New SpatialAnalyzer Version: SA 2023.1

One of the significant 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.

SpatialAnalyzer

SA's branding, logos and icons have changed starting in 2023 to support greater integration and unity with other Hexagon products and the NEXUS platform.

Redesigned SA About dialog with new logo with improved access to license information.

CAD IMPORT

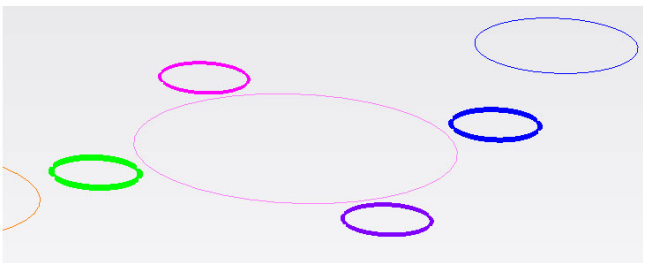
Updated CAD Import Libraries.

- Updated to: *Revit 2023*
- New format added: *Microstation DGN 7*

USER INTERFACE IMPROVEMENTS

Object Display Improvements

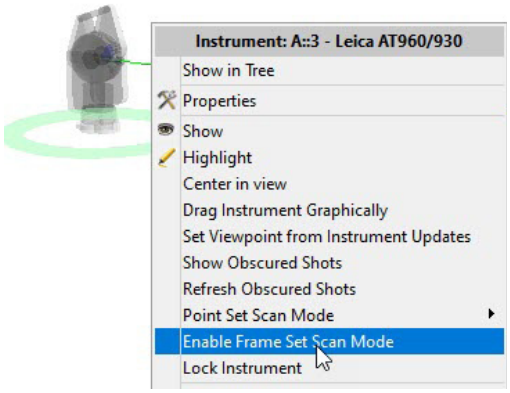
The line width used to draw objects can now be modified to highlight a single object (or set of objects) more clearly in the graphics. These changes include both a global setting and the ability to use Shift+ mouse wheel over the object of interest, in either the tree or the graphics, to adjust the size of a single object's display.



VMT

Frame Sets

Frame Set measurements can now be set per instrument as well as on a global basis and are enabled in the instrument properties.



Added support for multiple frame set measurements at the same time, collected as individual sets. This is accomplished using the saved object name (the object name appearing as the second note entry as “Object <object_name>”).

This is particularly helpful for photogrammetry systems which can now record the full motion of multiple 6D targets at high measurement rates in separate frame sets at once.

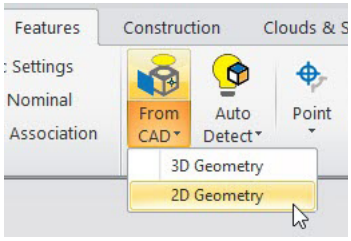
Simulation

Modified the random point generation to include a gaussian point generator. This allows a user specified range to be defined at a 6-sigma (center +/- 3 sigma) target volume.

FEATURE INSPECTION

Sheet metal Extractions

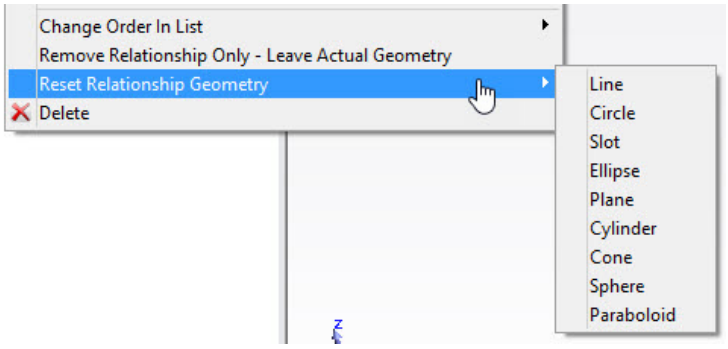
2D features such as circles can now be extract by clicking the top planar face of a CAD model. This greatly improves the ease of feature extraction when working with sheet metal parts.



Modified *“Get lines from CAD surfaces”*, *“Get circles from CAD surfaces”*, and *“Get points at center of circle holes”* functions so that the user may restrict result to one side of surface. This was extended to associated MPs as well.

Improved Auto Detect Features

Auto Detect features detect and set the geometry type for you automatically as you measure. This geometry type can now be reset at any time. An audible que has also been added to clarify when the fit process is complete.



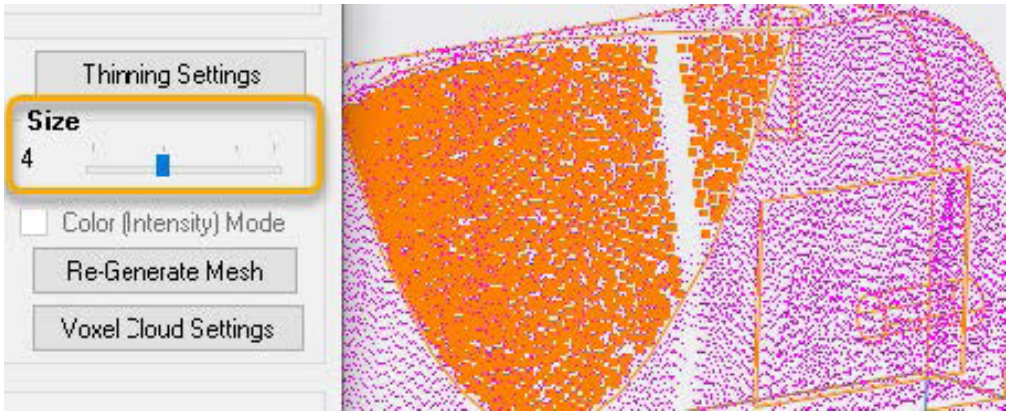
Align with Nominal Expanded

The Align with Nominal option within GR-Feature fit settings has been expanded to clarify reports for values such as the angle between. This option was only available for circles and cylinders in prior versions but is now offered for all GR-Feature types.

CLOUD BASED INSPECTION

Added Cloud Point Size Control

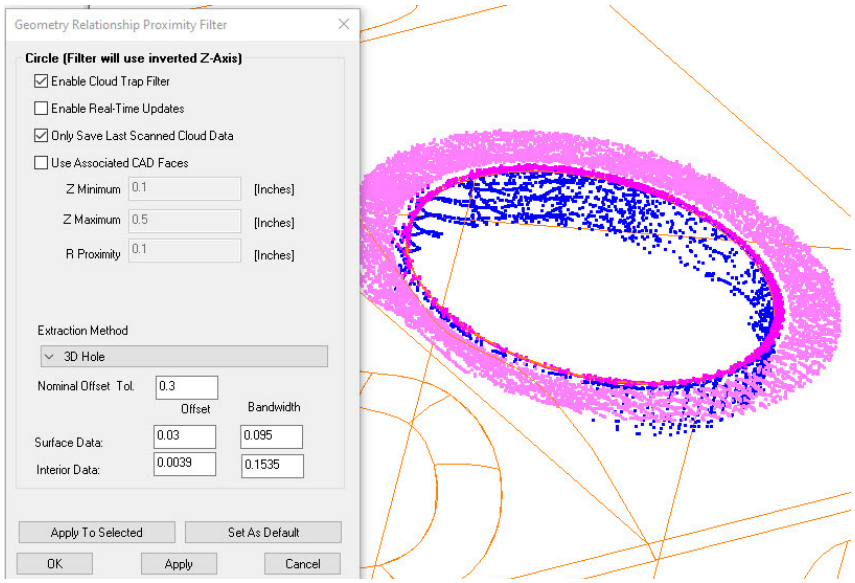
The size of the display of individual cloud points can now be modified for each point cloud independently. This makes it much easier to inspect a single cloud's point distribution while other clouds remain visible.



Added advanced circle extraction methods for clouds

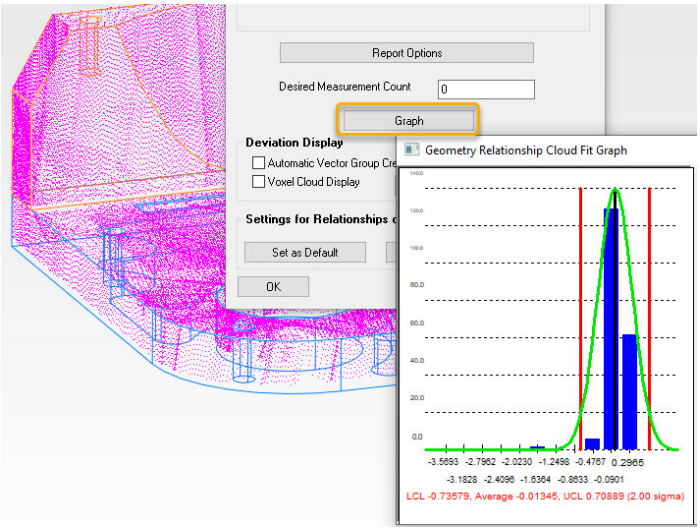
Proximity filtering for circles has been greatly expanded to off er both a local projection plane extraction as well as hole detection within the same feature. The following are now integrated options:

- **3D Interior Data.** This extraction matches our original method and typically requires a projection plane.
- **3D Hole.** Incorporates a local plane fit for projection as well as extracting data within the hole to refine circle diameter.
- **2D Hole.** Extracts a local projection plane and identifies the hole boundary points to define a circle. This setting can be used for sheet metal extractions
- **3D/2D Hole in a Cylinder.** Provides a means to extract a hole drilled into a cylinder where a projection plane is not appropriate.
- **3D/2D Flanged Holes.** Like 3D and 2D holes, this settings offer extraction of a local plane and data within the flange for diameter determination. This setting captures data above the projection plane as well.



Cloud to Object Relationships

Added a Graph button which provides direct access to a histogram display of cloud deviations. This can be used for a sigma level outlier rejection processing and outlier removal.



GD&T IMPROVEMENTS

Fixed an issue specific to the number of solved points reported when cross section evaluations are active. Replaced popup error message for missing direction reference with an evaluation error message for GDT Flatness checks.

REPORTING IMPROVEMENTS

Dimensional Improvements

Simplified dynamic numeric controls over position and placement.

Q-DAS Export

Adjusted DFQ file format to follow ISO Appendix section 8.3 “General data-model and writing rules”.

INSTRUMENT UPDATES

Added new SA Instrument SDK. This opens up the pathways to build your own interface to your own instrument within SA. It can be used by both 3rd party hardware developers and SA users to build a custom instrument interface. Contact Support@kinematics.com for more information.

New Instruments Added

API Dynamic 9D Ladar is now supported for use within SA.

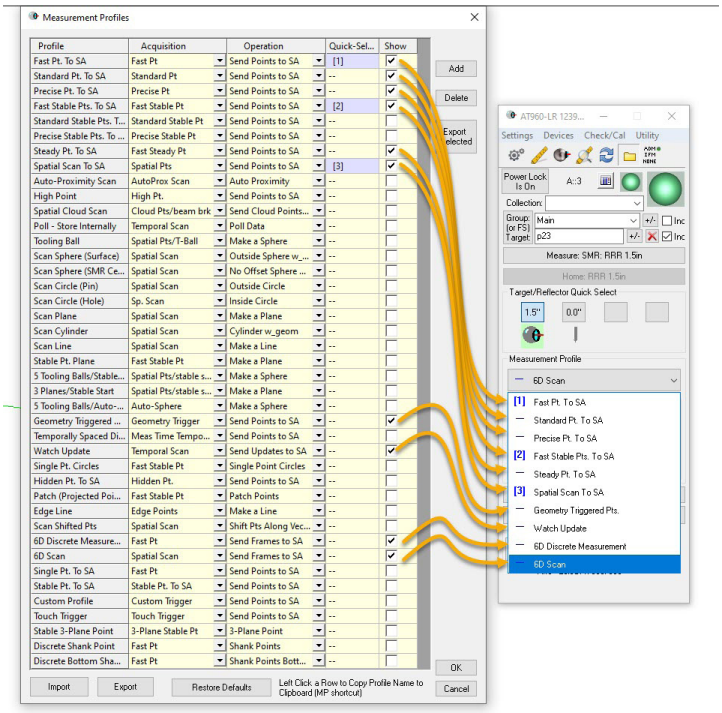
Integration includes a completely new and unique interface and advanced automation capabilities such as:

- Auto Measure Points
- Auto Measure Vector Group, and Surface Vector Intersections
- Auto Measure Batch of Features

It also includes direct access to the API's graphical camera and drive interface as well as configuration for multiple measure modes (Points, Spheres, Plans, Cylinders, Area Scans, etc). Even offers a flashlight.

Laser Trackers

Measurement profiles are are now much easier to manage. This version adds sorting options and visibility controls for measurement profiles. A simple basic set of profiles has also been established for each tracker type which can be accessed through the Restore Defaults option.



Total Stations

Added new Perimeter Scan Measurement Profile for automated grid measurement and can be used with any total station. Supports both Open and Closed perimeters.

All CMM Arms

The "Frame" Feature Measurement Profile has new functionality that allows a user to define an off set frame. The ability to directly trigger a MP script was also added as part of the frame measurement. This can be used to set a measured frame as working and import data into that frame, as an example.

Several bug fixes for MP integration and use of Auto Correspond With Proximity Trigger. See readme for details.

Hexagon Absolute Arms

Added programmatic switching between scanning and probing.

Nikon Laser Radar

Clarified the different "threshold" settings (added meaningful description per setting). The settings categories in Target Manager have also been clarified. See readme file for details.

The scan output default setting has changed to send a cloud to SA instead of a point group. It is the fastest way to generate the result.

Updated and improved Help Topics >> Measurement Plans (MP) Help dialog.

Added new MP Instrument Operational Check options:

- **SaveVideoFrame.** Save video frame as an image file. Supported formats are BMP, JPG, PNG, GIF, or TIFF
- **Is VideoOn?.** Off ers the ability to verify the status of the video streaming.
- **IRPowerWindow <ON/OFF>.** Open/Close IR Power Spectrum FFT Window.

- **SetScanPowerThreshold [].** Provides a means to set the can power threshold for the active target.
- **SetConfidenceThreshold [].** Provides a means to set the quality (confidence) threshold for the active target.

Added new MP command “LR Get Most Recent SNR Info” to get signal-to-noise-ratio information about the IR FFT.

Added new MP command “Auto-Measure Batch of Features” for auto measure of SA Geometry Relationships (Features) by MV430E/MV450E Gauging Engine (GE).

* Currently supported geometry types are circles, rounded slots, and rectangular slots.

Photogrammety

V-Stars

Added point uncertainty simulation capabilities. This capability had not been available in 64bit SA, until now. We also directly incorporate the full 3x3 covariance matrix from V-Stars with the measured points and offer ellipsoid visualization.

Surphaser Scanners

Updated Surphaser SDK to Build 517. This included expanded support for newer scanner models with a different chip integration. Marker Search now includes Rectangular and Circular. Found Marker points will now have a subscript stating their type: _Rectangular, _Circlular, or _Spherical

A new Camera tab has been added. See readme for details.

MP/SDK SCRIPTING UPDATES

Updates to Existing Commands

Added Graphic View width and height results to *Get Screen Resolution.*

Added a flag to create an attribute if missing in *Set XML Attribute.*

Added additional argument to return Collection Object Name from *Get Working Frame Properties.*

Drift Check and *Locate Instrument* dialogs were prompting for an “SA Point Request Measurement” for CMM Arms. This was causing issues with Measurement Plan work fl ows.

- This behavior is discontinued in favor of just starting a standard Discrete Points measurement.

* The *“Stop Active Measurement Mode”* command now waits for the instrument to say it is done before aborting the measurement.

- This is a behavioral changed for all instruments. Please let us know if you see any issues with your MP(s).

BUGS AND FIXES

Import

Improved store/load time for point set data.

Uncertainty

Wrong distance reported for front/back shots measured at polar zenith. Changed bundle algorithm to basic average when measured from same instrument.

Reporting

Fixed problem with UDP not being reported when enabled in Frame to Frame Watch Windows. Related to change in 2021.3.