

What's New In SA

CHAPTER

1

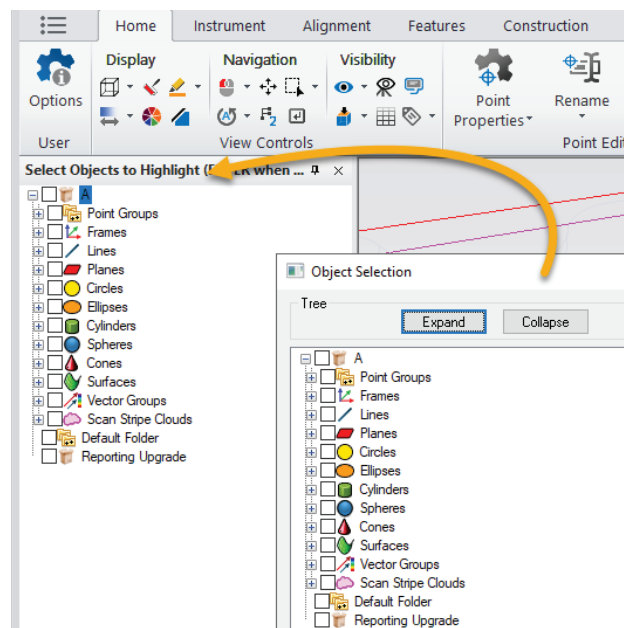
One of the advantages of SpatialAnalyzer is that development occurs at a brisk pace. New feature requests, bug fixes, and changes are implemented quickly, giving you the opportunity to start taking advantage of newly implemented features in a very short period of time. The following is a summary of the new additions.

2022.2

User Interface Improvements

Added Tree Selection

The F2 selection window has been integrated directly into the SA Tree bar as a new dynamic selection panel. This allows direct access to multi-select options from a filtered list of relevant items, when selection is needed.



Tree Selection: https://youtu.be/IZE3e5_c7Ak

Import Improvements

New CAD Import Libraries:

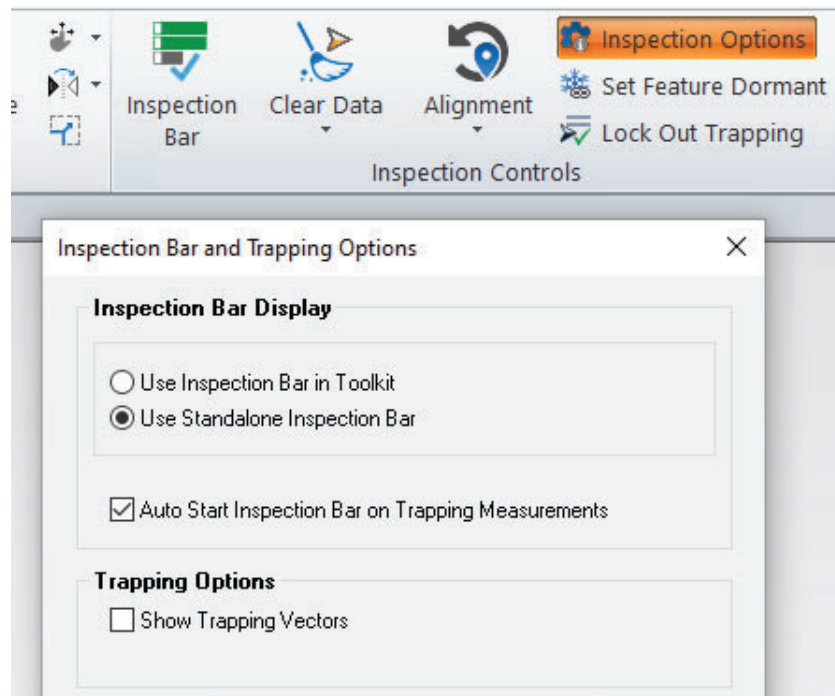
The following updated support is now available:

- Autodesk Inventor 2022, Creo 8.0, FBX 7500, NX 2007, Parasolid 34, Solid Edge 2022, SolidWorks 2022

Inspection Improvements

Added Inspection Options

There are now basic configuration options for inspection which allow you to choose between the Inspection bar and Toolkit Inspection panels and offers an option to automatically open the inspection bar when trapping begins.



Expanded Offset Plane References

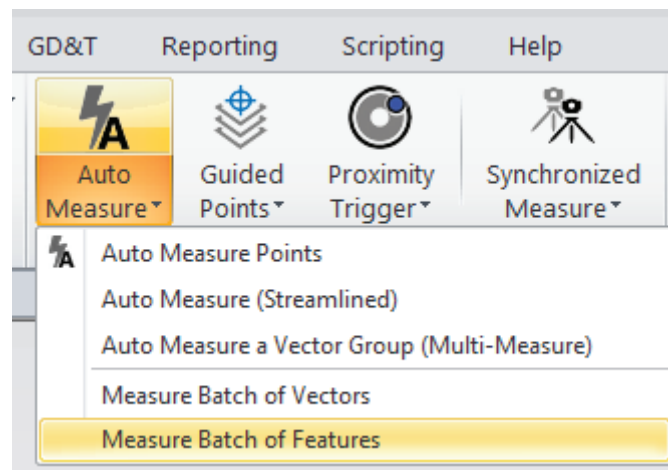
In prior versions Offset Planes were always based upon a reference plane. In this version any objects base frame can be used as the reference. This expands their use by allowing an offset plane to be built from a dynamic frame for example.

Added Auto-Measure Batch of Features

Auto-Measure >> Measure Batch of Features to support the automated measurement of Compare to Nominal GR-Features selection.

Currently, it allows to measure a list of circles and/or slots by Nikon

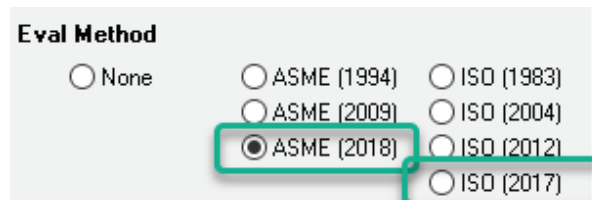
APDIS MV400 Laser Radar. See more details in the instrument section.



GD&T Improvements

Added support for ASME 2018 and ISO 2017

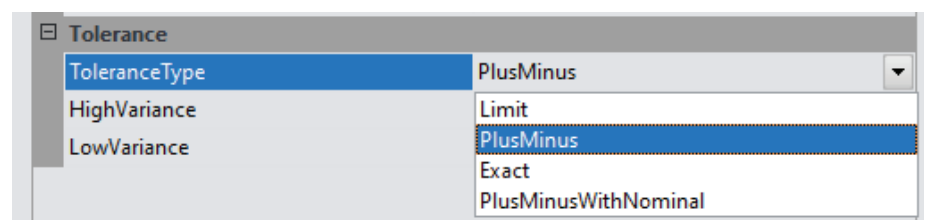
Options are now available to have GD&T feature inspection conducted using the more recent standard definitions. These options can be found in the **User Options > Analysis > GD&T Options**



Added Control Over Diameter Tolerances

Added clarification to plus/minus tolerance modes of operation:

- *PlusMinus*. Will apply tolerances relative to the reference feature (as nominal).
- *PlusMinusWithNominal*. will apply tolerances relative to user defined reference value.



Cloud Based Inspection

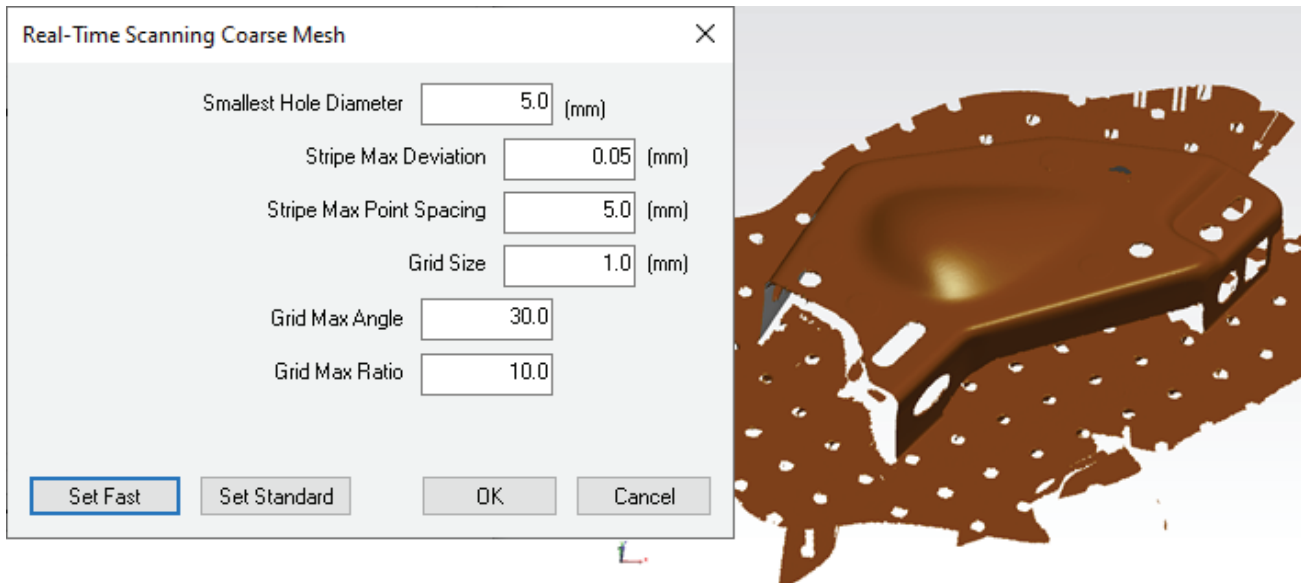
Boundary Points

Added Right-Click option to *Generate Boundary Points Clouds* from a

Scan Stripe Cloud. The boundary points define the extents of each scan line and can be used for edge or feature identification.

Real-Time Meshing Improvements

Real-Time Meshing has been significantly improved. Changes include greatly improved stability with laser trackers based scanners, leading line and cloud visualization as you scan. Greatly improved density and save sizes as well as improved settings and density controls.



Uncertainty Calculations

Modified uncertainty model for laser trackers

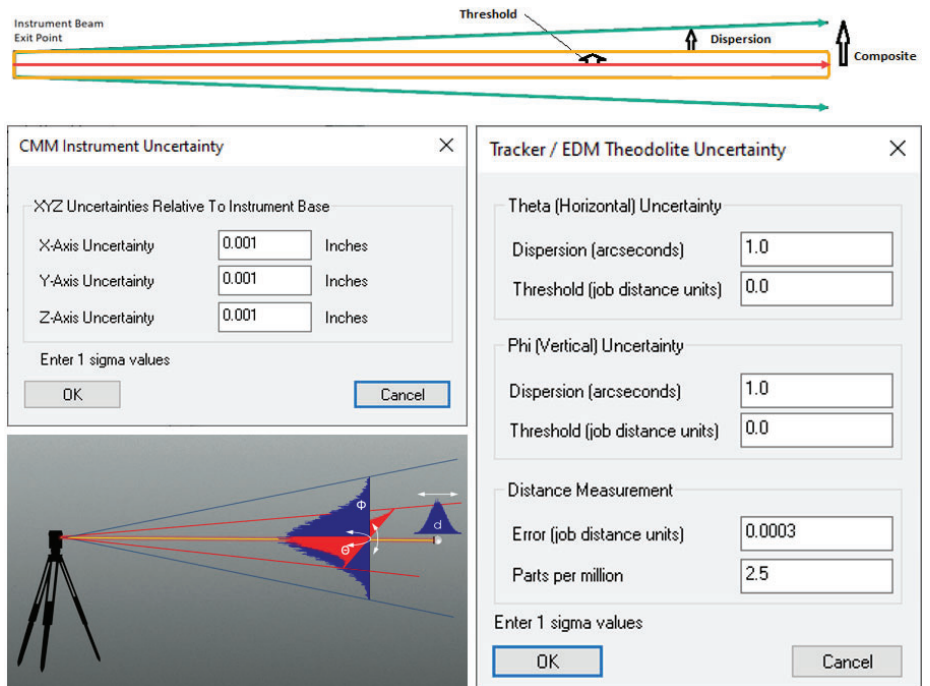
Modified uncertainty model for laser tracker (polar instruments) to eliminate singular behavior of uncertainty assessment when the measurement approaches polar points. Although this singular behavior accurately emulates the motor encoders, in practice the uncertainty is better modeled as:

Distance measurement uncertainty -> Error along line-of-sight(LOS)

THETA (Horizontal) uncertainty -> Error orthogonal to LOS in the horizontal plane

PHI (Vertical) uncertainty -> Error orthogonal to LOS in the direction of positive PHI

Consider sighting through a telescopic sight directed towards the measurement. The angular error is now computed with respect to this shot line.



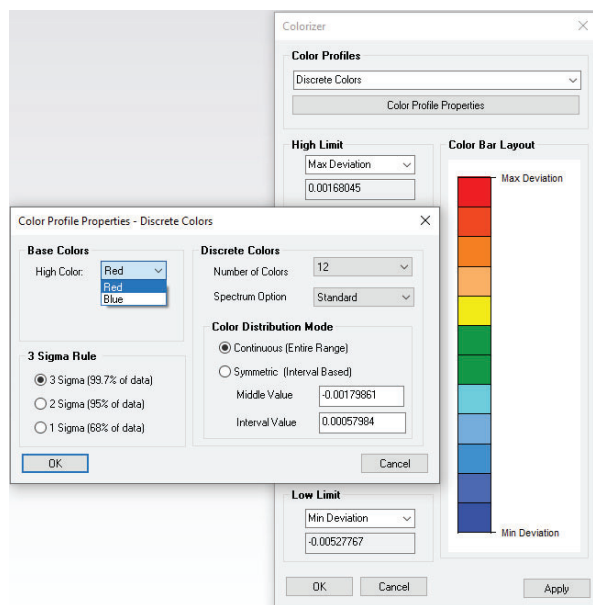
Modified uncertainty model for PCMM Arms

The uncertainty parameters for an arm model have been simplified to an XYZ uncertainty with respect to the instrument base.

Added capability for setting XYZ uncertainties for PCMM instruments so that XYZ component uncertainties can be determined during USMN operations.

Reporting Improvements

Added ability to reverse colors in Discrete Colors mode. Now, red color can be picked for high and blue for low.



Instrument Updates

Leica Trackers

Added New Instrument - Leica AT500



The AT500 offers reflector measurements at up to 160 meters an integrated controller and the ability to measure using the B-Probe^{plus}.

Updated to LMF 1.9 (AT9x0, AT600, AT500)

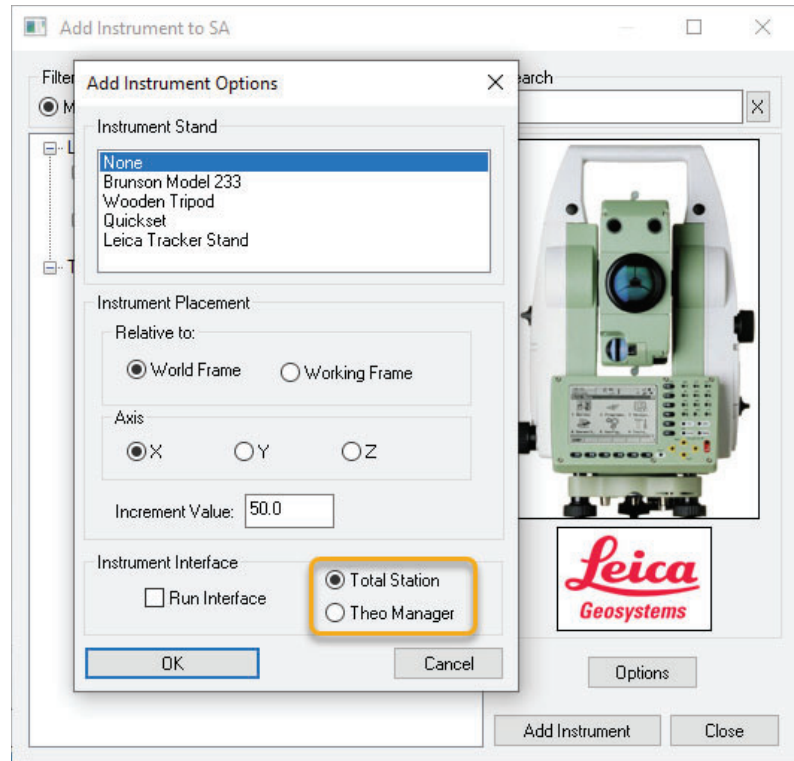
- Added support for RDS 6.2 and improved the ability to connect and disconnect from RDS with the AT960 and a scanner.
- AT5600 minimum scan distance goes to 1m from 1.5m, and will now scan any part of a perimeter that is not too close.

API Trackers

- Added SDK to support the new 2-axis level for the Radian Plus (OminiTrack2)

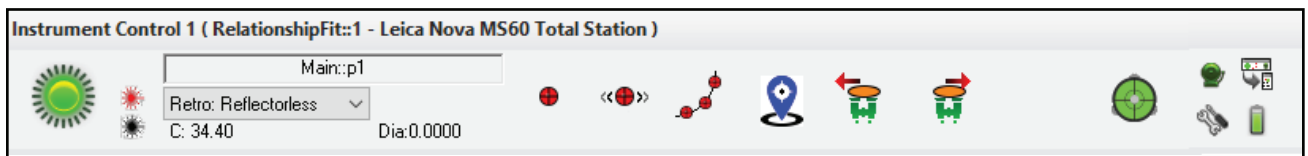
Total Stations

Added default interface selection for total stations under the Add instrument button.



The new total station interface has been greatly improved.

- Added support for Surface Vector Intersection measurements
- Added new instrument toolbar



Nikon APDIS Laser Radar

- Laser Radar APDIS MV400 has been integrated with Nikon CLR SDK v10.05.06.6174

Added new menu options:

- Instrument >> Hardware Capabilities
- Tests >> Vibration Analysis

Large number of nominal vectors can be measured using menu option *Instrument >> Taking Measurements >> Auto Measure >> Measure Batch of Vectors*. With this we added:

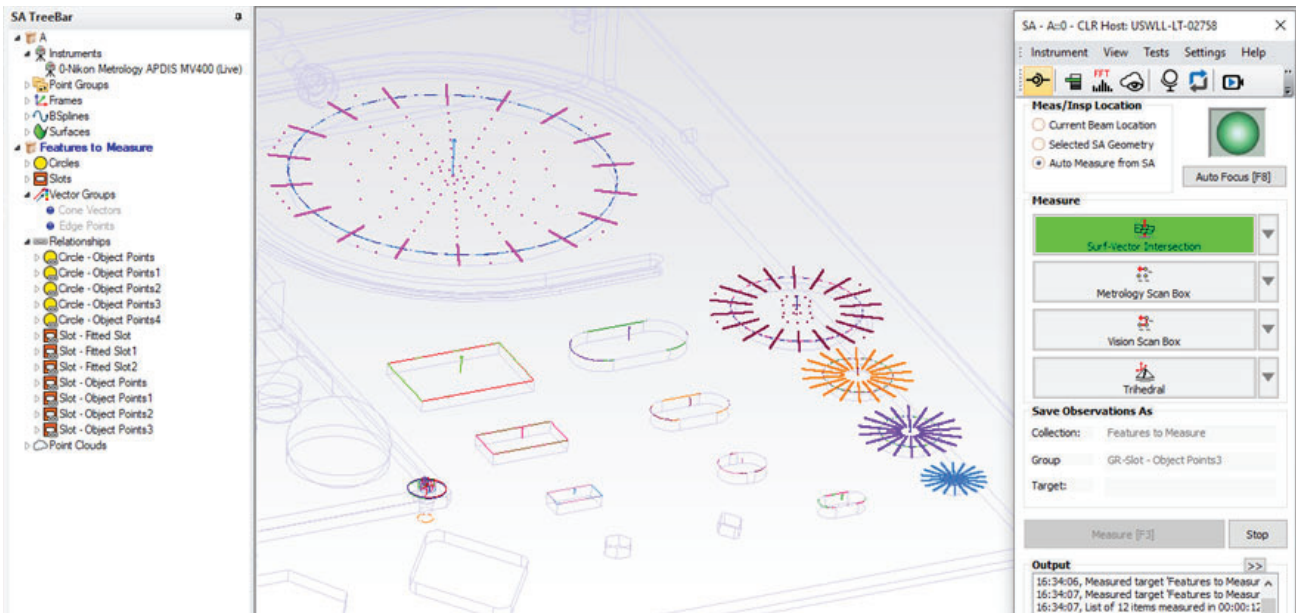
- Now, measured points can be saved in a desired collection
- Added ability to build a new vector group including skipped or failed vectors from the list

MV430E and MV450E Laser Radar Enhanced Models

Implemented auto measure of SA Geometry Relationships (Features) by MV430E/MV450E Gauging Engine (GE).

- Currently supported geometry types are circles, rounded slots, and rectangular slots.
- Each feature can have a saved target definition for customized scanning and the option to send clouds, measured geometry or both.

To start measurement process, select on SA ribbon *Instrument >> Auto Measure >> Measure Batch of Features*.



Gauging Engine: <https://youtu.be/Wadmqz-x24w>

Laser Projectors

Added New Instrument - Virtek Iris Projector

An all new interface to the Virtek Iris projector has been added. See instrument Manual for setup details and scripting controls.



Updated LAP Projector Interface

Rewritten interface for the SynchroNet API, replacing the older CAD-

Pro API, significantly increasing performance.



MP Script Updates

Updates to Existing MP commands:

- **Set Tracker/EDM Theodolite Uncertainties.** Replaces previous version and offers updated uncertainty parameters
- **Get Tracker/EDM Theodolite Uncertainties.** Replaces previous version and offers updated uncertainty parameters.
- **Fit Geometry to Points.** - added the Torus geometry type
- **Fit Geometry to Point Groups.** - added the Torus geometry type
- **Get Transform for i-th Frame In Frame Set.** Normalize resultant transform to address “stacking creep” when iteratively using result to set working frame

Allow Watch Window commands to set the position and size even if no watch window template is provided. This will affect the following MPs:

- Watch Point to Objects
- Watch Point to Point
- Watch Closest Point
- Watch Instrument
- Show/Hide Relationship Watch

Added new MP commands:

- **Set PCMM Instrument XYZ Uncertainties.** Provides a means to set the uncertainty parameters for a PCMM arm.
- **Get PCMM Instrument XYZ Uncertainties.** Returns the current uncertainty parameters for a PCMM arm.
- **Set XYZ Instrument Uncertainties.** Provides a means to set the uncertainty parameters for any XYZ uncertainty based instrument.

- **Get XYZ Instrument Uncertainties.** Returns the current uncertainty parameters for any XYZ uncertainty based instrument.
- **Subtract two Point Name Ref Lists.** Provides a means to removed points from a list based on a comparison between two lists.
- **Append two Relationship Ref Lists.** Provides a means to combine two relationship lists.
- **Watch Point to Edge.** Provides a means to open a watch window that displays deviations after compensating point offsets to a first reference object.