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.

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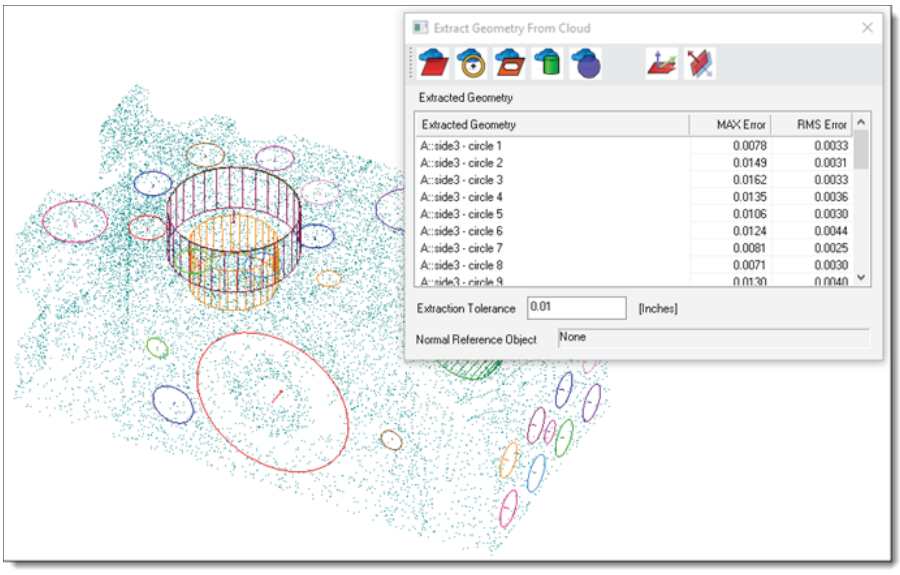
Point Cloud Operations

Feature Extraction from Unstructured Cloud Data:

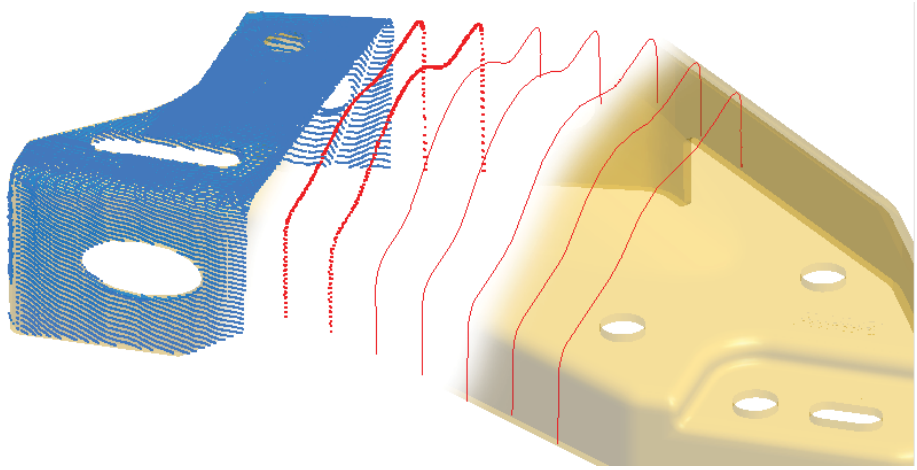
SA now offers a powerful cloud extraction tool designed to find and extract geometry from a point cloud without CAD or any nominal reference by simply clicking in a relevant section of the cloud. SA then searches and detects geometry that fits the tolerance criteria (in SA Ultimate only).



A second surface circle extraction option has also been added that allows a user to detect geometry within a specifed proximity to a set of nominals and build the fi t geometry from point clouds where only the surface can be scanned (such as is the case when working with sheet metal). This function does not require CAD, but can use a set of reference geometry directly as guidance.

Added B-Spline from Cross Section Cloud:

This new tool was added to build b-splines from Cross Section clouds. It uses a click starting point to guide search along a curve to much more accurately and easily build b-splines from cross sections.



SA Toolkit Enhancements

Right-click Align Option for Relationships

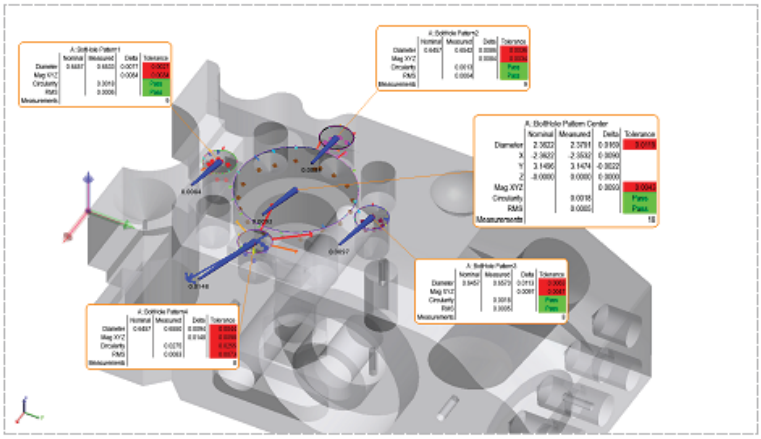
A simple right-click **Execute Alignment** option has been added to four relationships types:

Group to Group and **Group to Nominal Group** now offer an option to perform a Best-Fit operation using the points included in the group to group relationships, aligning the second or measured group to the nominal.

Frame to Frame and **FrameWizard Relationships** now offer the ability to align the second or measured frame with the nominal frame.

Custom Reporting Tables for Geometry Relationships

Custom report tables can now be built from a subset of geometry relationships. These tables include all the information found in a regular compare to nominal report, but in a more condensed and manageable format.

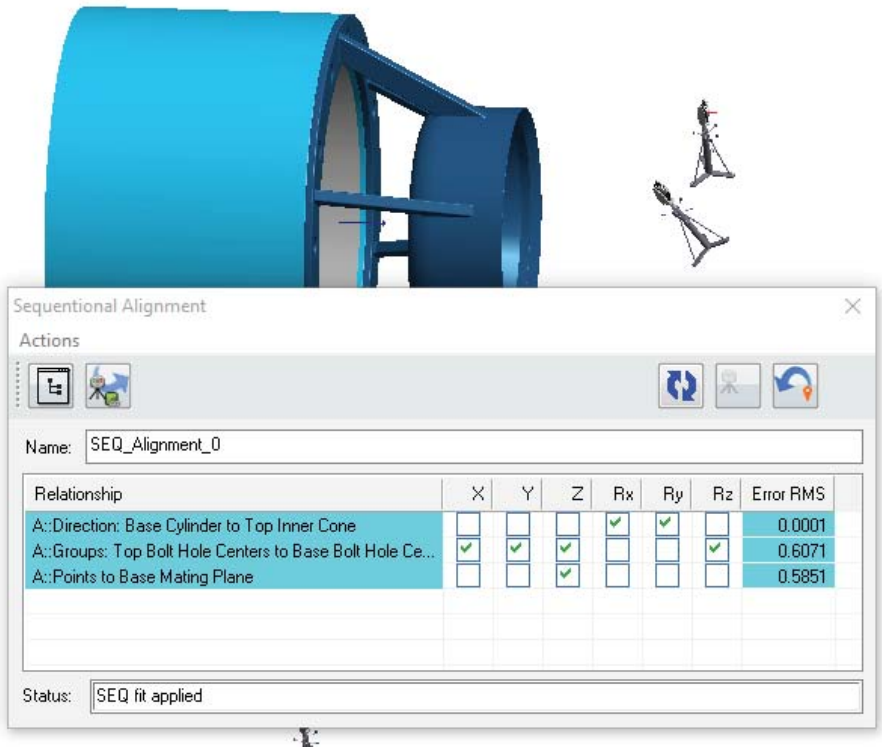


Geometry Relationship Summary A::BoltHole Pattern1						
Criteria	Nominal	Measured	Delta	Low Tol.	High Tol.	Tolerance
Diameter	0.6457	0.6533	0.0077	-0.0050	0.0050	0.0027
Mag XYZ			0.0084	-0.0050	0.0050	0.0034
Circularity		0.0018		-0.0020	0.0020	Pass
RMS		0.0006		-0.0010	0.0010	Pass
Measurements						9
Proj. Plane						GR-Top Plane
A::BoltHole Pattern2						
Criteria	Nominal	Measured	Delta	Low Tol.	High Tol.	Tolerance
Diameter	0.6457	0.6542	0.0086	-0.0050	0.0050	0.0036
Mag XYZ			0.0084	-0.0050	0.0050	0.0034
Circularity		0.0013		-0.0020	0.0020	Pass
RMS		0.0004		-0.0010	0.0010	Pass
Measurements						9
Proj. Plane						GR-Top Plane

Sequential Relationship Alignment:

A new sequential relationship alignment process has been added to SA. This tool is designed to provide a streamlined means to apply one relationship optimization after another while predefi ning the degrees of freedom used with each relationship relative to a designated frame.

This tool is ideal for GD&T style alignments, providing an way to align to curvy surfaces in a sequential way with defined degrees of freedom. It combines the best parts of an RPS alignment with the power of surface optimizations and is also saved as an alignment in the tree for easy recall and adjustment.



GD&T Improvements

GD&T Evaluations have been optimized to better handle cloud data. There is now the ability to eff e ctively s ubsample d ata a ssociated with a particular feature check as part of the evaluation process. This makes it easy to limit the number of points used in large planar surface, for example. We also report the number of cloud points used in the valuation as well as the ones included in the check.

USMN Enhancements

In the USMN interface, you can now select the frame used to define instrument motion as an alternative to using the individual instruments base frame. This provides a means to align instruments relative to each other in any orientation and hold that orientation independent of their own standing axis.

Also added is the option to pass a point offset on to the composite group created through the USMN analysis. This option makes it easier to include addition points in a USMN network and then fit geometry using those point offsets and the USMN network uncertainties.

Reporting Improvements

Dimension Enhancements:

Added option to project "Object to Object" and "Point to Object" dimensions to the XY-plane of a user specified reference frame. This provides the ability to display a 2D dimension component in these dimension types.

Instrument Updates

Added Support for the Leica LAS-XL Scanner

The new portable LAS-XL is a new ultra large-scale portable laser scanner and runs in the tracker interface, like the LAS. The LAS-XL requires RDS v.4.3.

Measurement Plan

New MP command were added:

- **Make a Callout View Ref List - WildCard Selection.** Produces a list of Callouts based upon the wildcard string search criteria.
- **Sort Callout View Ref List.** Sorts a list of callouts by name in ascending or decending order.
- **Get Number of Callout Views in Callout View Ref List.** Returns the number of callouts in a list.
- **Get i-th Callout View From Callout View Ref List.** Returns the i-th callout from a list.
- **Add a Callout View to Callout View Ref List.** Appends a callout to a list of callouts.
- **Set Default Callout View Properties.** Provides a means to set

the default Callout properties for a job file.

- **Set Relationship Voxel Cloud Display.** Provides a means to enable and disable Voxel Cloud displays for Clouds to Objects relationships and define the display characteristics.
- **Set Active Integrated Language.** This command sets the SA job files default language to one of the integrated language options also available through **File>Language Translation.**
- **Set Active Custom Language.** This command allows the user to browse for a custom language and set it as the working language in the job.