New SpatialAnalyzer Version: SA 2017.01.12

One of the very 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 new or requested features in a very short time.

SPEED IMPROVEMENTS

Enhanced Graphical Display Speeds and improved graphic display performance with Point Clouds by about ~30 times what it was previously.

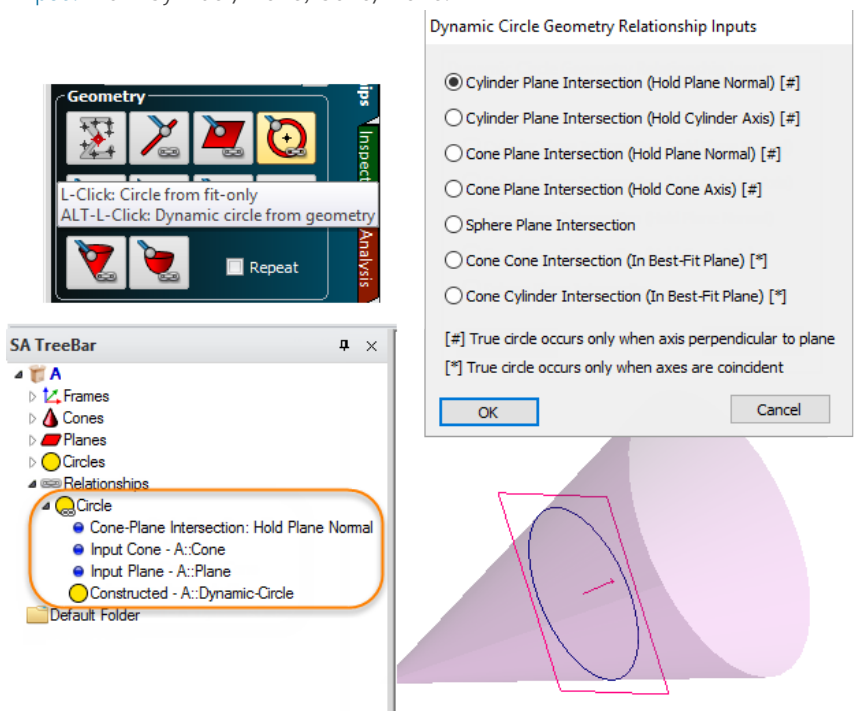
Accelerated cloud optimizations and drag instrument commands.

SA TOOLKIT

Added Dynamic GR Intersection

SA now offers the ability to not only easily compute intersections between objects but to do so dynamically. This includes:

+ Dynamic Points. From two Lines, Line/Plane, Cylinder/Plane, Cone/Plane, three Planes.
+ Lines. From Cylinder axis, Cone axis, two Planes, Bisect two Lines, Center of Slot.
+ Plane. Bisect two Planes, Cone/Cone, and Cone/Cylinder.
+ Circle. From Cylinder/Plane, Cone/Plane, Sphere/Plane, Cylinder/Cone, and Cone/Cone.
+ Ellipse. From Cylinder/Plane, Cone/Plane.



+ Average Point Relationships now have a Point List and Deviation Graph like other geometry relationship types.

GUIDED BY VMT

GD&T

Added Import of Screen Oriented Annotations

Many CAD packages offer the option to allow annotations to rotate with the graphical view so that the annotations always face the viewer. While SA could previously build annotation in this format, we now support direct import of those annotations from CAD packages as well.

GD&T Inspection Summary Table

Customers have been asking for a means to provide a condensed summary of specific checks and their results. To do this, we added a new GD&T Custom Summary Table function that allows you to select feature checks to report and build a custom table with those checks.

GDT Feature Check Summary									
	Check Name:	Tolerance	Special Characters	High Tol	Low Tol	Datums	Results	Measured Deviation	Distance Out of Tolerance
A									
∠	Geometrical Tolerance.18	0.2500				C	PASSED	0.0004	0.0000
∠	Geometrical Tolerance.19	0.5000				B	PASSED	0.0001	0.0000
⌓	Geometrical Tolerance.28	0.0120				ABC	PASSED	0.0018	0.0000
⌓	Geometrical Tolerance.34	0.0080				ABC	FAILED	0.0208	0.0128
▱	Geometrical Tolerance.38	0.0040					PASSED	0.0005	0.0000
//	Geometrical Tolerance.39	0.0150				C	PASSED	0.0008	0.0000
↗	Geometrical Tolerance.40	0.0040				D	PASSED	0.0009	0.0000
⊥	Geometrical Tolerance.41	0.0020				B	PASSED	0.0004	0.0000
⊥	Geometrical Tolerance.43	0.0200				AB	PASSED	0.0010	0.0000
Ø	Dimension.6	0.7870	Ø	+0.0040	-0.0040		PASSED	0.7883	0.0000
	Dimension.8	0.3940		+0.0100	-0.0100				
	Dimension.9	1.9690		+0.0020	-0.0040				
	Dimension.14	3.1500		+0.0050	-0.0100				
⊥	Geometrical Tolerance.42	0.0200				A	PASSED	0.0005	0.0000
	Dimension.17	1.1810		+0.0100	-0.0100		PASSED	1.1810	0.0000
⌖	Geometrical Tolerance.35	0.0200 0.0100	ØⓂ ØⓂ			AEⓂB A	PASSED	0.0011 0.0011	0.0000 0.0000
Ø	Dimension.13	1.5750	Ø	+0.0080	-0.0040		PASSED	1.5754	0.0000
Ø	Dimension.16	0.3940	4xØ	+0.0040	-0.0040		PASSED	0.3951	0.0000

GD&T Feature Summary Table

An additional Feature Summary table has been added to the reporting options for Feature Checks. This is especially helpful for Position checks on multiple features because it offers a condensed version of the information that was previously in the Details table. It also offers bonus tolerance reporting and vector deviation results at the solved point locations.

4 - HOLE PATTERN

⌖ ø0.0200ⓂAEⓂB
ø0.0100Ⓜ A

CHECK PASSED 0.0011 0.0011

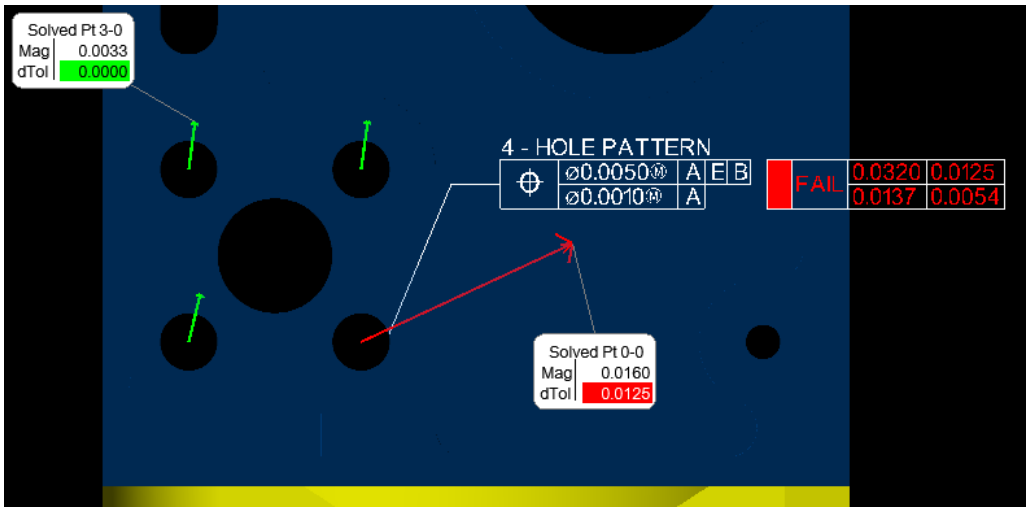
GD&T Composite True Position Check Geometrical Tolerance.35 (Reported in A::WORLD)											
Feature Summary											
Tolerance Zone	0.0244			Meas Dev	0.0011			Dist Out	0.0000		
Cylinder											
#Points	Nominal Radius		Actual Radius		Delta	Nominal Length		Actual Length		Delta	
78	0.1969		0.1971		0.0002	0.5906		0.1168		-0.4737	
	Nominal			Actual			Deviation				
	X	Y	Z	X	Y	Z	Dx	Dy	Dz	Mag	
Solved Pt 0,0	1.9685	3.7402	0.5586	1.9680	3.7398	0.5586	-0.0005	-0.0003	0.0000	0.0006	
Solved Pt 0,1	1.9685	3.7402	0.6754	1.9683	3.7404	0.6754	-0.0003	0.0002	0.0000	0.0003	
Feature Summary											
Tolerance Zone	0.0252			Meas Dev	0.0009			Dist Out	0.0000		
Cylinder											
#Points	Nominal Radius		Actual Radius		Delta	Nominal Length		Actual Length		Delta	
38	0.1969		0.1975		0.0006	0.5906		0.1226		-0.4680	
	Nominal			Actual			Deviation				
	X	Y	Z	X	Y	Z	Dx	Dy	Dz	Mag	
Solved Pt 1,0	1.9685	4.9213	0.6164	1.9687	4.9214	0.6164	0.0002	0.0001	0.0000	0.0002	
Solved Pt 1,1	1.9685	4.9213	0.7390	1.9689	4.9214	0.7390	0.0004	0.0002	0.0000	0.0005	

Improved Cylinder Evaluation Controls

+ Additional evaluation options have been added to True Position checks to allow either evaluations to be conducted to the extent of the measurements or extrapolated to the full extent of the nominal feature.
+ An option was added to restrict the auto-evaluation mode for cylinders to exclude full cylinder evaluations. This can be helpful when measuring a part with a minimal number of points and looking for 2D position deviation results.

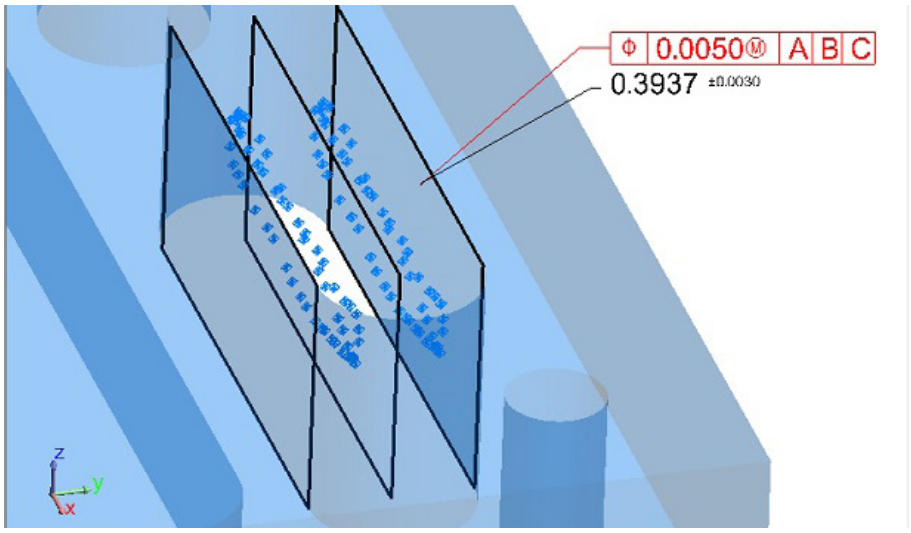
Vector Position Reporting

We have also added an option to display these position deviation results as a vector group in the graphics automatically as the check is evaluated. This Go/No Go vector group inherits the tolerances from the feature check and displays the deviations relative to the nominal feature. This makes it much easier to identify, for example, if a single hole in a group of holes is out and in what direction.



Width Datums and Open Slots

Support has been added for open slots and width datums. By selecting a set of parallel planar features and marking the annotation as a slot, the midplane for those features is now automatically computed and used for the evaluation. True position with material modifiers can also be used for open slots in conjunction with a width check.



+ Screen oriented annotation import.
+ Improved distance between feature detection logic.

Accelerated Position Evaluations

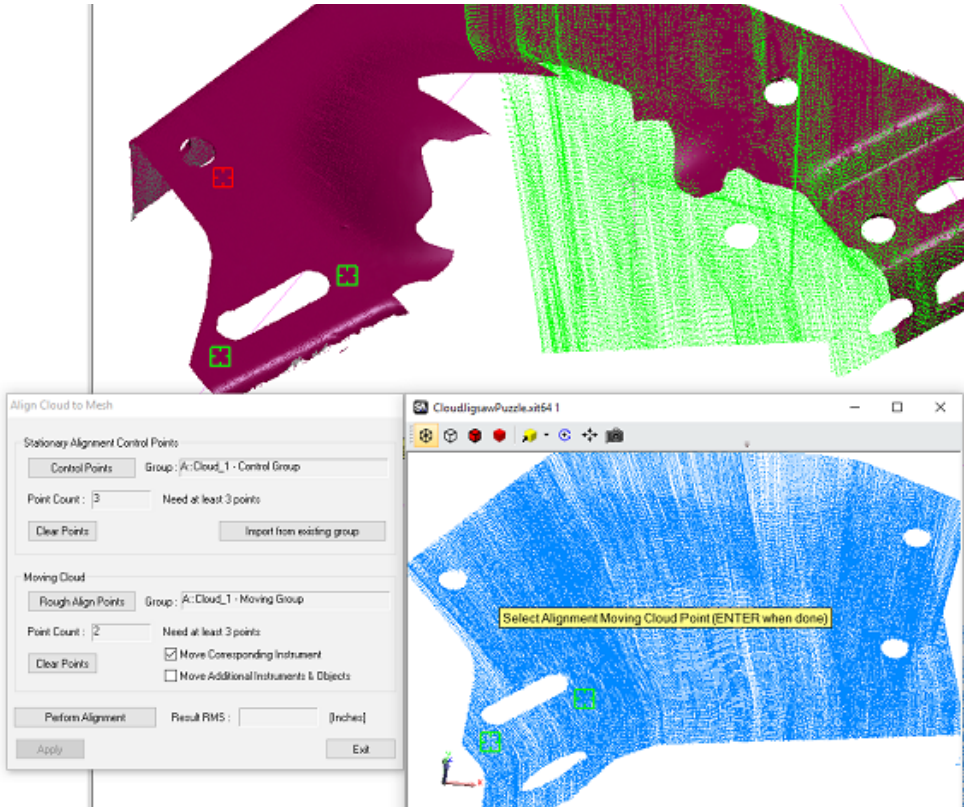
Many customers need to inspect the position of lots of holes on a large part in a quick and efficient way. Efforts were made to accelerate the construction of annotations and ease of inspection.

+ Addition Position checks for a series of holes can now be added at one time using a right-click option from the SA Toolkit. This option allows you to select many features at one time using F2 select or a series of CAD faces and add individual position checks to each feature.
+ When incorporating a material modifier with the position check, the diameter check can be added at the same time to each of the features along with the position annotations. The addition of the @M or @L symbols in the tolerance field will trigger a prompt to build a diameter check at the same time.
+ True Position checks can also now be added to lines and circles and evaluated with only one point. This makes quick evaluations easier to perform.

CLOUDS

Added Align N Points to Objects

This new function provides the ability to align cloud to cloud, cloud to mesh, mesh to mesh, or cloud/mesh to CAD. It works by providing a utility to help the operator select corresponding points to use as a best fit. From this starting point, a final optimization is performed between the selected features to finalize the alignment.



Added “Cloud Bounding Box” section to a “Point Cloud Properties” dialog. Predominantly a diagnostic tool, it is used to identify outliers and visualize the extents of the cloud. We are now using it as a visual function when you move or rotate an instrument so that you can see the position and orientation of the cloud as you move it graphically with far fewer points displayed. It is also used under the covers for selection purposes to help increase the speed of jobs displaying millions of cloud points.

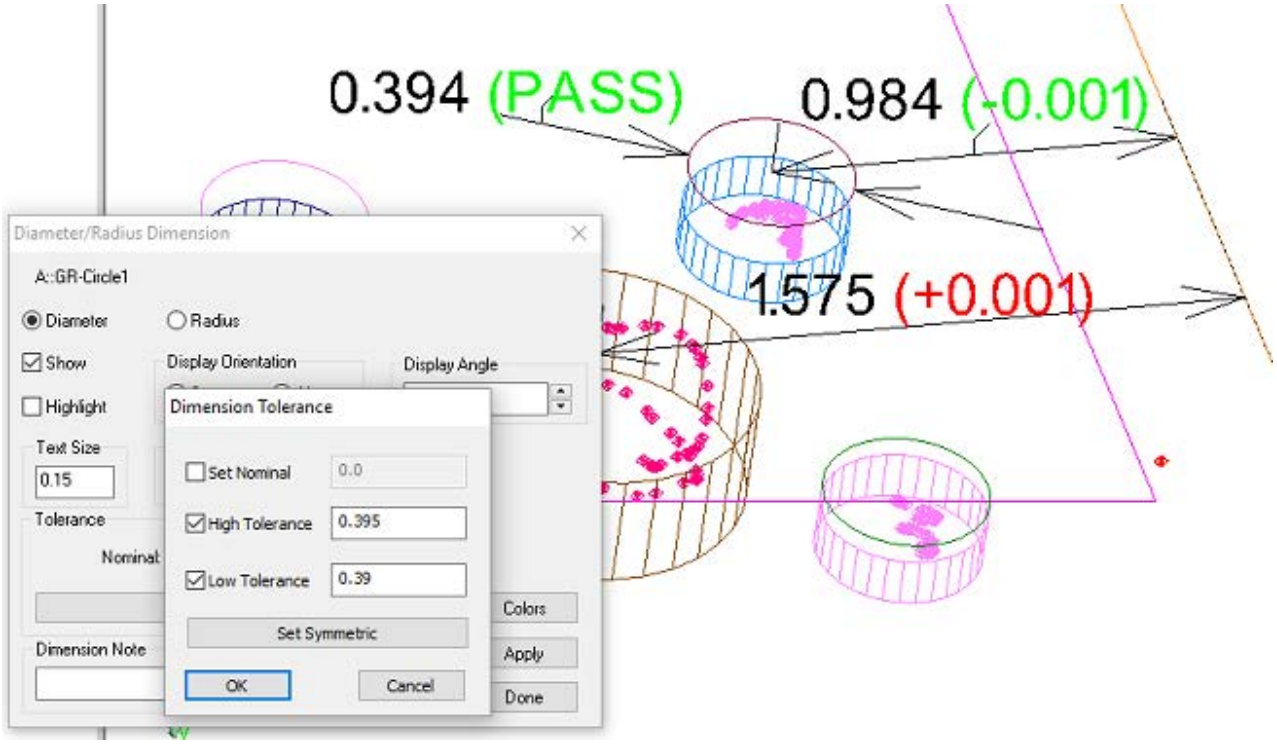
CALLOUTS & DIMENSIONS

Geometry Relationship Callout Enhancements

Callouts added to geometry relationships now have controls for multi-selection. An apply to selected option was added, and set as default options. A title only option was added as well, providing the ability to add and configure callouts at one time.

Dimensions Now Have Tolerances

The ability to add tolerances was incorporated in SA's dimensions. These can be set either as a nominal +/- value or a range and are reported both graphically and in the report tables.



INSTRUMENT UPDATES

+ Creaform VX Elements interface was added to support the MetraScan 3D and HandyProbe Next.
+ Laser Radar SDK upgrade to v8.1.2.2676.
+ MS60 improvements including improved depth and resolution control, angles only perimeter definition, and embedded video display. Significant improvements were also made in the reliability of scan data transfer over wireless connections.
+ Laser Tracker interface now supports updating probe changes during an active scan measurement.
+ GSI VStars upgrade to include support for 6D targets.

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