What's New In SA

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.

2017.08.11

SA Toolkit Enhancements

Added Inspection Status Icons

Customers have asked for an easier way to identify the status of GR-features in both the tree and SA Toolkit. To accomplish this we've changed the feature icon to display the feature's current status. Feature icons now display four states:

1. Unmeasured

2. Measured

3. Tolerance set - Pass

4. Tolerance set - Fail (or mixed status)
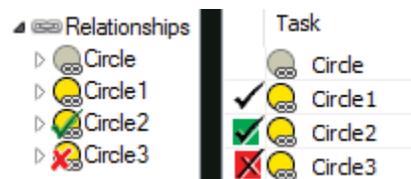
The status icons are displayed differently in the tree and the Inspection Tab of the SA Toolkit. In the tree, the icon is condensed with the check mark on top of the feature icon. In the task bar, these are separated to make it easier to view the status.

Improved Properties Control for Relationships

Relationships are very powerful tools with many settings. Customers have asked for an easier way to adjust settings for multiple relationships or features at one time, so we have expanded the "Set as Default" and "Apply to Selected" options.

Changes include:

1. The Points/Groups to Objects/Surfaces and Group to Group relationships dialogs are easier to read, edit, and provide "Apply to Selected" control:
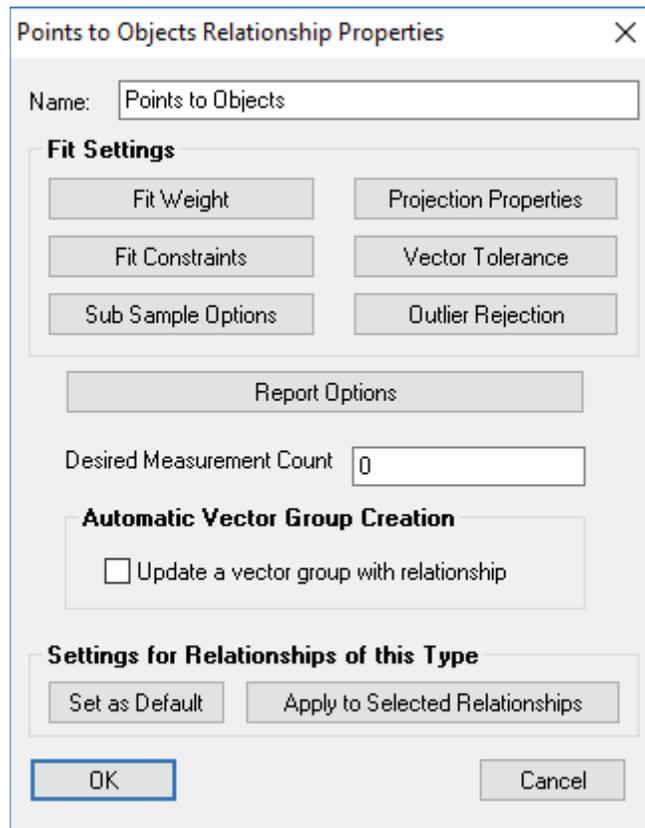
2. The "Apply to Selected" dialog now provides selection of components to apply and a preview of which features are to be applied to the selected relationships/features. These same controls are also available in the Set as Default control.

3. The name control dialog for cardinal points was redesigned to allow users to more easily define and combine cardinal points in the desired point groups. This includes adding greater Cardinal Point configuration, on/off control, and improved group and collection tracking. Cone cardinal points were also expanded to better define measured extents, shifting the point on axis to the center of the large measured end, and adding a new point at the center of the smaller measured extent.
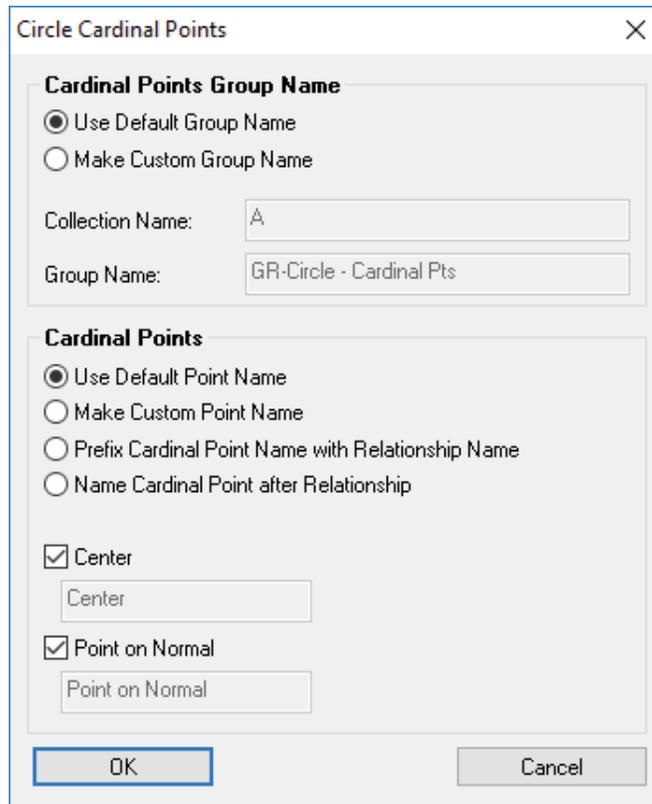
The following new controls were also added:

- Added new capabilityto apply "Projection Plane Settings" to the selected relationship of the same type. The feature is limited to Geometry Relationship, Average, and Dynamic Point Relationships only.

- Added the ability to apply sub-sampling to the selected relationship as well as for cloud oriented GR-Features.

- Added Line direction control to the fit settings.

Group to Nominal Group Improvements

- Implemented option to activate view proximity zooming for group to nominal group relationships
- Added a rejection threshold so that points taken too far away from the nominal points will not be included in the relationship.
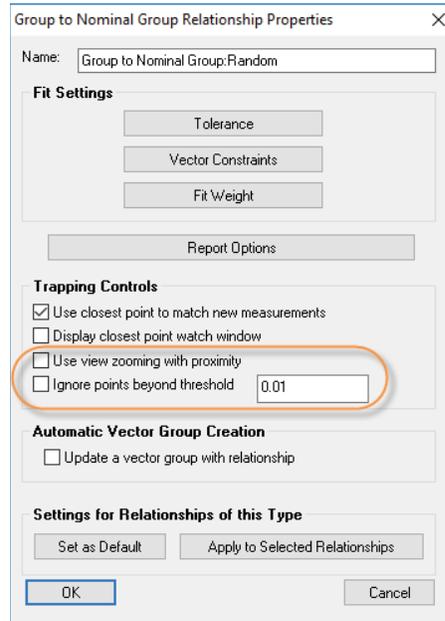
Added Make Geometry Relationship Option to Geometry Fit Interface

When points are already measured within a job file, the best tool to build geometry from those points is the Geometry Fit Interface. This same tool can now be used to build geometry relationships. It provides a geometry selection and fit settings preview and those settings can be applied to the relationship when the Next or OK button is pressed.
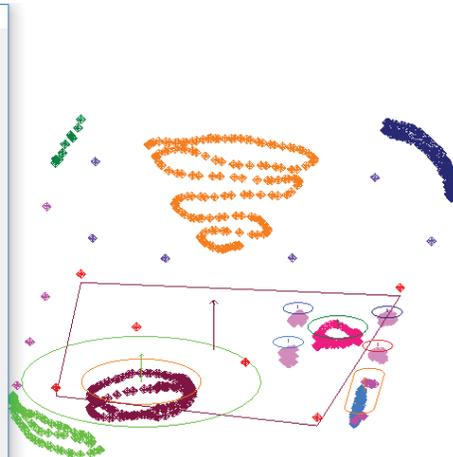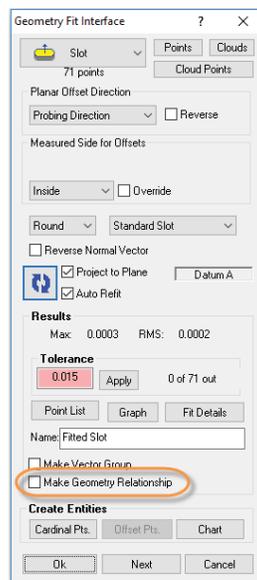
Colorization Control Enhancements

Improved Colorization Dialog

The vector Colorization control has been overhauled to provide new display options and more streamlined control. Improvements include the following new features:

- New Color profile selection drop down list
- New Color Profile Properties control for color selection and the ability to change the in tolerance color.
- "Set Symmetric" button for easy tolerance and warning configuration with a single value entry.
- Sigma threshold and custom limit controls for color transitions.
- Improved color bar preview.
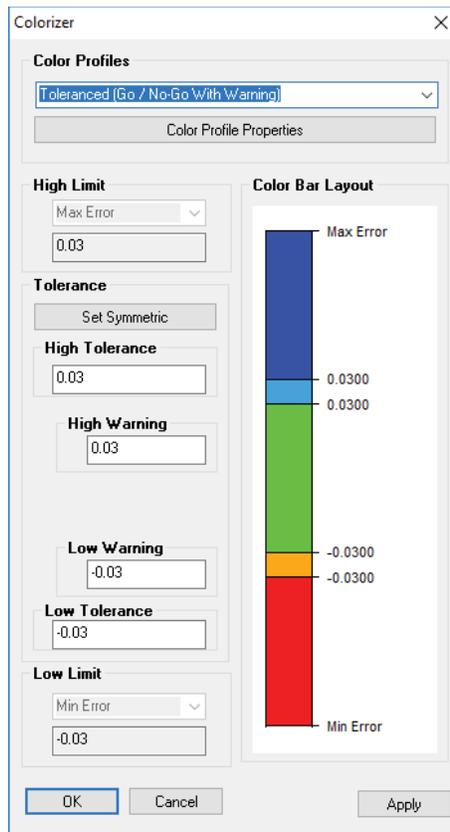
Improved Vector Default Settings

The default vector settings were previously available, but have now been cleaned up and clarified within the **Users Options> Colorization Controls.**
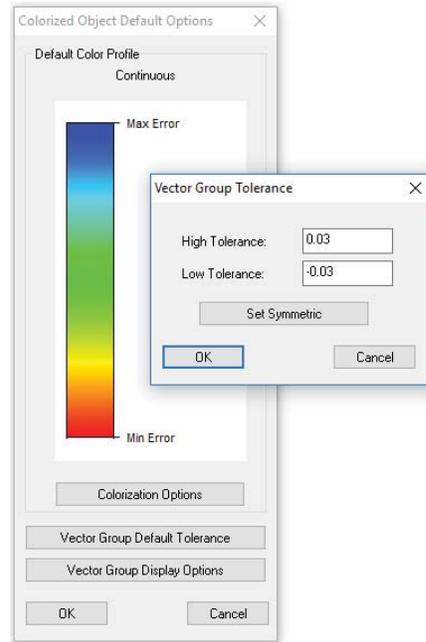
Addition of Discrete Color Display Options

Discrete colors have been added as a colorization option including:

- Option to display discrete colors in any of 4,8,12 steps.
- Option to display discrete colors at a fixed distance as an alternative to equal distribution relative to the data's extents.
- Added Grey scale and a special colorization scheme for color blindness (deuteranopia).
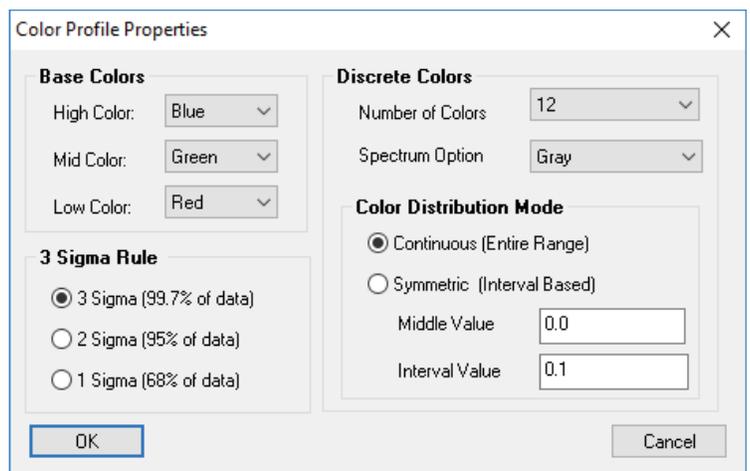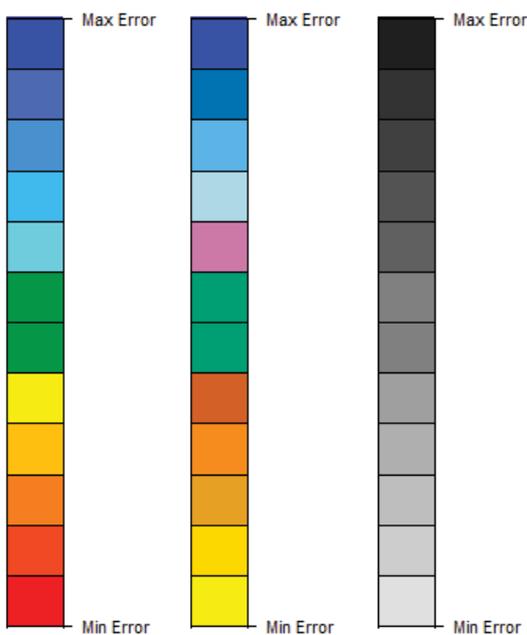
Point Clouds

- Greatly improved memory utilization for Scan Stripe Clouds.
- Modified **Construct>Point Clouds>From Existing Clouds>Uniform Spacing** to use a faster uniform spatial decimation method.

Auto Filter for Feature Extraction

Users can now build cloud based features directly from a scan by filtering to nominal. Align to the part and scan, then go to **Relationships>Geometry Comparison>Auto-Filter to Nominal.**

This auto-filter function will detect the cloud points with a specified proximity to the nominal feature, build a new subset cloud, and as-sociate that cloud with the feature. This tool effectively provides a means to extract the relevant features from a cloud based upon a CAD reference.

Cloud thinning options and an advanced volume filter (Voxel process-ing) is available, as well as full proximity controls to exclude edges and other features within a close proximity.
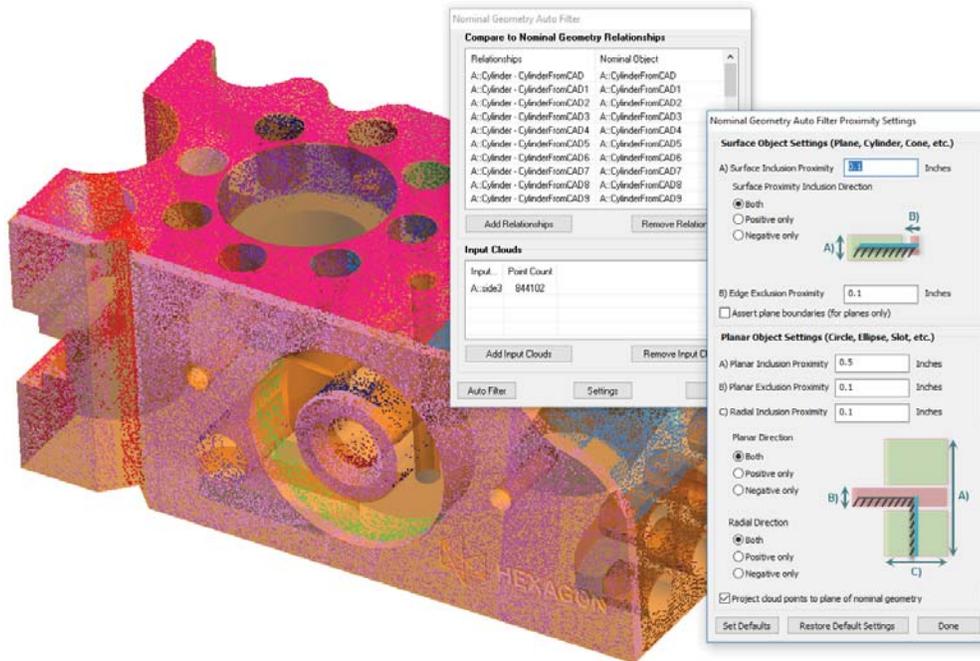
Cross Section Cloud

A new Cross Section Cloud has been added to SA. The build dialog provides the necessary controls to define the filtered cloud sections. As inputs, it requires a reference object which defines the direction axis for the cloud processing. This can be any object that defines a direction and can also be used with a b-spline, where planes will be added normal to the spline at the distance along its curve.

Once built, the Cross Section Cloud provides visualization control for each section independently as part of the cloud properties.
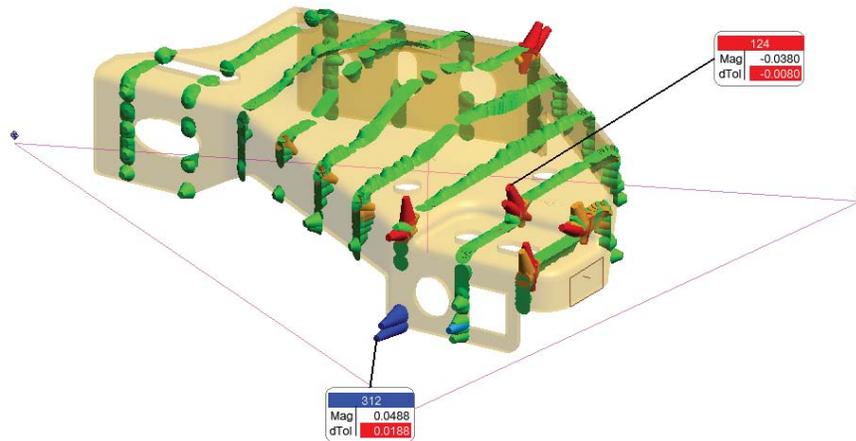
Added Screen Oriented Blotch Display

Blotches can now be set oriented toward the screen rather than along the vector axis. This makes it much easier to view blotches from the side and can be helpful for cross section reporting.
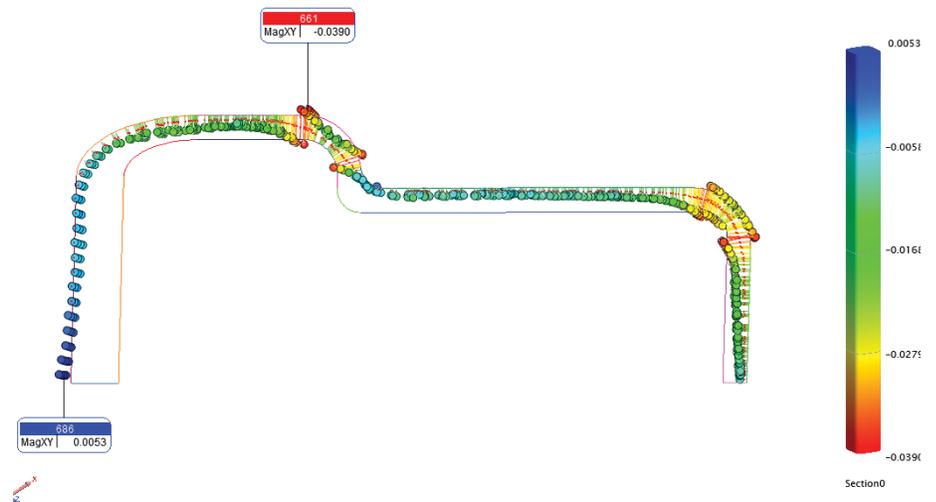
Meshing Capabilities

Added capability to generate a course mesh from legacy cloud data such as that generated by room scanners. This can be very helpful for visualization purposes.

GD&T Improvements

Activated cones as GD&T features available for GD&T operations such as Circular and Total Runout checks.

Added auto vectors for display of GD&T surface profile deviations. This option provides the means to visualize the deviations relative to the nominal feature.
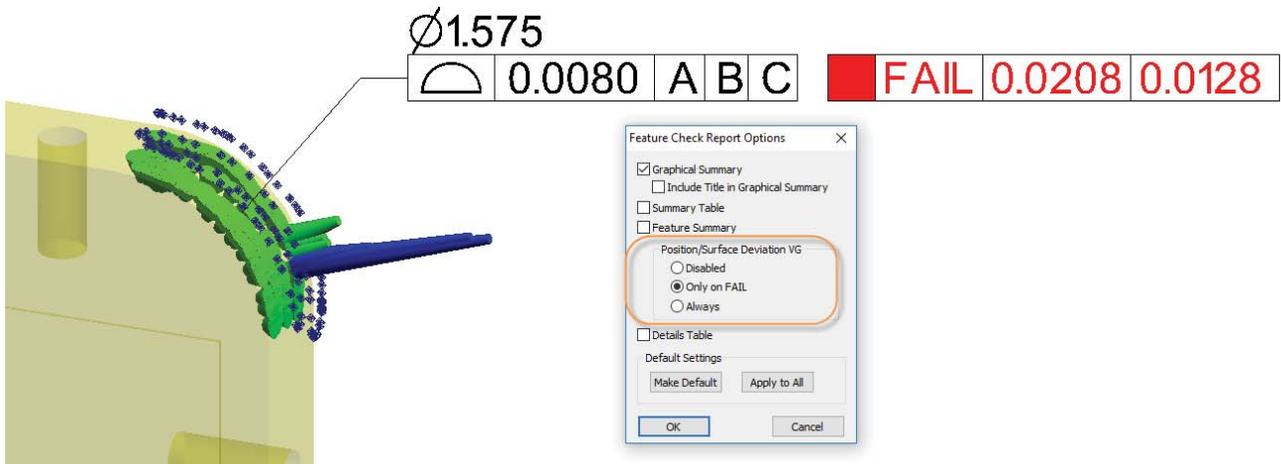
The ability to right-click on a datum or feature check and center the graphics on that feature of interest has been added.

Report table formats have also been updated to provide a cleaner and more condensed layout.

Speed Improvements

Cylinder and Cone fits have been significantly accelerated using an advanced guess algorithm. This option can be enabled or disabled as needed through the geometry fit settings.

Modified the function of the delete key to allow selection of any object type from the tree for easier job cleanup.

Navigation Improvements

A new Graphical Control Toolbar has been added to SA.

This toolbar collects the graphical control icons previously distributed in the Main Toolbar with additional functions including:

- **Set Rotation.** Set rotation point for the view now persists as an On/Off control.

- **Instrument View.** Set view from instrument updates is now an On/Off switch (double click to access the full panel).

- **Selection Mode.** Graphical selection can now be toggled between rectangular and polygon selection with a single click.

- **Mouse Configuration.** Left-mouse button function can now be adjusted to provide right-click and center mouse (pan) button controls for tablets with a single mouse button.

The middle mouse button now functions as a panning control when held down. This can also be used during graphical selection.

Instrument Updates

Added support for the Leica AT403

Improvements over previous AT40x models include faster stationary measurement, new continuous time (10Hz), and distance measurement modes, as well as improved B-Probe speed and performance.

Surphaser Interface Redesign

The Surphaser interface has been completely rebuilt to provide significantly greater scan control and many new features such as distance and intensity filters, image based scan region selection, and scan parameter set recording. Integrated using SDK v.3.12.

Measurement Plan

New MP command were added:

- **Get Boolean From DataShare File.** Returns a boolean from a specified datashare file.

- **Set Boolean in DataShare File.** Sets the specified boolean in a designated datashare file.

- **Get Point Properties.** Two new arguments have been added to this command in order to view point weights and tolerance setting information.

- **Get Point Tolerance.** This command returns the full point tolerance settings.

- **Set Relationship Dormant Status.** This command provides the ability to temporarily postpone the refresh of selected relationships by setting their dormant status.

- **Set Named Double List Variable.** Defines a variable composed of a list of doubles.

- **Get Named Double List Variable.** Returns the list of doubles from the specified variable.

- **Add Double to Named Double List Variable.** Adds a double to a list variable.

- **Get Named Double List Variable Min/Max.** Returns the largest and smallest values in a double list variable.

- **Clear Named Double List Variable.** Empties a double list variable.

- **Construct Ellipsoid.** Builds an ellipsoid of the specified size.

- **Enable All Cloud Cross Sections.** Displays all the cross sections in a cross section cloud.

- **Enable/Disable Cloud Cross Sections.** Turns on or off a single cross section by index number.

- **Enable Single Cloud Cross Section.** Turns off all but the designated cross section by index number.

- **Get Number of Cross Sections in Cross Section Cloud.** Returns an integer with the number of cross sections defined in the referenced cloud.

- **Get Instrument Part Temperature.** This command returns the current part temperature reading from the selected instrument (trackers on).

SA CAD Validation Tester

A separate stand-alone CAD validation application is now available on our website for download.

http://kinematics.com/download/downloadindex.php
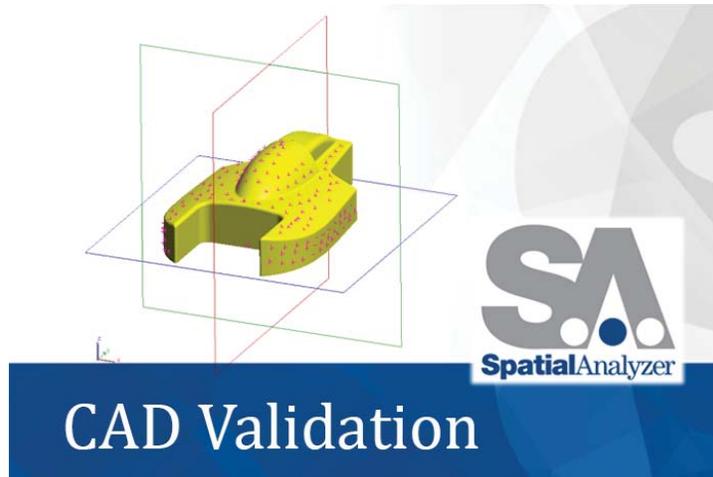
This utility provides a streamlined means to do the following:

- Define stand alone test reference files which contain lists of CAD files and reference Points for verification. It uses a simple independent ASCII reference point file to verify the imported CAD Model in SA and provides the ability to verify all the file formats supported by SA's Direct CAD Import functionality (including support for Dassault's Catia, Solidworks, Siemens NX, PTC Creo, Autodesk Inventor, Rino, standard formats and more).

- Allows defining statistical tolerance thresholds for acceptance and rejection for each CAD file evaluated.

- Provides a separate and independent connection to SA for verification purposes

- Delivers a simple user interface and a RUN button to perform a verification process with as detailed a verification as is required.