# New SpatialAnalyzer Version: SA 2018.05.01

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.

FEATURE MEASUREMENT ENHANCEMENTS

Detect Nominal Geometry by Proximity

Added "Detect SA Object Nominals by Proximity" to the relationship tab of the SA Toolkit and the **"Relationships -> Geometry Comparison -> Detect Nominals by Proximity"** menu. This function allows you to select a set of SA objects and detect from those the appropriate nominal to associ-ate to your measured features based upon proximity. It also automat-ically renames your features using the nominal object names. Both Nominal Feature extraction from CAD and this new object detection tool are available through the Utilities section of the SA Toolkit.
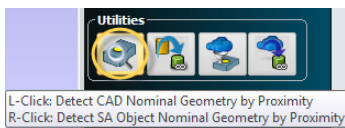
Auto-Filter Points to GR Features and Relationships

SA now offers the ability to auto-filter points based upon proximity to the nominal features in a relationship. This includes geometry relationships with CAD Face references where the CAD face selections are used to isolate the points included in the filter. This filter can also be used with Points to Surface Face relationships. This filter has been added as an option in the **Relationships > Geometry Comparison > Auto Filter to Nominal Geometry > 3D Geometry**, as well as in the Utilities section of the SA Toolkit.
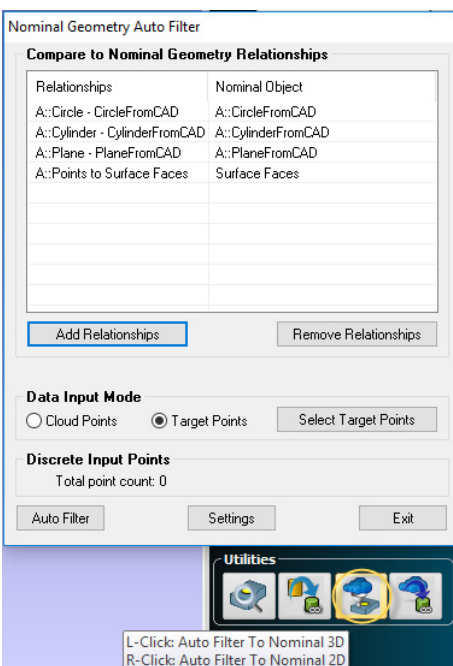
USER INTERFACE IMPROVEMENTS

Added Zooming options in the tree

Tree navigation and user interaction is essential in SA. To make this process easier, you can now magnify the text size. By holding Ctr + Mouse Wheel, you can scroll the tree text size up or down from 75% to 300% of its original size. Laptops that support pinch zooming can also access this feature when the curser is on the tree.

## GD&T IMPROVEMENTS

GD&T Auto Filter Enhancements

Added **GD&T > GD&T Auto-Filter for Selected Checks Only.** This option provides the ability to take greater advantage of the unique GD&T Auto Filter capabilities. Not only can you use it to filter to an entire inspection but also as a filtering tool to fill in associations with particular checks that are missing data.

GD&T Troubleshooting Improvements

Two options were added to help with troubleshooting datum alignments. These include an option to disable the initial datum alignment for feature checks. This can facilitate auto-association of input points for cases where the under constrained datum configurations cause a significant shift from the current job alignment.
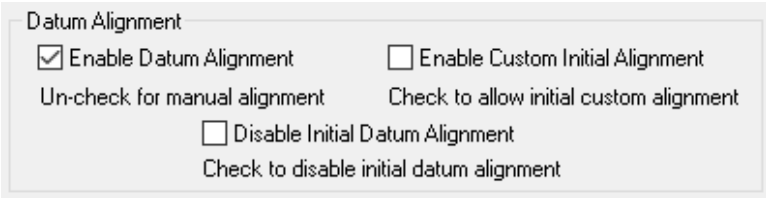

A second option was added to provide the ability to reference an initial alignment, which is particularly helpful when Offset Objects are used. A Sequential Alignment or RPS alignment can be directly ref–erenced in the Annotation properties to ensure that the evaluation starts from a well defi ned initial location.
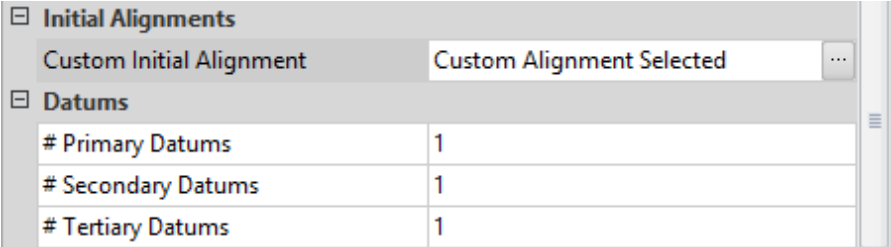
"Ignore Edge Projections" to feature check options (only for surface features) was also added.

Added Highlight Features Missing Data to the feature check right–click menu. This function provides an easy way to identify if features in a pattern check are missing measurements. This can be particularly helpful if, for example, a single check referen–ces many holes and will not evaluate because a single hole was not measured.
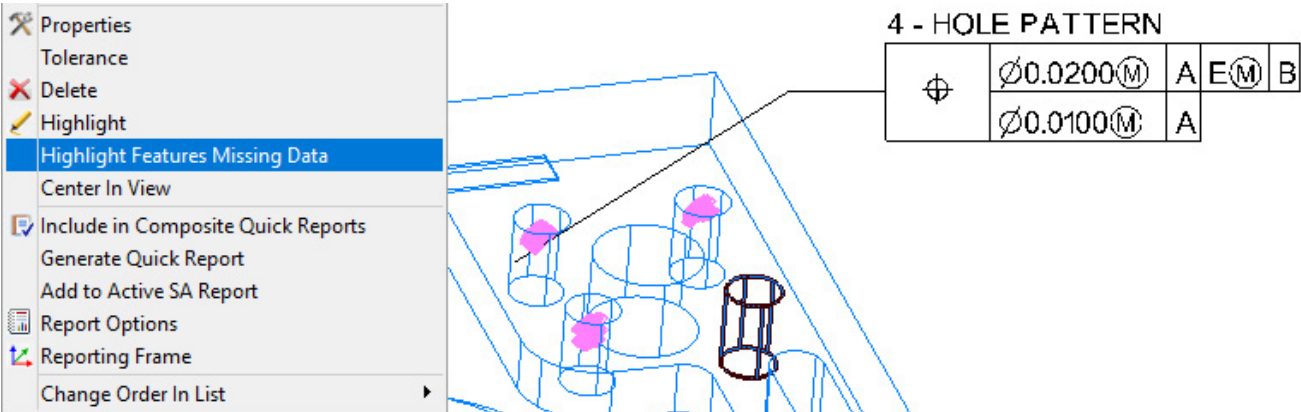
REPORTING IMPROVEMENTS

Added Fractional Unit Display Options

Many customers have asked for the ability to display deviation statistics in fractional units, so this version offers the ability to do just that. Fractional displays can be enabled for both feet and inch unit designations and are shown in the following fields:

⌐ **Dimension.** Both the graphical display of dimensions and their reported values include the fractional unit designation when set.

⌐ **Callouts.** Vector callouts are converted to display in fractions.

⌐ **Vectors.** Vector labels are converted to display in fractions.

⌐ **Watch Windows.** The distance component in a watch window display in fractions.
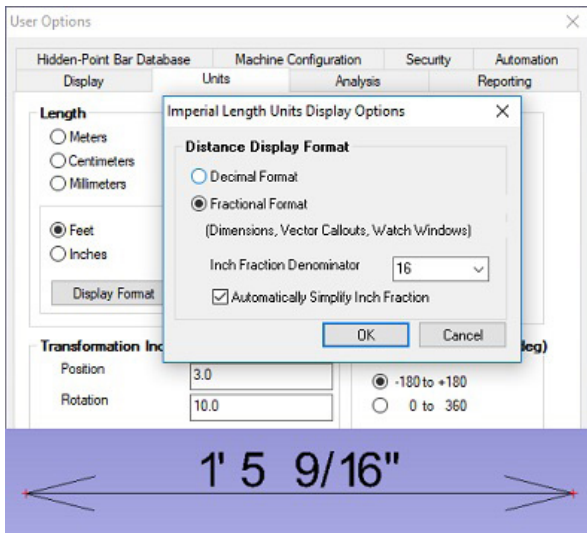
Added Apply to Selected for Dimensions

Managing the display of dimensions and editing their properties has gotten much easier in SA. The look and feel of the different dimension types has been streamlined. A new default control has also been added to the user options, including the ability to define default names for different dimension types.

Like the relationship properties, the Apply To Selected function allows you to specify which parameters you want to apply to a choice of other dimensions.
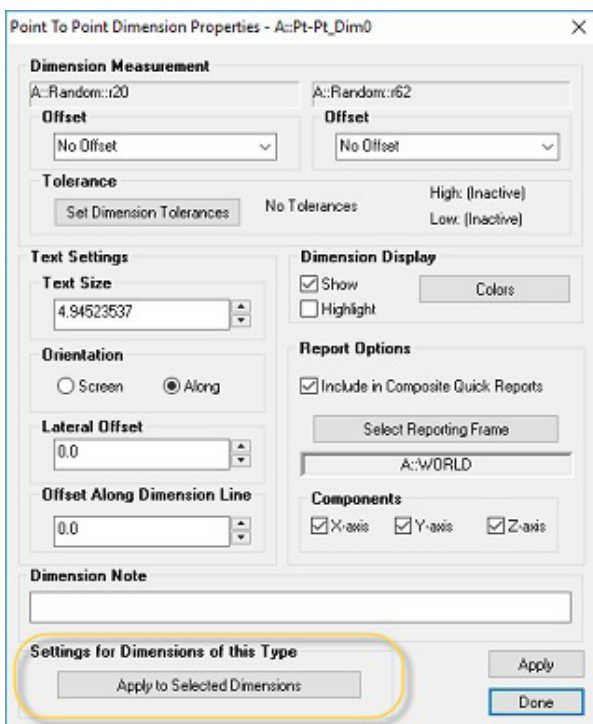
Added a 6D Watch Window

You can now right-click on a frame and add a watch window to that frame. If you are using a 6D measurement device, you can watch the position and rotations of your probe relative to that frame directly. This can be very helpful when aligning in both position and orientation.

A::WORLD				
X	-168.1098	ERx	-179.9966	
Y	-0.0010	ERy	0.0084	
Z	-0.0941	ERz	89.9887	
D	168.1098	TAng	179.9916	
	Units: (in)	/	(deg)	

This watch window can be set to read out in either fi xed (RxRyRz, RzRyRx) or euler (ERxERyERz, ERzERyERx, ERzERyERz, ERzERxERz) angles relative to any selected frame.

Added Uncertainty Computations to GR Features

The geometry uncertainty calculation (available under the menu item „Fit Geometries using Uncertainty Fields") has been included in the geometry relationships (GR) reports, provided uncertainty option is enabled in the GR properties.

Uncertainty
☑ Compute

Graph

Geometry Relationship A::Cylinder		
Criteria	Measured	Uncertainty
Diameter	1.737900	0.001805
Rx from Y	-90.0260	0.4156
Ry from Z	179.8384	0.6376
Rz from X	-9.1355	93.5774
Angle Between		0.7611
Cylindricity	0.008569	
RMS	0.002484	
Measurements		16
68.26% Confidence Interval (1.0 sigma)		

Added Frame Sets

Frame Sets provide a frame format that allows many individual frames to be saved as part of a single object, much in the same way a point clouds record point information. Using Frame Sets provides the advantage of keeping the tree manageable and allowing more frames to be measured in a single job file at faster rates (thus avoiding job processing delays).
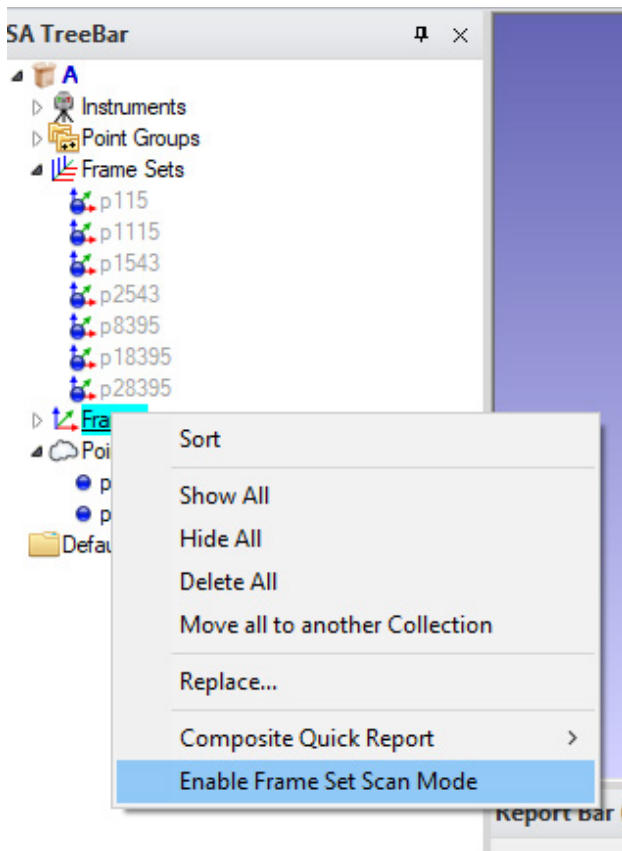
Once enabled, measurements are recorded graphically and can be accessed directly like a vector by double left-clicking on the frame of interest.
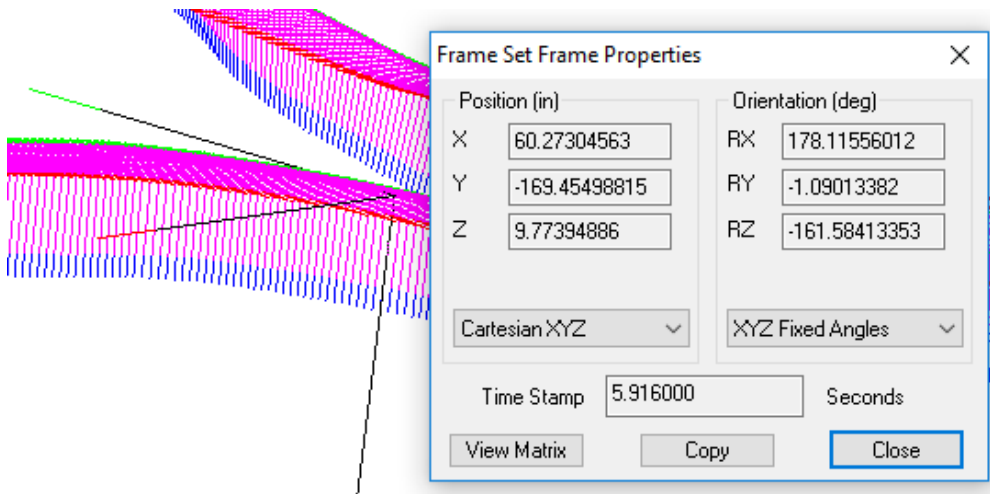
This provides access to both the transform and time stamp for individual frames. The time stamp is the super accurate controller time from the start of the scan.

INSTRUMENT UPDATES

Threading of Incoming Cloud data

In this version, an alternate data acquisition architecture was implemented that gives each instrument its own dedicated thread of execution for receiving incoming data. Previously, data acquisition all occurred on the UI thread in competition with everything else that was accomplished by the UI thread (most notably updating of the graphic view).

With this alternate architecture, much higher input data rates will be achievable which should significantly mitigate many of the issues previously observed when acquiring cloud scan data at high rates.

Assembly Guidance Laser Guide Projector

LaserGuide 2 projectors are now supported with updated SDK v.3.04.18. The necessary drivers can be downloaded here:

ftp://ftp.kinematics.com/pub/SA/Install/Driver%20Downloads/ Pro-jectors/AssemblyGuidance%20LaserProjector/