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What's new in Inspire

2022.2

In Inspire

Point Cloud Rewrite

Performance + Features

We have completely rewritten how we scan and store cloud data. This increases scanning and operations speeds with point clouds by parallelizing operations. By avoiding unnecessary copying of data, algorithms are now more efficient.

- Brings many memory, performance, and functionality improvements.

- Many operations are 2-3 times faster than before such as Alignments & Feature extractions.

- Some operations are 10x faster such as scanning large files, selecting and deleting large sections of cloud data.

Note: When first loading an older file, please be patient as your cloud data is converted into the new format. Once the file has been converted and saved, subsequent loads will not have this additional delay.

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Incoming cloud data: Scan Voxelization
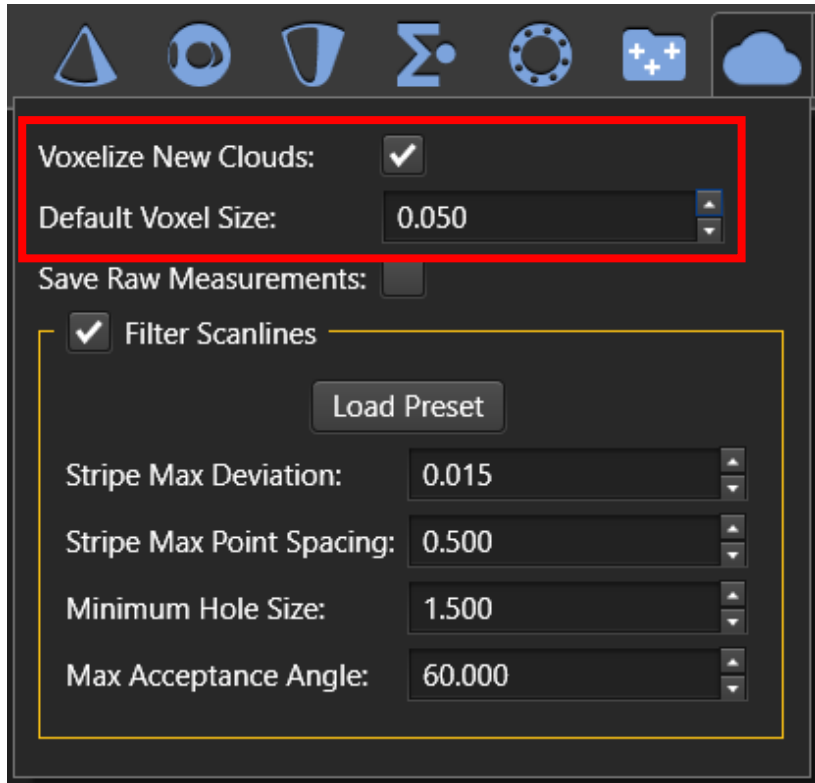
Scan Voxelization

All measured scan data is now optionally voxelized as it comes in from the instrument. This is recommended for most scanning devices. Voxelizing incoming data reduces memory requirements and improves performance.

Even setting a very small voxel size (0.02mm) will show a great improvement over previous release.

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Incoming cloud data: Raw Data Storage
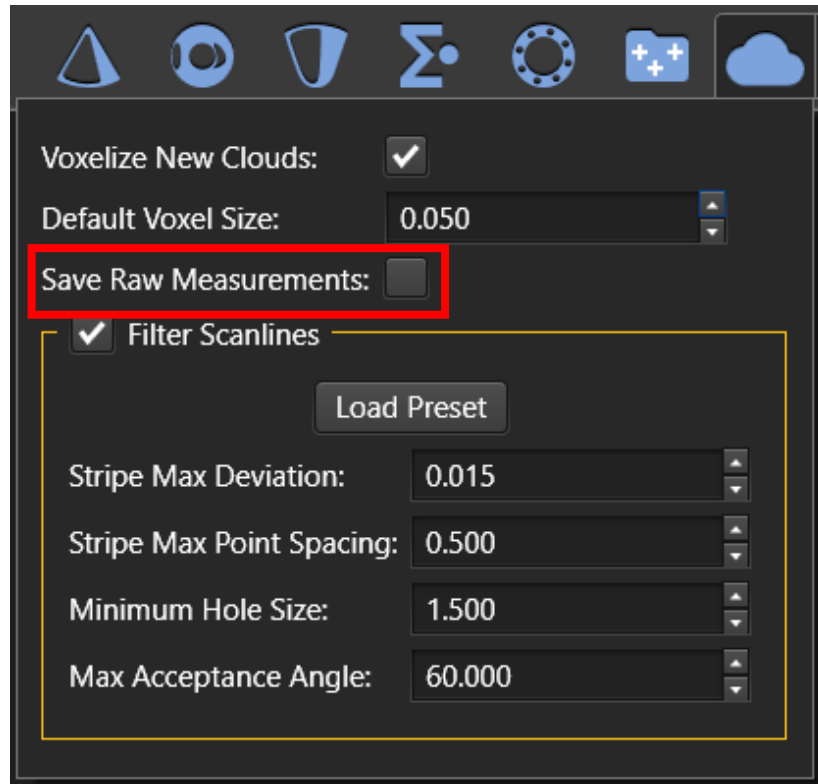
When the "Save Raw Measurements" option is enabled, incoming scan data from an instrument will be stored on disk at full data density. This enables you to modify the voxel size or scan filter settings of these scan passes without needing to remeasure the cloud. Saving raw data is only recommended in very specific applications where high density data might be needed or with devices like the ATS600 where you want to set the data density from your tracker settings.

The raw data will be embedded with the project file and remain until it is removed, so if your file size is large, this may be the cause.

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Incoming cloud data: Scanline Filtering
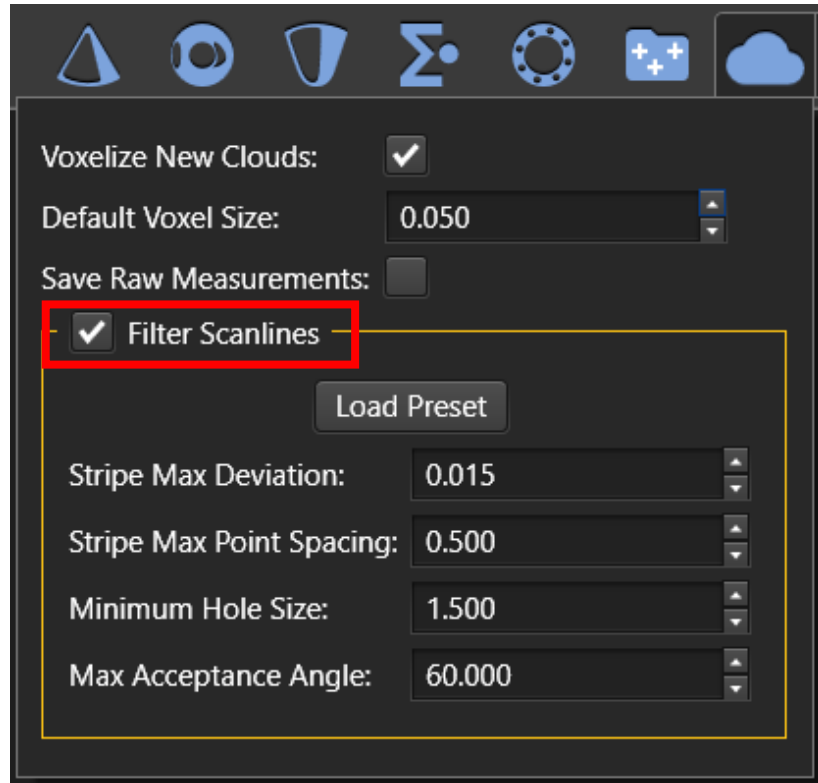
Scanline filtering can now be applied to the incoming scan data:

- Reduces noise

- Reduces data density in flat regions where detail is not needed.

- Detects boundary points in the scanline.

- Filters out data where the angle between the scanline and the scanning direction is below a critical angle (to prevent glancing scan data).

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# Incoming cloud data: Scanline Filtering parameters
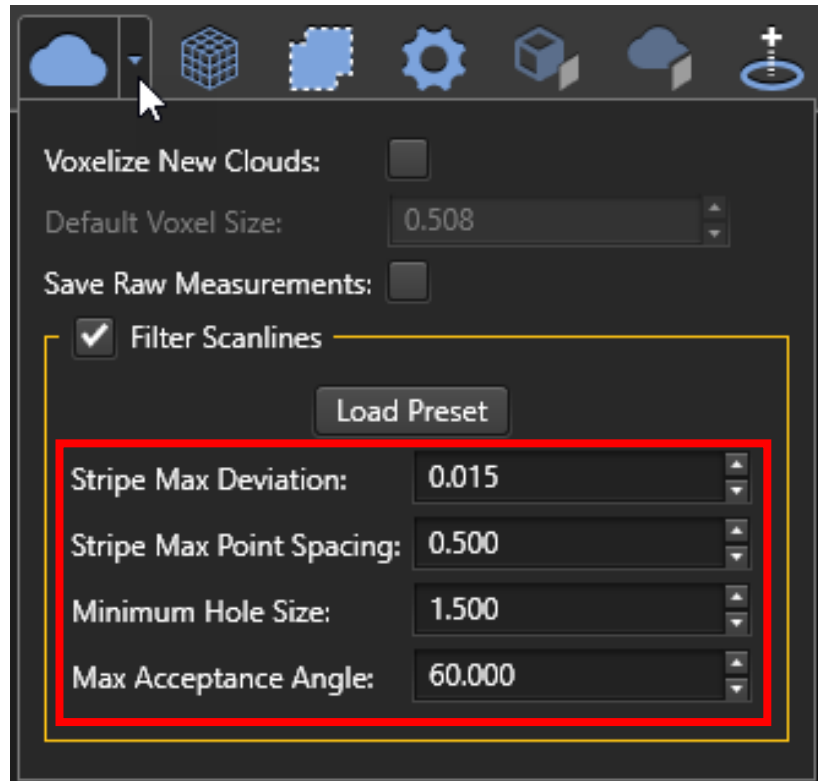
- **Stripe Max Deviation**: This is the maximum distance between a "smoothed" point and its original position.

- **Stripe Max Point Spacing**: This is the maximum allowable distance between any two consecutive points in the filtered scanline. It is recommended that this value not exceed 1/3 of the "Minimum Hole Size"

- **Minimum Hole Size:** The minimum size of any hole on the part to be measured. Any gaps in the scanline exceeding this distance will be interpreted as a hole.

- **Max Acceptance Angle:** This is the maximum allowable angle between the scanning direction and the surface normal along the scanline direction. If the angle exceeds this threshold, the data will be ignored.
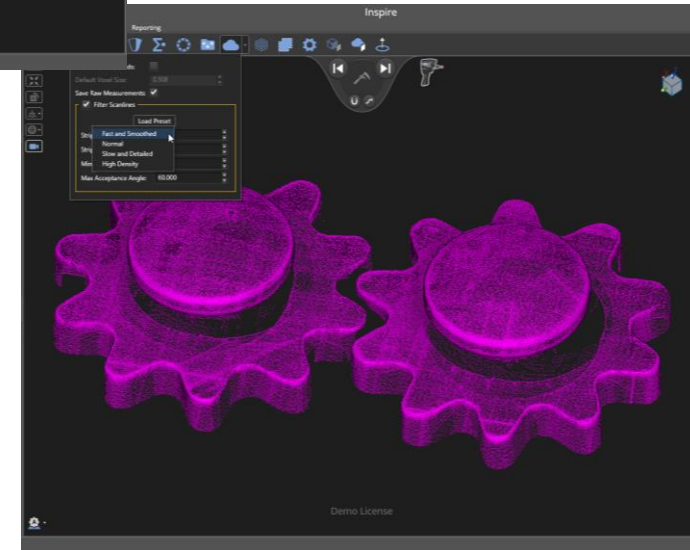
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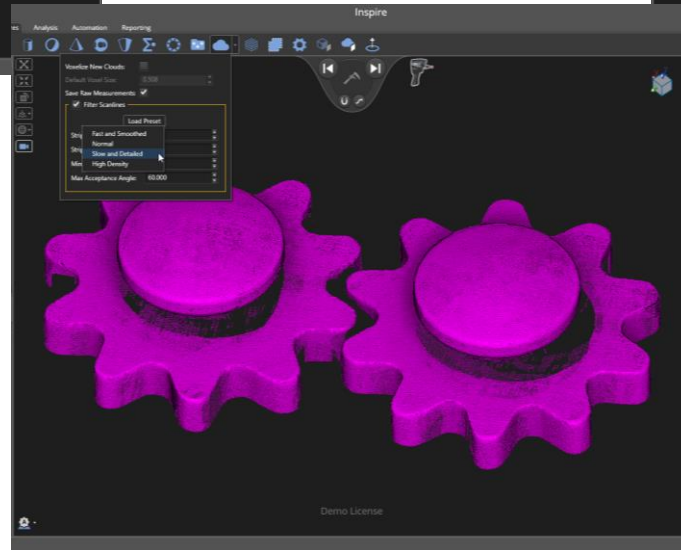# Filter Presets

High Density – 3,998,504 points
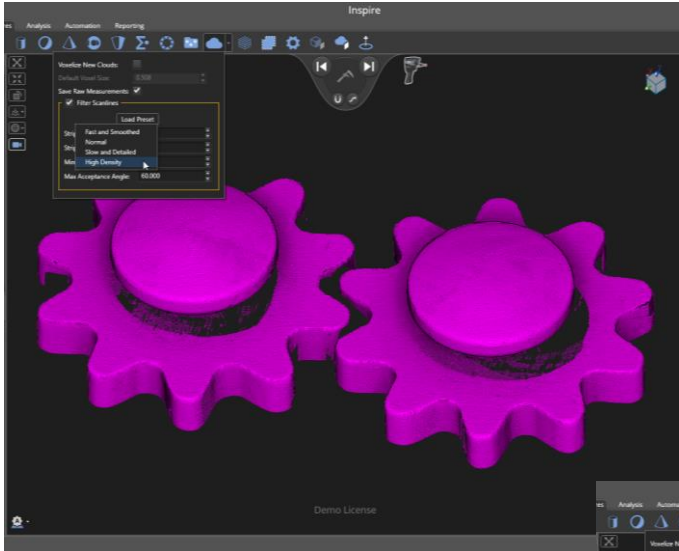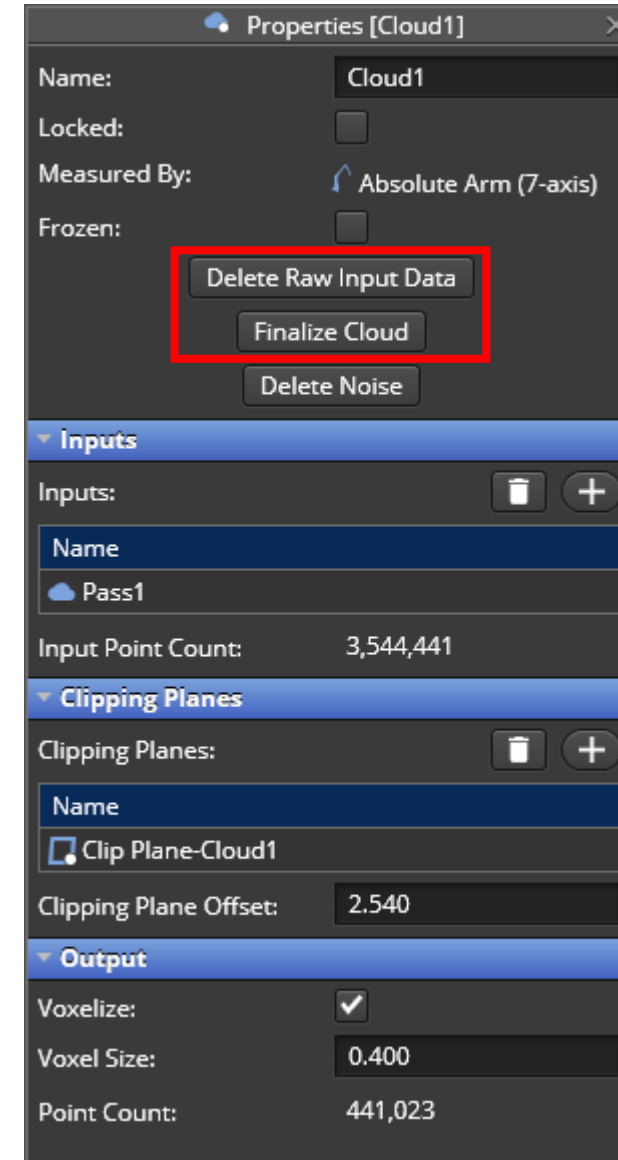
Normal – 1,090,493 points
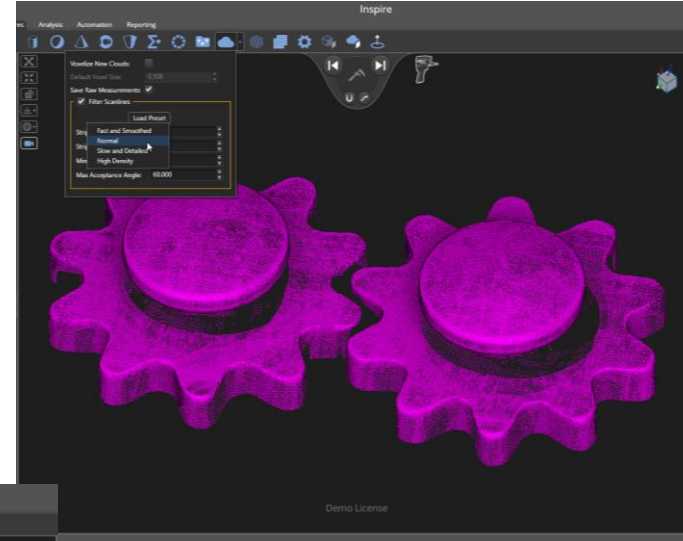
Fast – 689,704 points
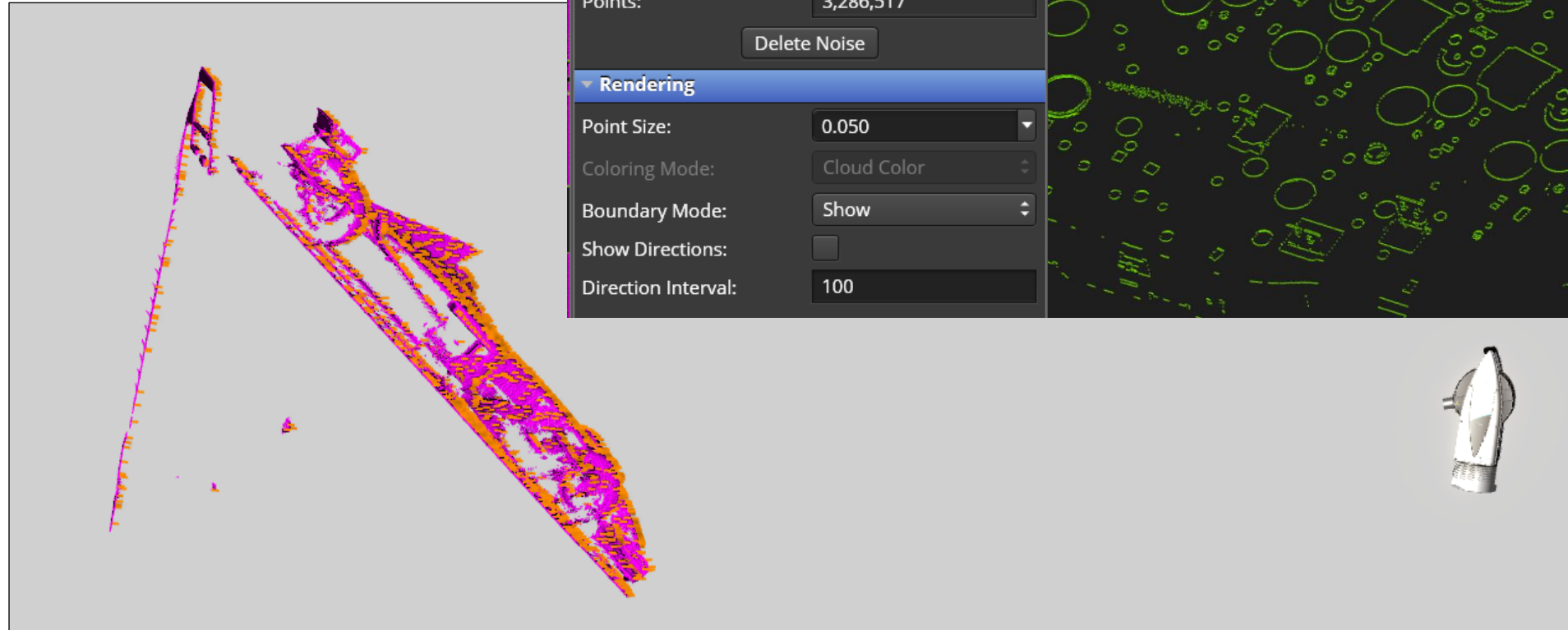

Slow & Detailed – 1,908,309 points

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Deleting Raw Data & Finalizing

- "Delete Raw Input Data:" If storing raw data, or whenever you've altered the voxel size of a cloud, raw data will persist with your project file, enabling you to restore your original voxel size without remeasuring. However, keeping this data around when it's not necessary will result in large file sizes.

- "Finalizing" will replace the entire cloud feature (as well as its clipping plane) in the tree with the single cloud feature. This will reduce the files size significantly, but you will lose all the individual scan passes.

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Metadata support

- Direction

- Intensity

- Error

- Quality

- Boundaries

Properties [Cloud1 Output]

Name:	Cloud1 Output
Locked:	☐
Color:	🔲
Measured By:	⌂ Absolute Arm (7-axis)
Points:	3,286,517

Delete Noise

▼ Rendering

Point Size:	0.050
Coloring Mode:	Cloud Color
Boundary Mode:	Show
Show Directions:	☐
Direction Interval:	100

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ISO 2768 Standard Tolerancing

For criteria dimensions that can be toleranced using the ISO standard tolerancing, you now have the option of using those tolerances.

Simply select (or multi-select) the criteria you want to apply the standard to and change from override to ISO 2768. Adjust to the Fine, Medium, Coarse or Very Coarse setting and even view the tolerances in a table.

Tolerances will changes based on the size of the Nominal.

Lock radius for circle/cylinder/sphere

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Manual Custom Measurements

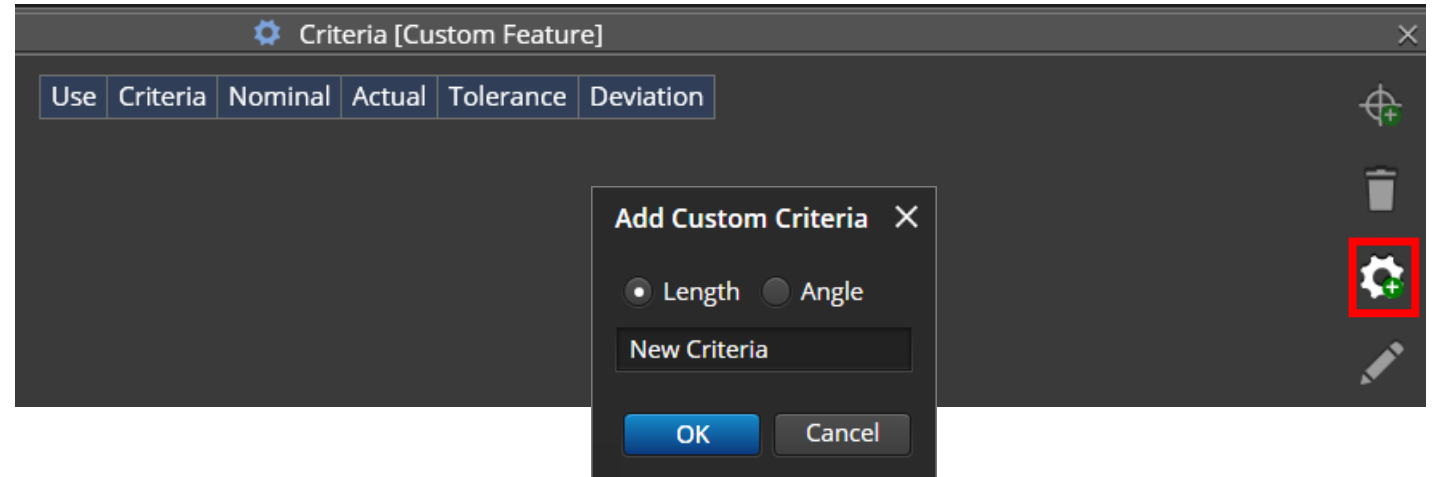For dimensions not directly measurable by a supported device

In the Features tab you have an additional feature type called the "Custom Feature."

This creates a blank feature that can have multiple custom criteria added to it.

Click the icon and it will create a custom feature you can rename.

Open the Criteria and you add a Custom Criteria that is either a Length or an Angle and give it a name.

Use this for entering depth & feeler gauge dimensions or any manual dimensions

Criteria [Custom Feature]

Use	Criteria	Nominal	Actual	Tolerance	Deviation

Add Custom Criteria

○ Length   ○ Angle

New Criteria

[OK]   [Cancel]

Criteria [Gap Thickness]

Use	Criteria	Nominal	Actual	Tolerance	Deviation
☐	Thickness	1.500	1.488	± 0.100	-0.012 ✔

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Vectors for Center to Axis Deviations for Cones & Cylinders

Inspire can now display vector deviations between the Nominal Axis and the Measured Center for both Cylinders and Cones.

Adjust Magnification, Spike or Line, show labels and adjust tolerance to color
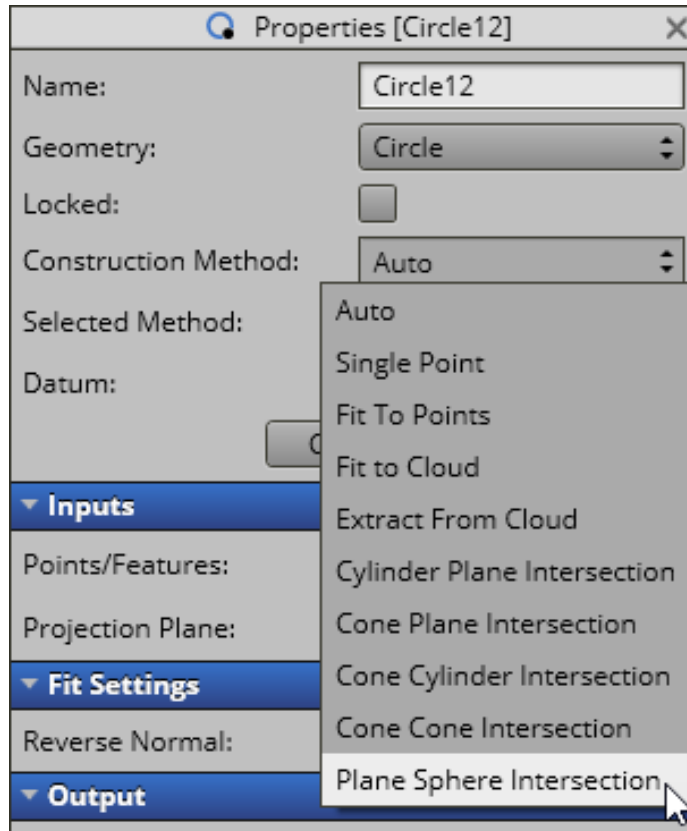
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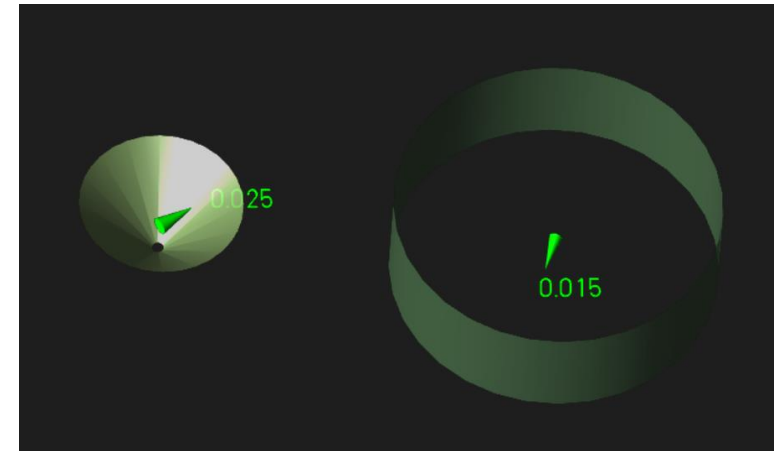
Circles Extraction from CAD: use neighboring face normal

Improvements to feature extraction from CAD now looks at neighboring faces to determine the direction of a feature. Circles and Slots should now show the correct direction
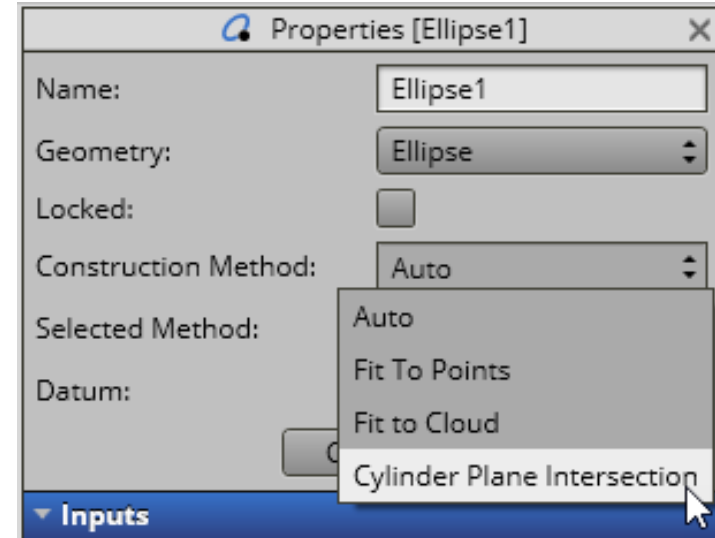

Before

Now

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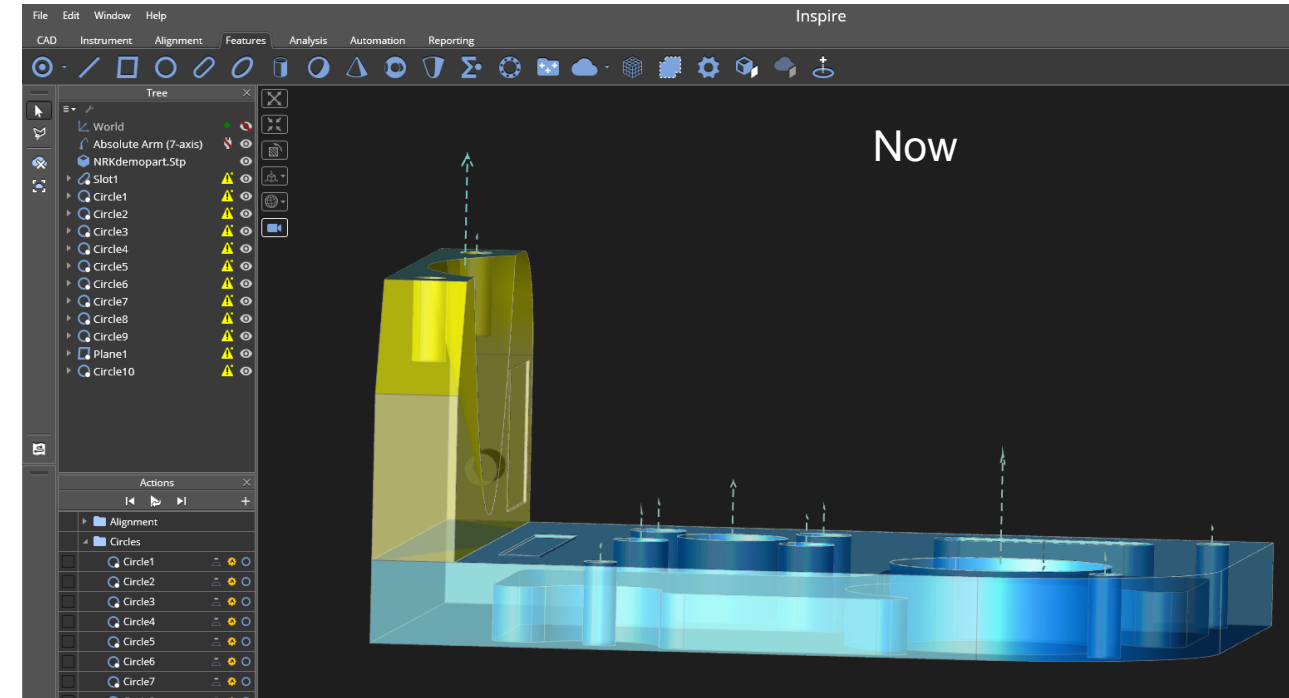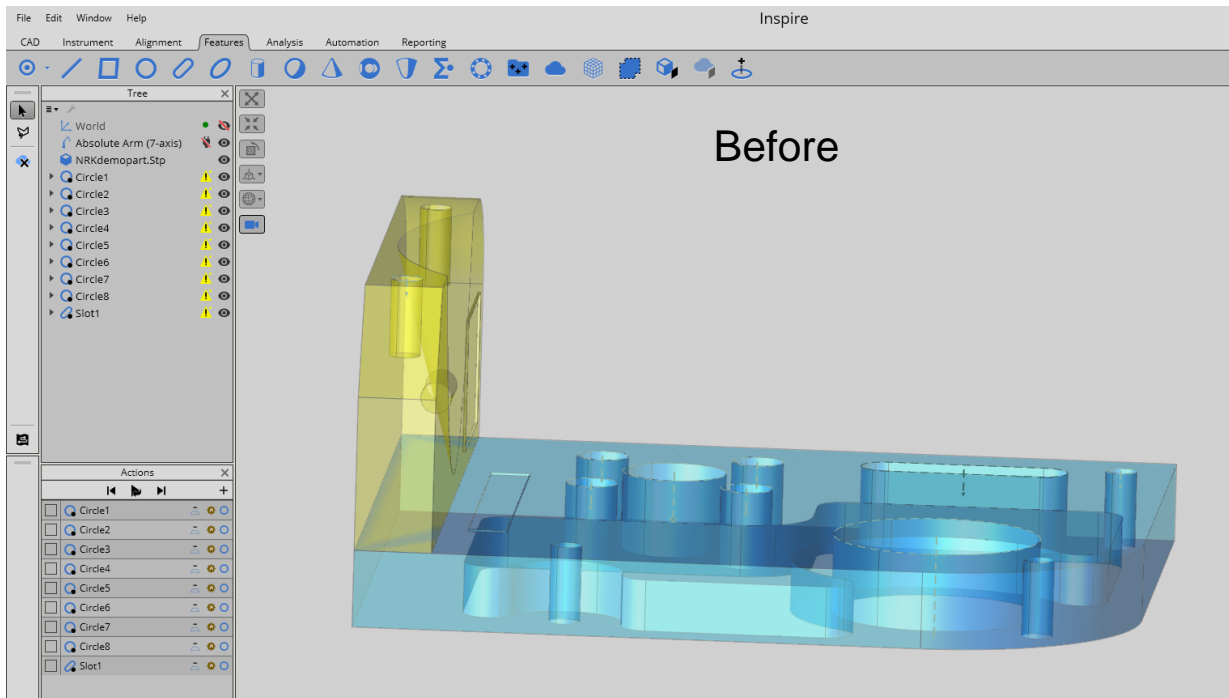
New feature Construction Methods
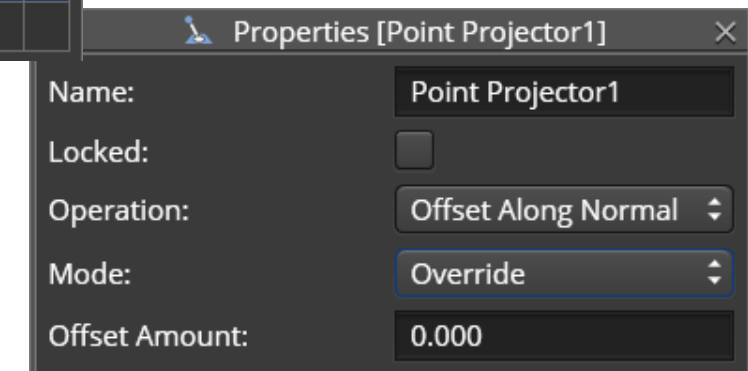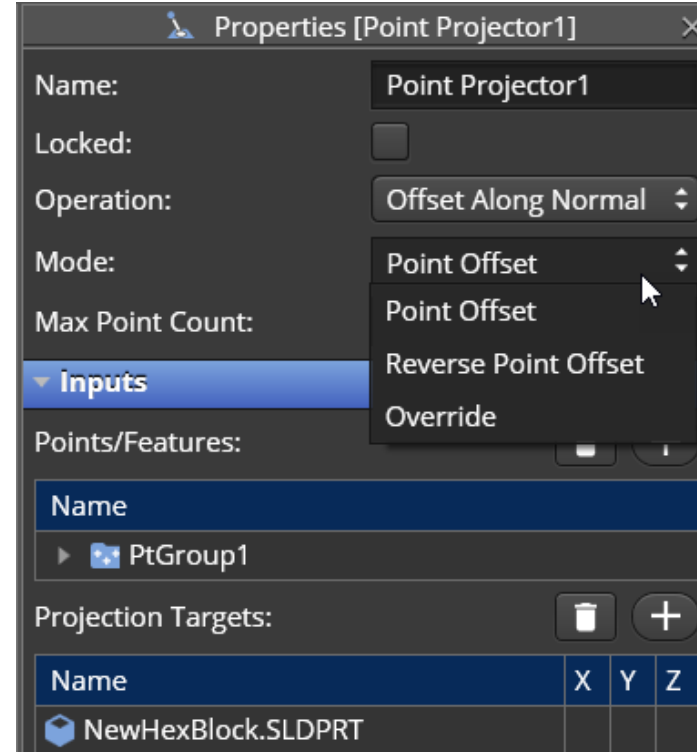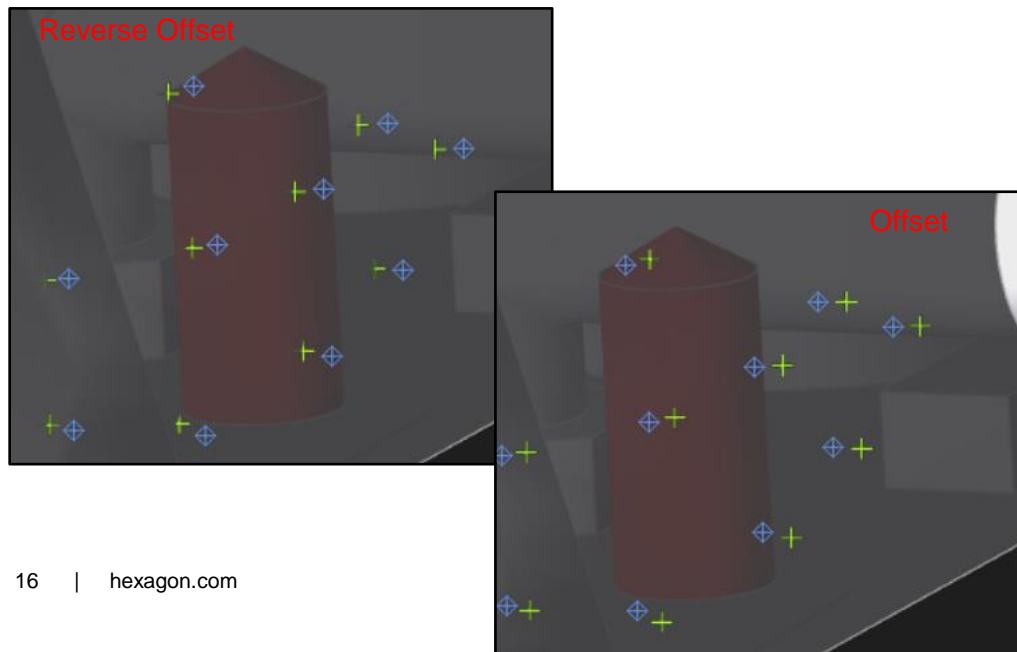
Circle from Plane/Sphere intersection

Ellipse from Cylinder/Plane intersection

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Point Projector Enhancements

Inspire now has 3 options for offsetting the input points:

- Offset by the probe radius along the normal direction
- Offset by the probe radius opposite the normal direction
- Offset by a keyed in amount "override"

Extraction and Filter Clouds now permanent tree items

When the Construction Method of a Feature is set to "Extract From Cloud," the Extraction Cloud is now permanently saved in the tree.

Now, when you remeasure the feature, the extraction clouds can be used for inputs to other features.
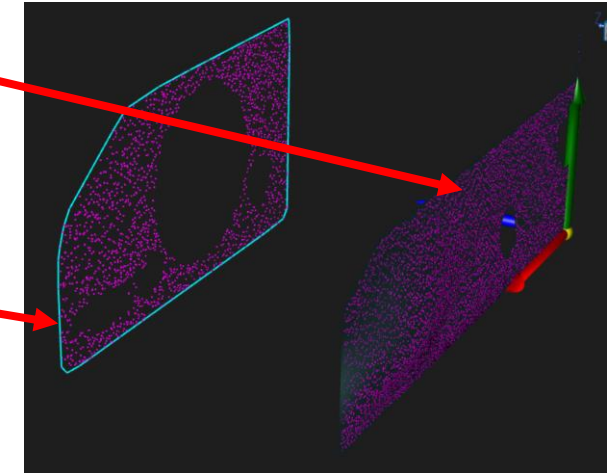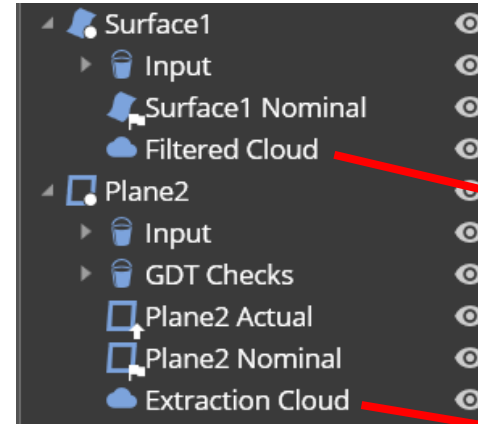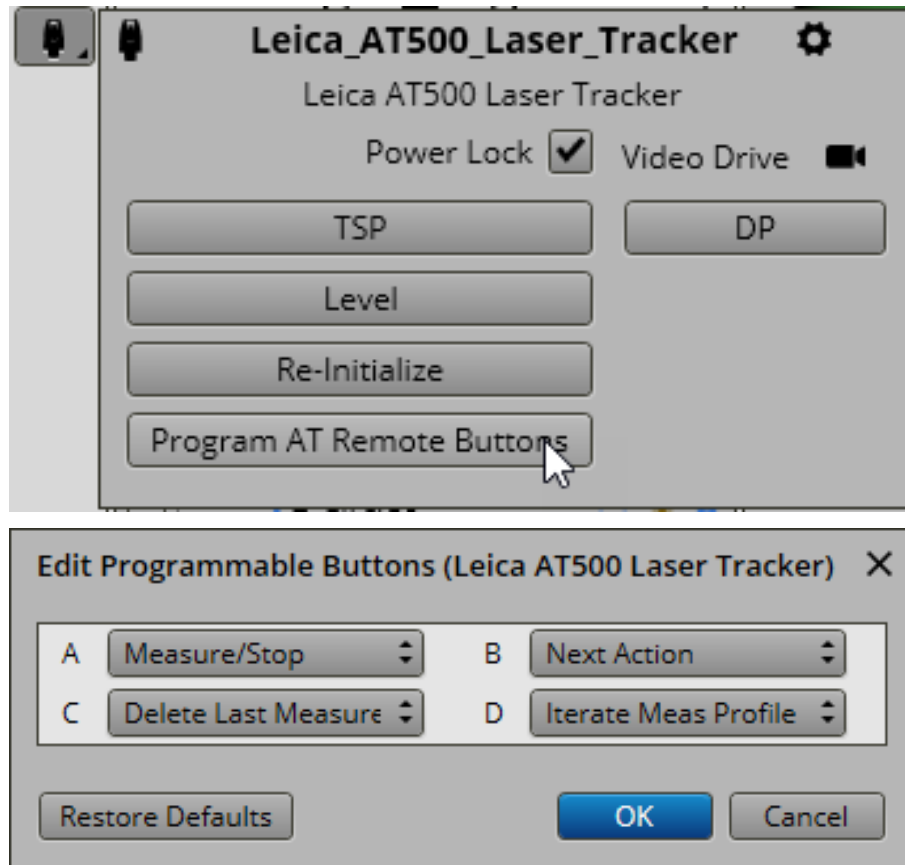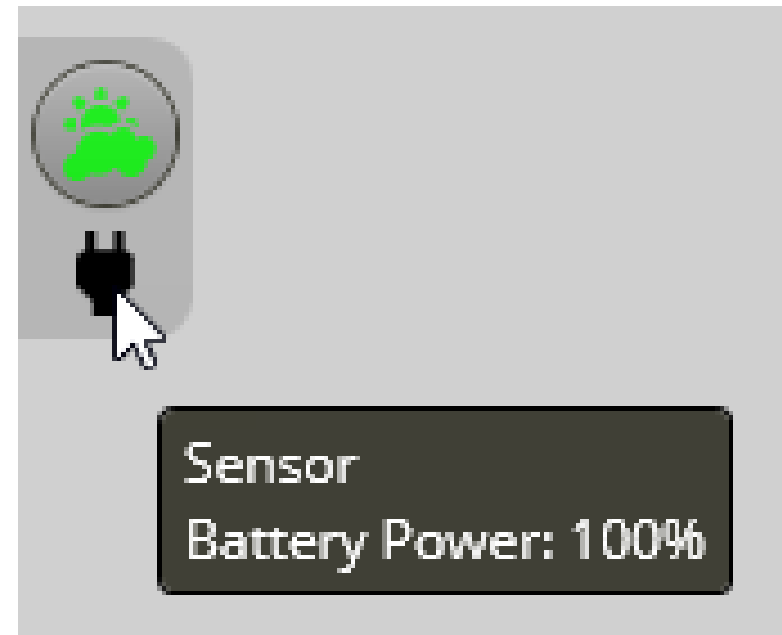
For example, using extraction clouds in Comparisons
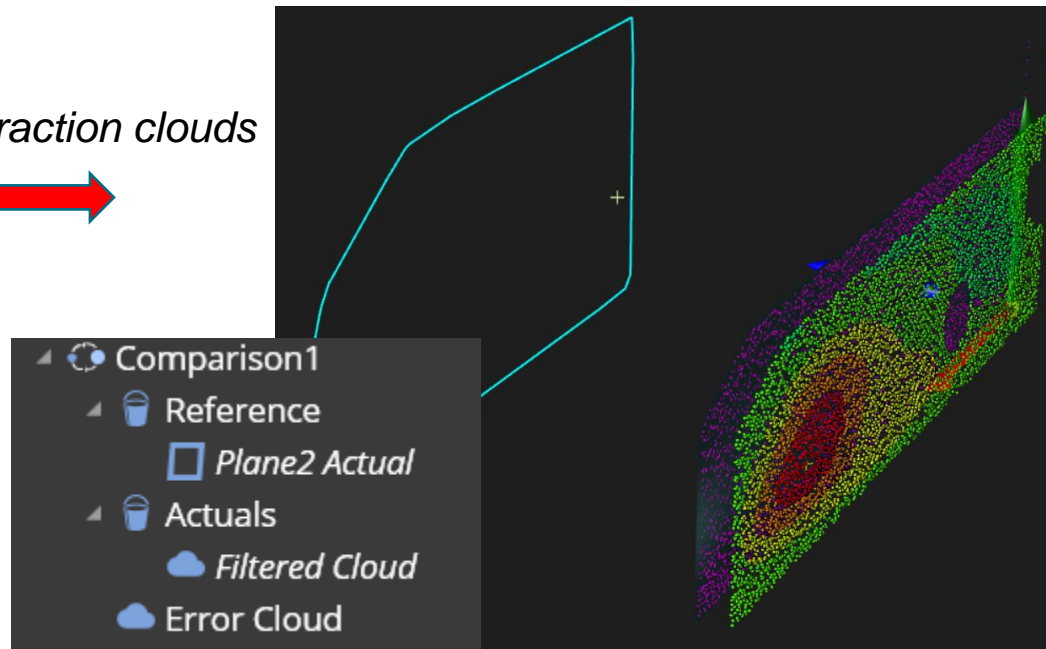
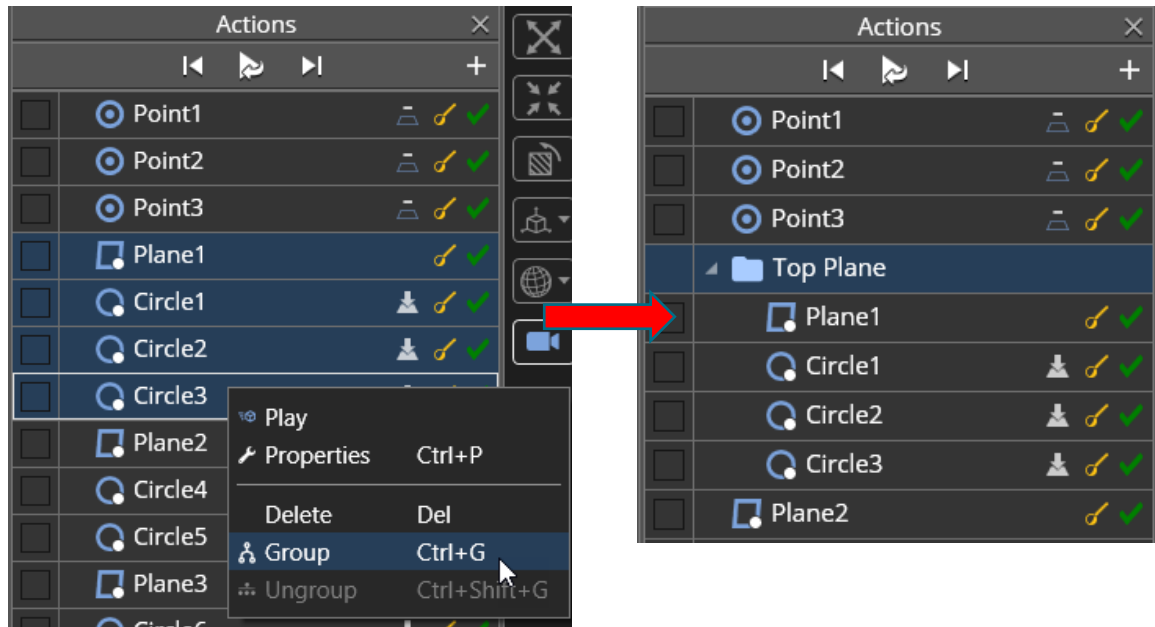# Trackers

Leica LMF 1.9.1.11 Hot Fix

Program AT remote Buttons

Show battery charge level even when plug
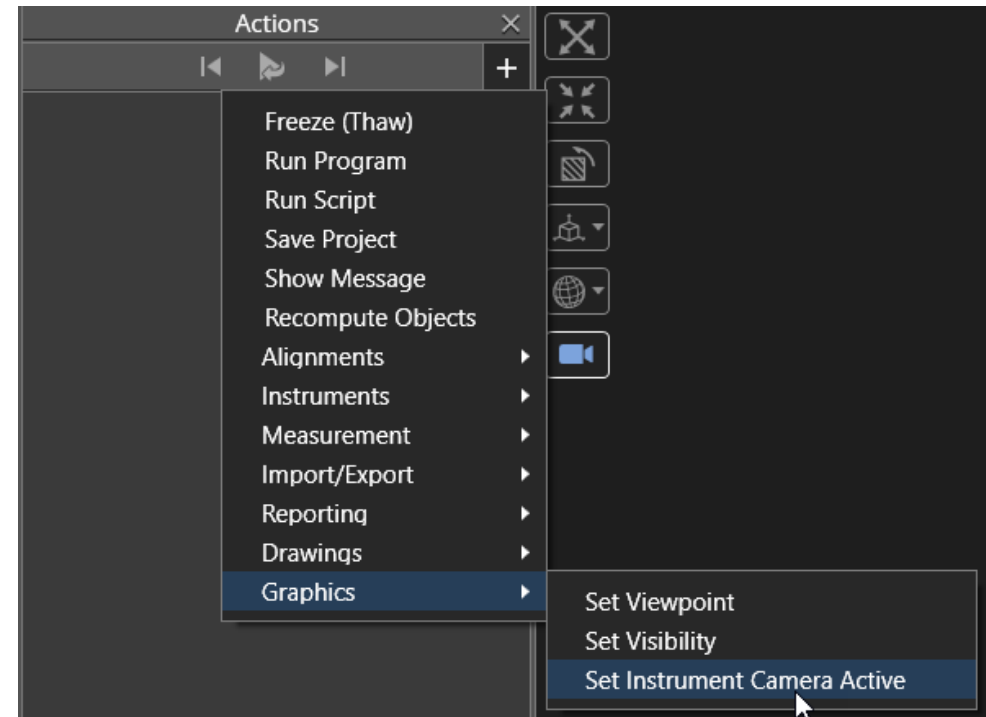
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Actions Enhancements & Additions

Group Actions in the Actions Panel.

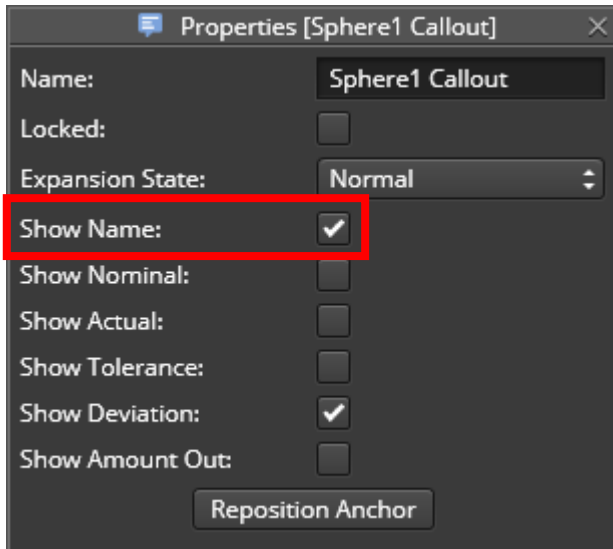Multi-select and Right-hand Click > Group (Ctrl+G)

Turn the Instrument Camera Off or On with an Action.

Graphics > Set Instrument Camera Active
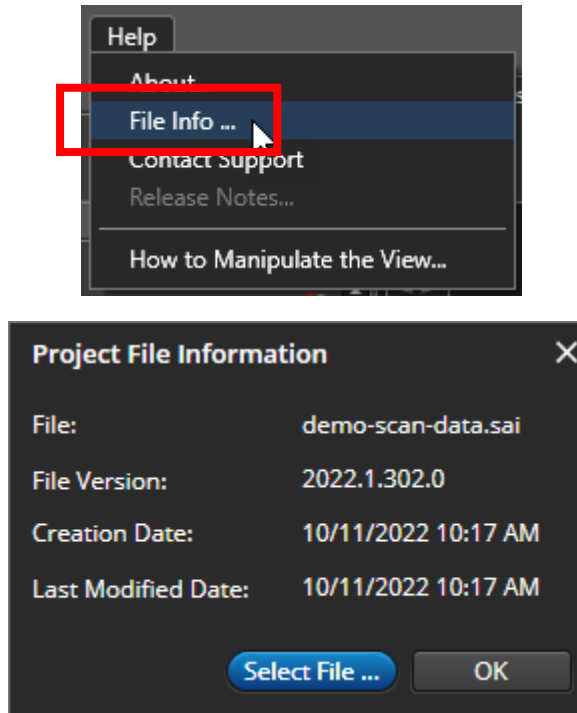
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Callout : Show/Hide Name

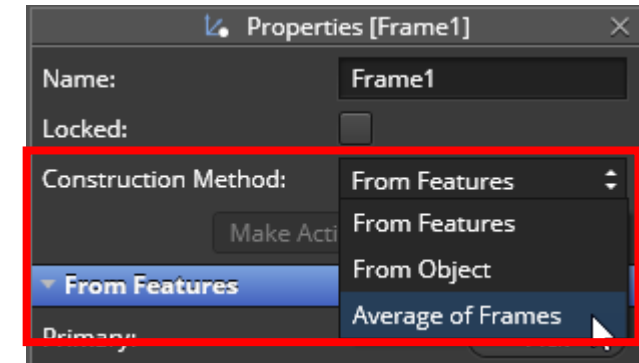Callouts: Show/Hide Name option in the callout properties

See which version a file was created in

Construct a Frame from the Average of Frames

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Python

Upgraded Python language libraries to version 3.4 (previously 2.7.9). may impact existing scripts :

- To upgrade, See the following links for help:

  * "Cheat Sheet: Writing Python 2-3 compatible code" (https://python-future.org/compatible_idioms.html)

  * "Porting Python 2 Code to Python 3" (https://docs.python.org/3/howto/pyporting.html)

  * "Supporting Python 3: An in-depth guide" (http://python3porting.com/)

- Added script line number where errors occur to error output

- Added ObjectsToRecompute to IN_ForceRefresh to only refresh provided objects

- Added script IN_GetTypedObjects to return a wrapped list of all features, alignments or CAD models. Eventually deprecates IN_GetFeatures.

- Added IN_GetProjectFilePath. Return full path of currently open project file.

- Added setting to IN_SetApplicationSetting under "General" category to disable/enable Undo.

- Removed IN_ApplicationSettings, deprecated in a previous release. Replaced by IN_SetApplicationSetting. To set application setting back to default, use IN_SetApplicationSettingsDefaults.

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