawing a reference line through the point cloud or by X, Y or Z axis. The user may also create multiple sections and batch create ortho-images.

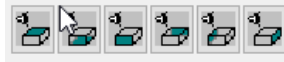
To open the tool, from the ModelSpace, go to **Tools | Ortho-Image Section...**



Workflow for Ortho-Image section:

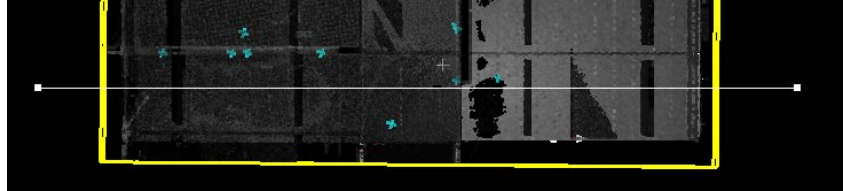
- Open a ModelSpace with a point cloud to section.
- Clean all unwanted data from the point cloud.
- Set a limit box to the extents of the area of interest.
 - The section tool will create a section image with limits based on the limit box.
- Go to **Tools | Ortho-Image section**, to open the tool.
- The default UCS can be used or a UCS can be set by using the Quick Orient tool.
 - Select a point on a planer surface or wall and then click the  icon.
 - This will set a UCS based on the wall selected.

- Next select which view to set using the view icons.



- Section images can be created in the following ways:

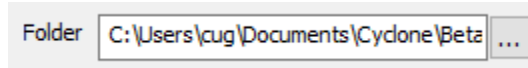
- By Ref line: Click the **Draw Ref Line** icon and then drag out a line to determine where the section image will be extracted.



- On the Ref line in place select the desired slice thickness:



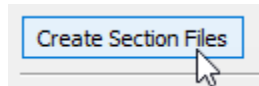
- Next confirm the output folder:



- Select the units of measure and then enter a value or units per pixel:



- Next click Create Section Files button to view a preview of the section:

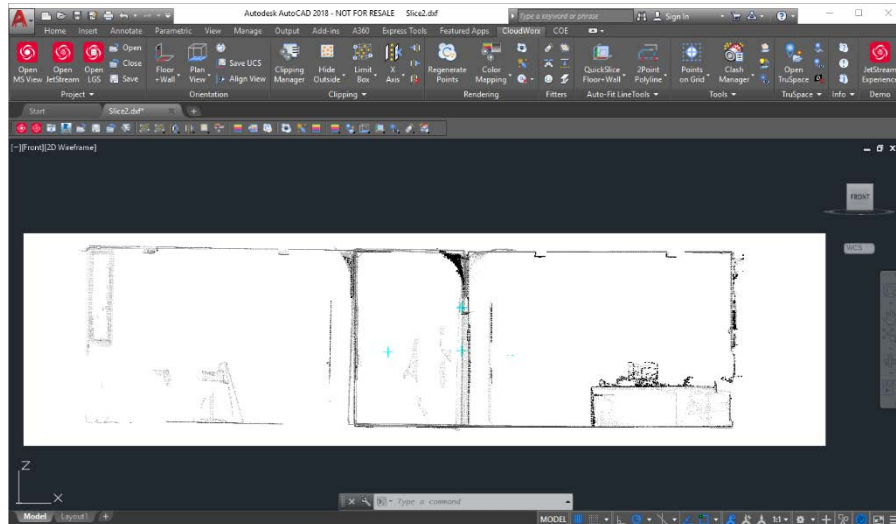


- The preview section dialog will appear to confirm the view:

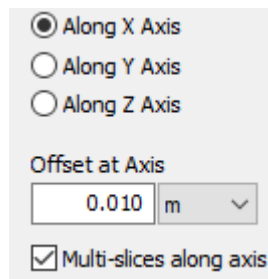


- Click the OK button to create the image\DXF file combination.

- Click on the *.dxf file to open your default program for *.dxf files:



- Creating multiple sections
 - Use of **Along Ref Line** command:
 - This creates multiple sections perpendicular to the Ref line
 - Select this option and then select the interval for section creation
 - Use of **Along X, Y or Z Axis** option:
 - Select the Axis and then select the offset value for the beginning of the section along the selected axis:



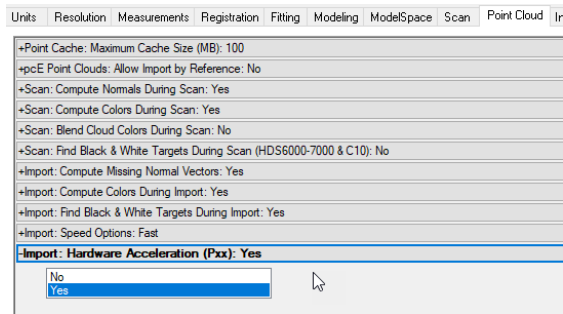
- Selecting the **Multi-slices along axis** will create multiple sections starting at the Offset value and at the interval set in the Section Interval field.

SmartAlign enhancements

The SmartAlign dialog now opens immediately instead of waiting until data is fully imported, allowing for faster registration workflows.

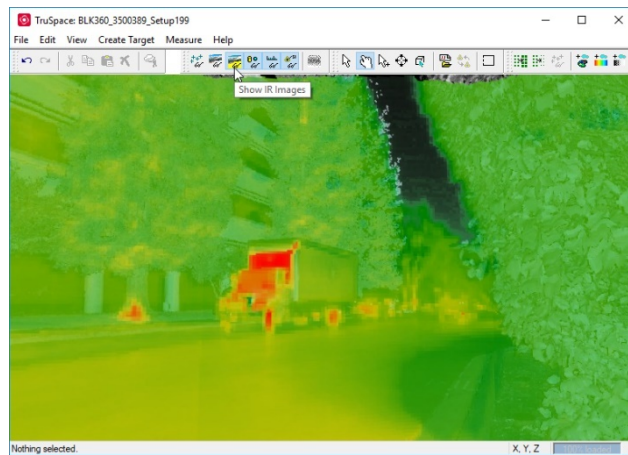
Turn off Hardware acceleration for P-Series import

In some cases, large P-Series imports may run into issues importing. If this is the case this new setting will allow the user to turn off hardware acceleration to ensure complete data import. This setting is located under Preferences-Point Cloud:

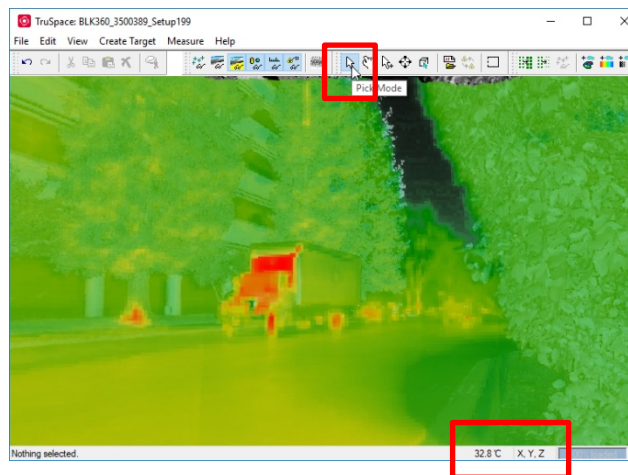


Enhancements to Support BLK360 data

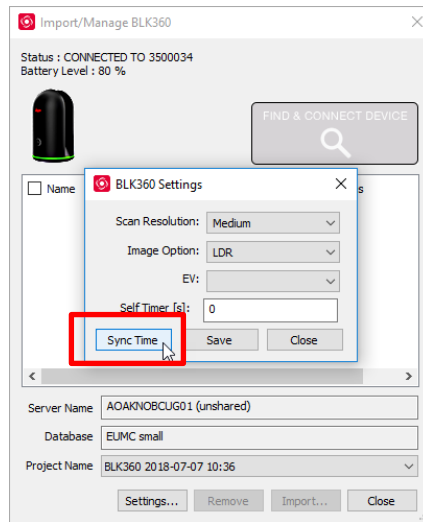
- The IR image captured on the BLK360 imaging scanner is now fully supported in the TruSpace of each imported setup with IR imagery.
 - Open TruSpace and select the IR option from the top tool bar:



- Check the Temperature of each selection by using the Pick mode tool. The temperature is shown in the bottom right of the TruSpace window:



- Changes to the BLK360 import dialog:



- There is a new button under settings that will allow the time on the connected computer to be synced to the BLK360 scanner.

Registration enhancements

The Registration workflow has been enhanced when using Cloud-to-Cloud constraints. A new column has been added that reads out the number of overlap points in cloud/mesh constraints (Cloud-to-Cloud constraints). Viewing the new column, of points in the overlap area, allows the user to inspect the constraints based on the number of overlapping points. Low overlap point numbers can mean that a constraint may not be valid.

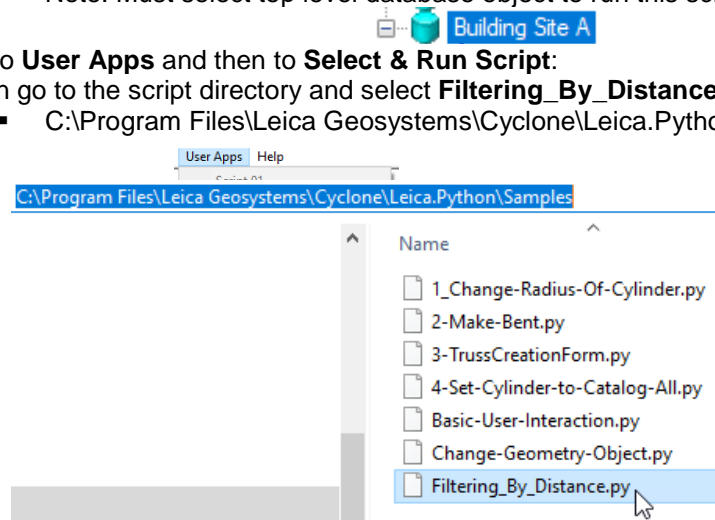
Here is an example of a registration with the new column:

Constraint ID	ScanWorld	ScanWorld	Type	Status	Weight	Overlap Points	Error	Error Vector
Cloud/Mes...	Station-003: S...	Station-008: S...	Cloud: Cloud/Mesh - Cloud...	On	0.1633	150432	0.004 m	aligned [0.009 m]
Cloud/Mes...	Station-001: S...	Station-006: S...	Cloud: Cloud/Mesh - Cloud...	On	0.1609	191436	0.004 m	aligned [0.010 m]
Cloud/Mes...	Station-003: S...	Station-006: S...	Cloud: Cloud/Mesh - Cloud...	On	0.3690	216024	0.004 m	aligned [0.009 m]
Cloud/Mes...	Station-004: S...	Station-006: S...	Cloud: Cloud/Mesh - Cloud...	On	0.3929	310256	0.002 m	aligned [0.010 m]
Cloud/Mes...	Station-001: S...	Station-004: S...	Cloud: Cloud/Mesh - Cloud...	On	0.9211	356988	0.004 m	aligned [0.011 m]
Cloud/Mes...	Station-003: S...	Station-009: S...	Cloud: Cloud/Mesh - Cloud...	On	0.3474	366788	0.004 m	aligned [0.009 m]
Cloud/Mes...	Station-003: S...	Station-004: S...	Cloud: Cloud/Mesh - Cloud...	On	0.9910	441240	0.004 m	aligned [0.010 m]
Cloud/Mes...	Station-001: S...	Station-009: S...	Cloud: Cloud/Mesh - Cloud...	On	0.6971	449036	0.005 m	aligned [0.009 m]
Cloud/Mes...	Station-005: S...	Station-006: S...	Cloud: Cloud/Mesh - Cloud...	On	0.4446	449404	0.004 m	aligned [0.009 m]
Cloud/Mes...	Station-006: S...	Station-008: S...	Cloud: Cloud/Mesh - Cloud...	On	0.5969	452172	0.001 m	aligned [0.007 m]
Cloud/Mes...	Station-001: S...	Station-005: S...	Cloud: Cloud/Mesh - Cloud...	On	0.4531	507668	0.001 m	aligned [0.010 m]
Cloud/Mes...	Station-001: S...	Station-003: S...	Cloud: Cloud/Mesh - Cloud...	On	1.0000	509664	0.001 m	aligned [0.009 m]
Cloud/Mes...	Station-006: S...	Station-007: S...	Cloud: Cloud/Mesh - Cloud...	On	0.6233	571780	0.000 m	aligned [0.007 m]
Cloud/Mes...	Station-007: S...	Station-008: S...	Cloud: Cloud/Mesh - Cloud...	On	0.7376	612980	0.000 m	aligned [0.007 m]
Cloud/Mes...	Station-003: S...	Station-005: S...	Cloud: Cloud/Mesh - Cloud...	On	0.6582	622216	0.001 m	aligned [0.010 m]
Cloud/Mes...	Station-004: S...	Station-005: S...	Cloud: Cloud/Mesh - Cloud...	On	0.6440	721156	0.004 m	aligned [0.009 m]

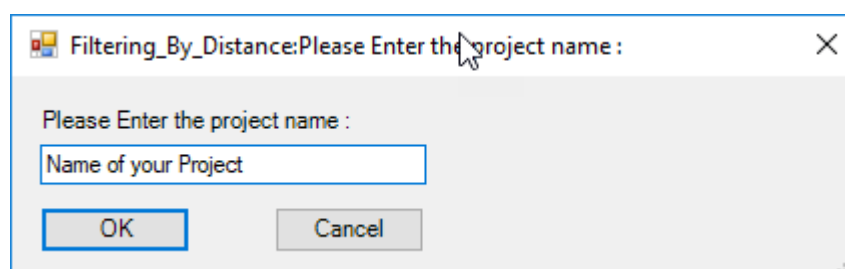
Python Scripting Enhancements

The following features have been added to the Python Scripting tool:

- Get all layer names
- Get layer count
- Delete layer
- Assign geometry to layer (for now, only new geometry is available)
- Read items in the tree
- Rename items in the tree
- Create new items in the tree
- New Script to delete scan points, in selected ScanWorlds, beyond a set distance.
 - How to use the new script `Filtering_By_Distance.py`
 - From the Cyclone Navigator select a database to work on.
 - Note: Must select top level database object to run this script!
 - Go to **User Apps** and then to **Select & Run Script**:
 - Then go to the script directory and select **Filtering_By_Distance.py**:
 - `C:\Program Files\Leica Geosystems\Cyclone\Leica.Python\Samples`

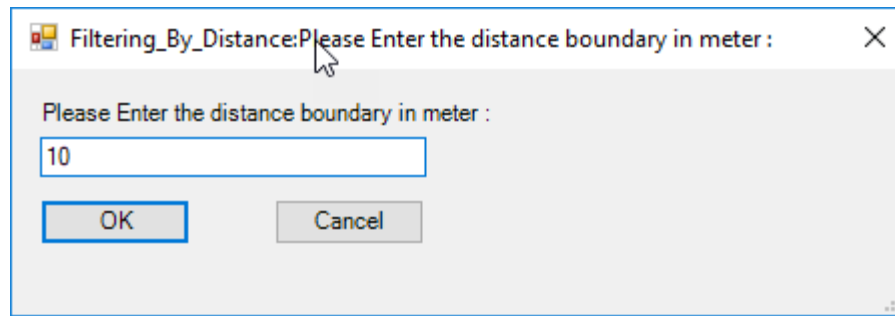


- Select the **Filtering_By_Distance.py** file from the sample Python directory.
- And click OK.
- Next enter the Project name in the dialog and then click the OK button.



- Then enter the distance in meters (only meters supported), then click ok.

- Every ScanWorld under the project will have the point deleted by the distance entered in the above dialog box. The edited point cloud is then set to Default cloud so all new Modelspaces will show the edited points. To revert changes, run the script again and enter a large number (i.e. 150).



GDPR Compliance

Publishing to TruView Cloud has been updated in compliance with the European Union's General Data Protection Regulation (GDPR).

Miscellaneous Enhancements

- Support for scan data with zero intensity.
- Shortened BLK360 setup labels to improve ease of use within SmartAlign.
- General improvements for clarity of action and error messages.
- Improved scan rendering in SmartAlign.
- E57 now supports un-gridded data.

Bug Fixes

UX Bugs

- Fixed bug with Help button.
- Setup IDs are now visible in SmartAlign for BLK360 data.
- Fixed bug related to annotating projects within Cyclone Navigator.
- Improved alignment of line segments typically used for trajectory analysis.
- Fixed bug that could result in previously cleaned points reappearing after unification.
- Improved consistency of results when using Datum tool in different UCS's.
- Fixed bug where unifying P-Series or C10 datasets with setups could corrupt point cloud.
- Improved consistency of Points on a grid results.

Import Bugs

- Fixed bug related to PTS import as single merged scan.
- Cyclone REGISTER 360 target names are now preserved when importing to Cyclone.
- Fixed bug relating to import of some P40 datasets with external camera images.
- Fixed bug in which incorrect Cyclone REGISTER 360 project could be imported as a result of current sorting.
- Fixed bug where *.rxp data could be offset from known coordinates.
- Fixed bug relating to import and matching of projects containing external images in particularly low light conditions.
- Fixed bug related to import of low point cloud detailed scans.
- Import of PTS files of more than 2 billion points now supported.
- Fixed bug affecting import of some MS60 datasets.

- Fixed a bug where batch import did not add vertex to scanner location.
- Fixed bug relating to opening Cyclone REGISTER 360 projects.
- Fixed bug related to lagging import progress bar despite progress.
- Fix bug related to importing DotProduct data.
- Fixed bug that could result in misalignment when Cyclone REGISTER 360 projects were transferred as e57 rather than RAF.
- Fixed bug related to PTG import file renaming.
- Fixed bug where import of multi-image from an external camera became instable if there was more than one set of images.
- Improved auto-target finding accuracy.
- Improved support for import of e57 files with large offset.
- Phase based scanner filters restored.
- Fixed bug related to tilt correction of BLK360 scans vs images resulting in seeming misalignment.
- fixed bug related to Nodal Ninja and pano image misalignment.
- Fixed an import bug where if the scan was full dome and had external camera images, the external camera images would not be imported

Publishing Bugs

- Fixed bug preventing the export of normals.
- Fixed bug relating to exporting from Navigator.
- Fixed bug where export of geo referenced data to e57 could fail.
- Fixed bug related to publing TVG files when no points were visible.
- Publishing of PTS files of more than 2 billion points now supported.
- Users can now abort publishing to JetStream Enterprise.
- Fixed bug in which attempting to publish to TruView with a visualization mode not supported by the data (i.e. colored cloud where no color exists) could result in an empty project.
- Fixed bug where publishing TruViews from Keyplan could result in setup icons not appearing.
- Fixed bug causing “access violation” error when publishing PTS, PTX from ModelSpace view.
- Fixed an e57 export bug where if the data source data contained two point clouds, one near 0,0,0 and one very far from the origin, then the export would fail.
- Fixed a bug where Cyclone would hang when attempting to publish to JetStream for the first time

Installation and Licensing Bugs

- Fixed bug relating to SPLM licensing for Hexagon PPM customers.
- Fixed bug related to installation.

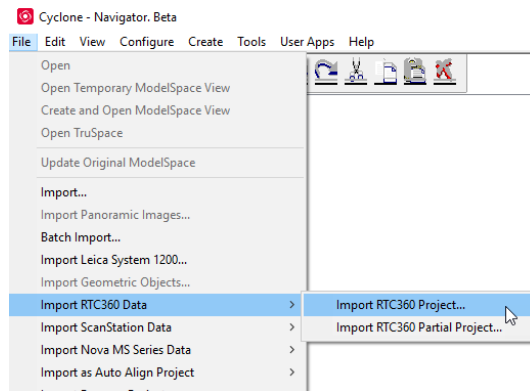
Workflow for importing RTC360 laser scanner data into Cyclone REGISTER

Import RTC360 laser scanner data

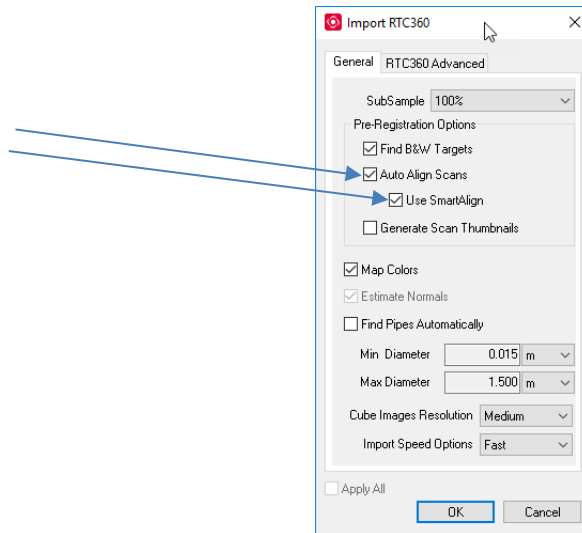
RTC360 data can be imported by selecting the top level **RTCStore360** folder after selecting the command **Import RTC360 Data** under the File menu in the Cyclone Navigator. However, data from the RTC360 and Cyclone FIELD 360 bring multiple auto-registration options, multimedia, metadata, and geo-location information.

Workflow for importing RTC data into Cyclone

- Select a database or create a database
- From the Navigator select **File | Import RTC360 data** and chose project or partial project

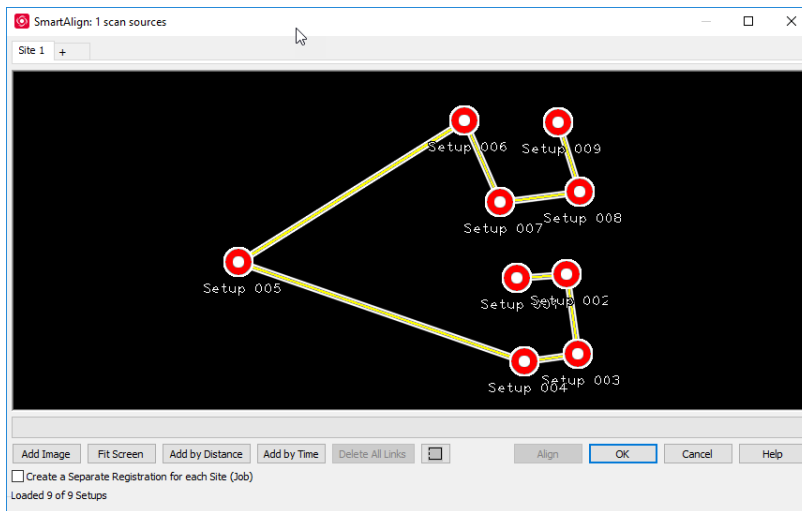


- The Import dialog will appear with **Auto Align Scans** and **Use SmartAlign** checked.



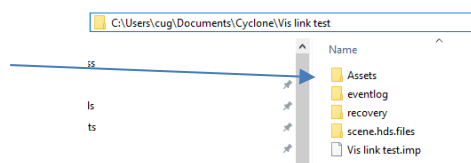
Note: Auto Align and SmartAlign MUST be enabled to utilize the Links created by the RTC360 laser scanner.

- The SmartAlign dialog will appear showing the links created by the RTC360 laser scanner and Cyclone FIELD 360.

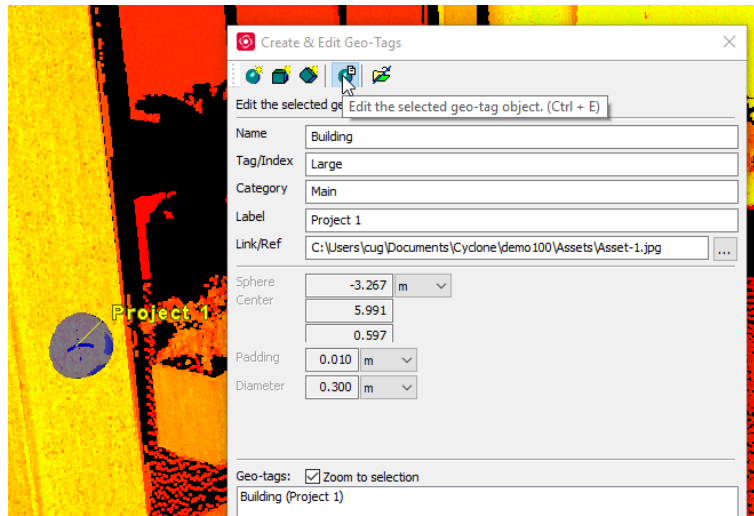


The links shown in the SmartAlign dialog are either VIS links directly from the RTC360 laser scanner or Cyclone FIELD 360 links from the tablet app.

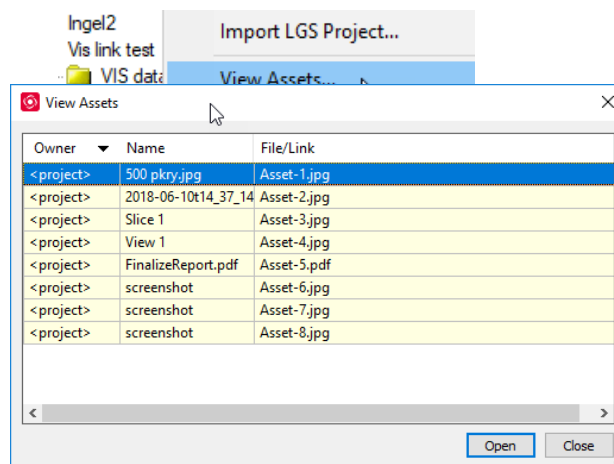
- All normal SmartAlign functionality is available for RTC360 data including:
 - Deleting links
 - Adding SmartAlign links by time, distance or manually dragging setups over each other.
 - Sending Setups or Bundles to other Sites.
- New Option for SmartAlign
 - There is a new check box with an option called: Create a Separate Registration for each site (job).
 - This new option allows each Site tab in the SmartAlign dialog to be turned into a separate Registration after import. If you have 4 site tabs, with the option checked, you will have 4 registrations after import.
- Registration creation detail
 - An unfinished registration will be created
 - Each bundle will be turned into a group within the registration
 - Un-linked setups will appear in the Ungrouped section
 - Links will be turned into Cloud/mesh constraints
 - The registration will need to be finished by using the **Registration | Register** command in the registration window.
 - Every link imported will have cloud-to-cloud run and errors generated
- Assets import
 - Assets are only included in the import if Cyclone FIELD 360 was used to collect the Assets in the field.
 - Assets can include:
 - Video
 - Images
 - Sound clips
 - Text files
 - Assets assigned to a setup's point cloud (a coordinate point was selected in Cyclone FIELD 360) are turned into GeoTags in the ModelSpace of that setup.
 - Imported assets, like videos and sound clips, are stored in the IMP folder under Assets:



- Assets assigned to GeoTags are stored in the Assets folder. The GeoTags themselves are in the respective ModelSpace.
- To view Assets assigned to a GeoTag, select the GeoTag in the ModelSpace and click the edit option to see the link to the Asset:



- To view the Assets assigned to ScanWorlds or Projects, right click the ScanWorld or Project and select View Assets:



- The Assets dialog will appear showing the list of imported assets. To open an Asset simply double click on the Asset.

Leica Cyclone 9.3 Compatibility and Upgrades

Windows 32-bit Support

Cyclone 9.3 no longer supports a 32-bit operating system.

Cyclone Database Management Recommendation

To avoid possible database inconsistencies or corruption while moving or copying databases, we recommend the following:

- Locate each IMP file in its own folder
- When copying, moving or backing up databases, copy/move/back up the complete database folder, including the IMP file, **eventlog** folder and files, and **recovery** folder and files

- The **eventlog** records administrative events and critical errors
- The **recovery** file keeps databases consistent, avoiding data corruption that may happen in rare situations
- When adding databases to Cyclone, a warning dialog is displayed if a database's recovery folder cannot be found when it is added to the database server. Push the **More Info** button for more information.

Upgrading to Cyclone 9.3 from Cyclone 6.0.x – 9.2

You must have Administrator-level privileges on your workstation to correctly install Leica Cyclone software.

Run the Cyclone 9.3 InstallShield and follow the directions in the InstallShield Wizard to proceed with the installation. Please read the warning message about compatibility of earlier version databases as older Cyclone IMP files will be upgraded to the new version and may no longer work in the older version of Cyclone.

Compatibility with Cyclone 9.3 AND Cyclone 8.1.3 or Earlier Versions

Cyclone 9.3 databases are *NOT* backward compatible with previous Cyclone versions 8.1.3 and earlier. Databases that are updated using this version of Cyclone cannot then be used with earlier versions. If you need to work with your data in older versions of Cyclone, you should make an archive copy of your database(s) prior to upgrading. Since it can take some time to update and optimize Cyclone databases, we recommend that you optimize your databases overnight, particularly when multiple databases are involved.

Known Issues

4K Imagery with TruView Local (ActiveX plugin) and Internet Explorer

The TruView Local plugin for Internet Explorer does not officially support 4K imagery or new data types found in the LGS file. To take advantage of these features, we recommend [TruView Enterprise](#) or [TruView Cloud](#).

Scanner locations are no longer visible in the ModelSpace when automatically created during Pegasus data import

When importing Pegasus mobile scan data into Cyclone, the user is provided the option to automatically create ScanWorld positions at a user-defined interval along the trajectory. These are used for the creation of TruView positions at these virtual "setup" positions. Currently, if this automated process is used, the Scanner locations will not show up in the ModelSpace view but will be correctly located and displayed on the Sitemap for published TruView datasets.

The scanner locations will be visible within the ModelSpace View if they are created manually after import.

Batch import Panoramic images

When using the Command **Import Panoramic images...** Images and scans in the import panel dialog may appear blank. The workaround is to resize the window.

Usage file reporting issue for EnterpriseElite Customers

When using the standalone CLM installer, some EnterpriseElite users may find that the usage file (year-month.db) normally located at *C:\Leica Geosystems\CLM\LogFiles* does not get produced.

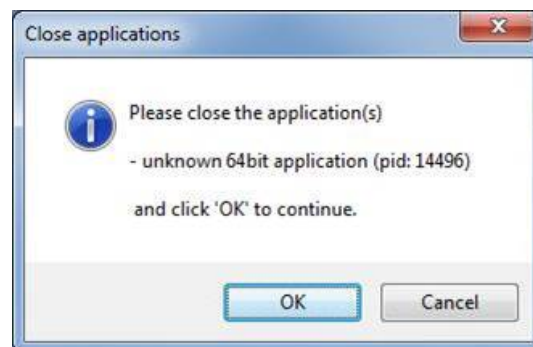
Please ensure your LGS.opt (located here: *C:\Program Files (x86)\Common Files\Leica Geosystems\License-Server\lgs.opt*) file looks like this:

```
DEBUGLOG +"C:\Leica Geosystems\CLM\LogFiles\lgs.log"  
NOLOG IN  
TIMEOUTALL 240  
ENABLE_DB_HISTORY 1  
PATH_DB_HISTORY C:\Leica Geosystems\CLM\LogFiles
```

ENABLE_DB_HISTORY should be set to **1** in this file. Please copy the file to a new location, edit it and re-save if the file says it's read-only.

Installing CLM while JetStream is running

During installation of CLM, users may encounter the following error message. This is commonly due to a service like JetStream running in the background.



To enable the successful installation of CLM, please follow these steps:

- Launch the task manager
- Select the Services tab
- Look up the process with the PID (Process ID) shown in the Close applications dialog
- In this case it is JetStream
- Terminate the process so that CLM can be installed
- After CLM is installed, click on the Services button in the Task Manager and restart the service

Licensing

Customers of Cyclone version 9.2, or earlier, need to be current on CCP to run Cyclone 9.3.