

# What's New In SA

CHAPTER

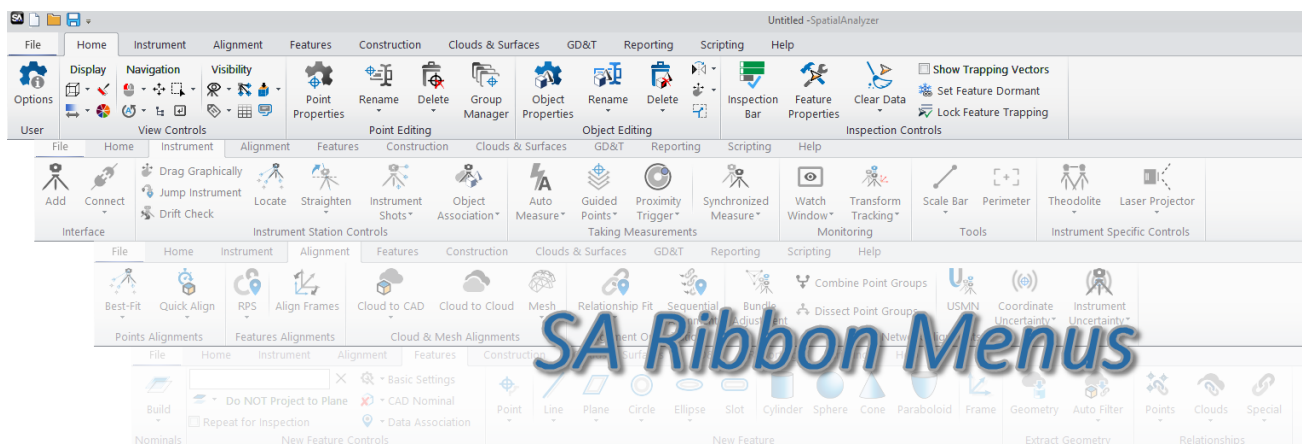
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One of the advantages of SpatialAnalyzer is that development occurs at a brisk pace. New feature requests, bug fixes, and changes are implemented quickly, giving you the opportunity to start taking advantage of newly implemented features in a very short period of time.

**2019.05.16**

## Introduction of a Ribbon Menu

We have been listening. Customers have been asking for a simpler cleaner interface to SA for some time, and this release provides that. The ribbon menus integrate the toolkit with the standard menu functions controls in an organized and appealing menu structure.

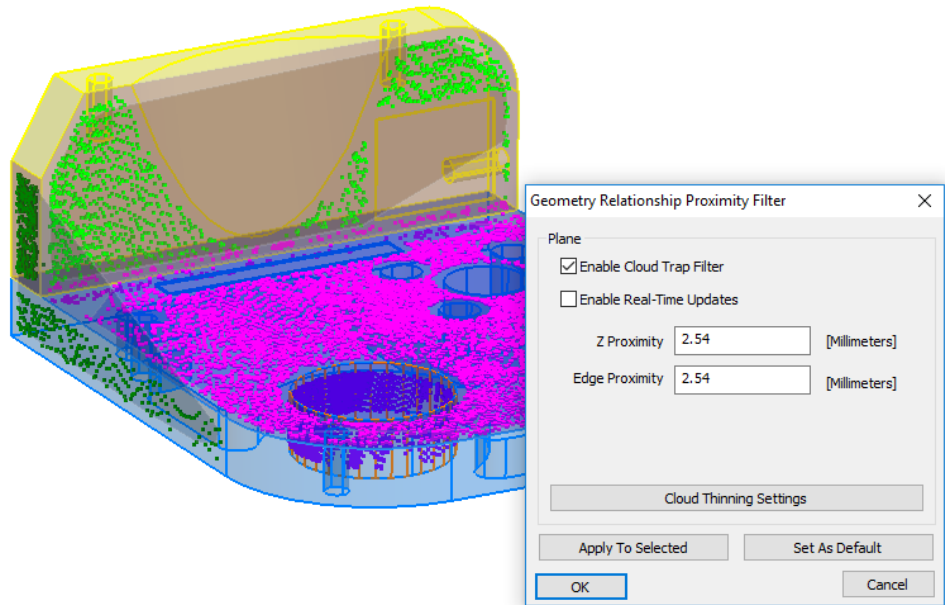


The ribbon menu is still under development with language translation and custom options still to come. So for the moment, it will need to be turned on using a check box on the Display tab of the User Options.

## GR-Feature Inspection Enhancements

### Feature specific cloud trapping capability

Compare to Nominal Geometry Relationships now offer the ability to be directly measured using scanning. A proximity threshold can be set on the nominal feature such that only data within the preset proximity is acquired while scanning. Settings have been added to allow filtering on the fly much like using multiple cloud clipping planes at one time. Surface face and edge proximity filters can also be asserted allowing feature specific cloud data to be collected.



### Associate Proximity Cloud Points

A new right-click data association method was added to geometry relationships for proximity filtered cloud data. This option allows selection of a large cloud, and by selecting it, data is sub-sampled to acquire data within proximity to the nominal feature.

### Added Filter Options for Lines

Added ability to filter points to lines within line geometry relationships (using proximity to the nominal line). We also added a single point line option as long as a nominal line is defined.

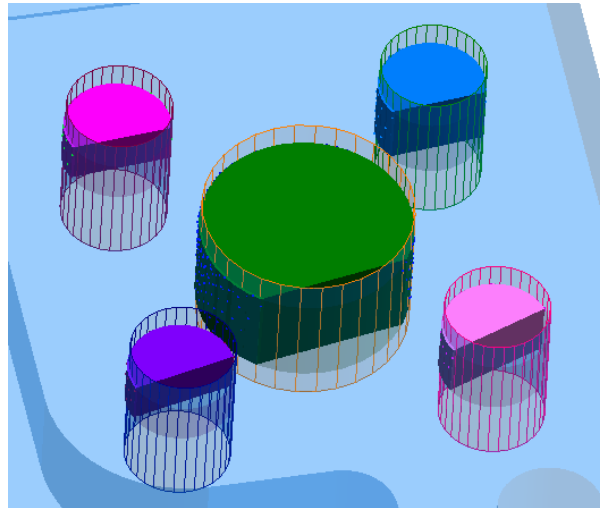
### Improved Cylinder Visualization for Data Coverage

Several changes were made to cylinder construction to improve feature visualization while in Solid render mode. These include:

1. Nominal Cylinders built from CAD are preset to be displayed in Wireframe mode.
2. The point/cloud point coverage can now be displayed for a specific cylinder as part of the fit by showing a cylinder seg-

ment which expands as additional points are taken.

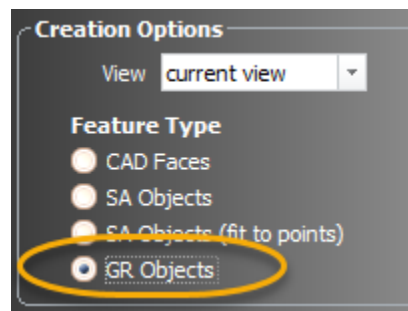
3. A translucent cylinder shell is always displayed to clarify the actual placement of the cylinder full measured cylinder.



## GD&T Enhancements

### Direct Geometry Relationship Link

GD&T Annotations can now be directly linked to GR-Features. Doing so does two things: it ensures that the nominal feature from the geometry relationship is used in the annotation as the reference, and the feature check directly uses the points associated with that relationship. This eliminates the need to associate points with both the GR-feature and the feature check independently.



### Surface Profile Auto-Detect Faces Option

Much like an All Over check, this option allows a single Profile check to be used to evaluate any surface with associated measurements. This option provides a helpful method in adding a “global” check for all measured surfaces.

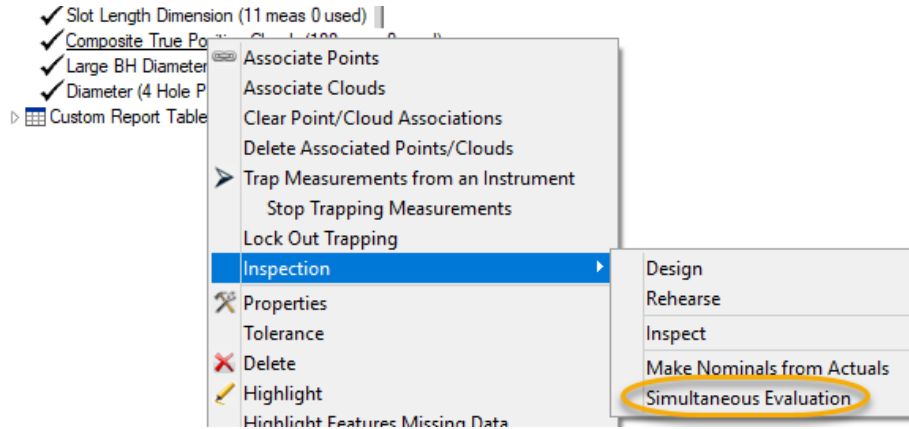
### Added Multi-Feature Datums

Datums based upon a group of features such as a bolt hole pattern can now be used as a single datum, limiting all but a single degree

of freedom.

### Simultaneous Evaluations

The ability to simultaneously evaluate all checks with a command datum reference frame (DRF) has been added. This can also be helpful in surface datum evaluations where a custom datum alignment is needed. Currently a single selected check can be used to initialize the alignment and all checks with the same DRF reference will then evaluate together.

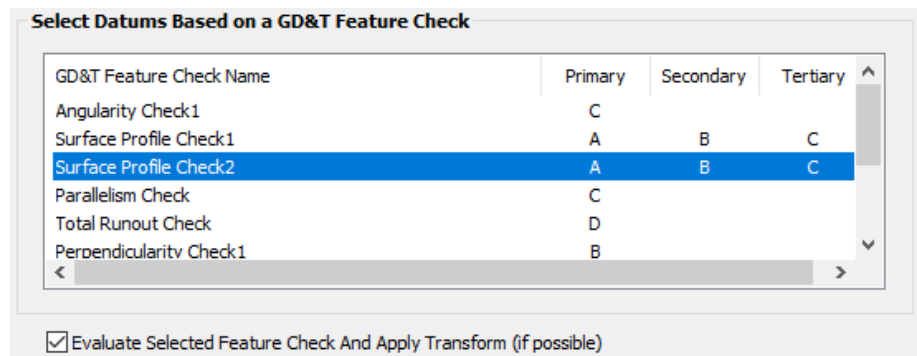


### Slot Length Added

Slot Length has been added as an additional dimensional option for GD&T evaluations. Both Width and Length can now be used as part of a material modifier for a position check on a slot.

### Check Specific Datum Alignments

Within the datum alignment tool you can now select a specific feature check, evaluate it and apply the final evaluated transform to your job file for troubleshooting and verification purposes.



## Expanded Composite Check Reports

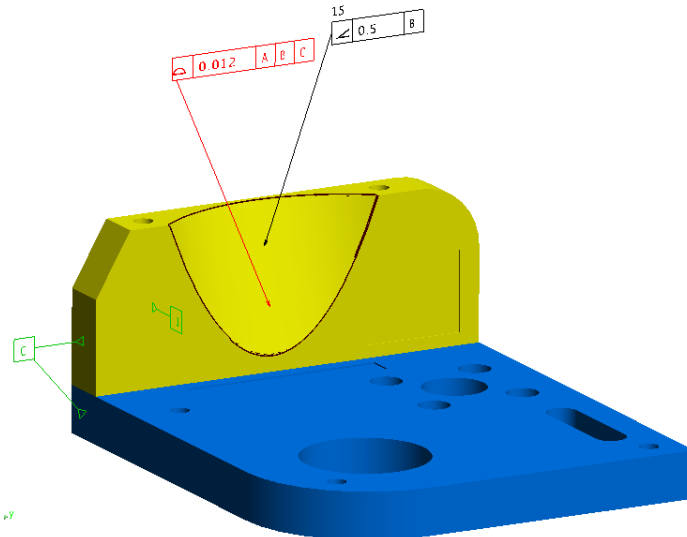
An additional separate set of Tables (both Datum and Tolerance Summary Tables and Point Details Summary) can now be built for Second Tier Evaluations in composite GD&T checks.

## Added Per Unit Length Straightness checks

Straightness can now be evaluated in segments to allow gentle transitions over a given distance.

## Show Only Active Feature Check

An option has been added to the Right-click menu of the feature check category that, when enabled, allows selective visualization of the selected feature check. This option hides all annotations not directly linked to the selected feature check, showing only annotations linked to the same faces and the referenced datums used by that check.



## Callout Views Created on Import

A new collection: "CADViews: [file name]" is now added when you import a file with GD&T annotations. Callouts are included for each separate view included in the annotations and have layers set such that only those commonly oriented annotations are shown. This collection also includes a set of frames imported defining the annotation perspectives.

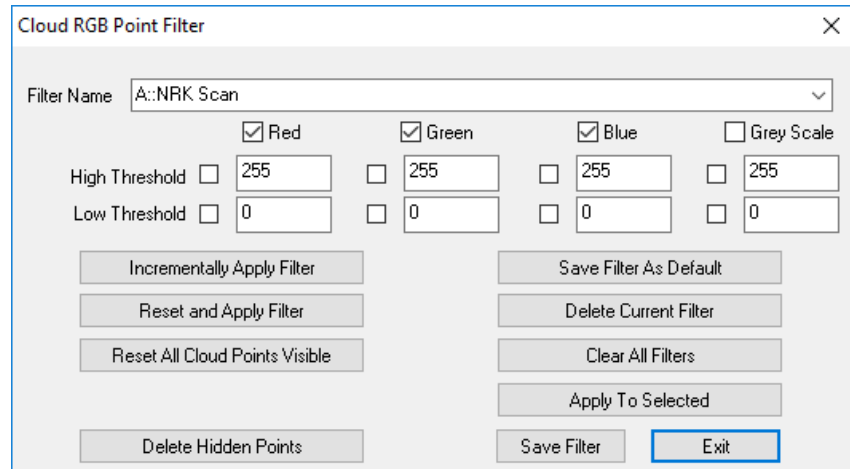
## Point Cloud Enhancements

### Point Cloud to Swatch Relationship

A new relationship has been added to both filter and evaluate point clouds relative to reference points on a part within a proximity zone.

## RGB Filtering

A new color based filter has been added to SA to allow both visualization and editing of clouds based upon saved color parameters such as Intensity and Incidence Angle.



## Alignment Enhancement

### Sequential Relationship Fit

The Sequential Relationship Fit option now includes the ability to group sets of relationships that can be optimized simultaneously as part of a sequential alignment process.

## USMN Enhancements

### Aperture Uncertainty Parameters Added.

Polar instruments such as Laser Trackers and Total Stations now have additional uncertainty parameters to better model uncertainty under all measurement conditions.

## Reporting Enhancements

### SA Report menus have improved graphics

Modified SA Report menu layout and implemented CTRL-wheel zooming. CTRL-middle mouse button will set zoom to 100%.

### Added Alternate Time Display Formats

Added additional time display formats for report tags. This is performed under page settings and allows selection between the order of display in Time, Day, Month and Year as needed for regional reporting.

## Instrument Developments

### Nikon Laser Radar Update

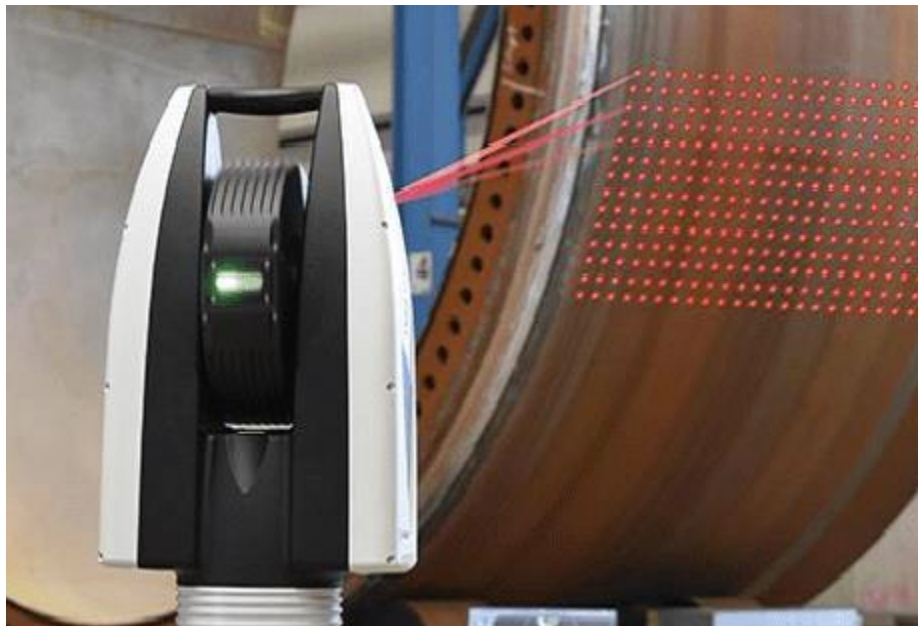
Updated Nikon SDK from v8.2.2.3323 to v8.2.5.3840

### Added Mitutoyo SpaceTrac series of Laser Trackers

Support has been added for these new tracker models through the use of the API Device interface.

### New Leica ATS600

The ATS600 is the first reflectorless scanning tracker. The cloud data returned from the ATS includes intensity and quality information that can be displayed as a colorization of the returned point cloud.



## Scripting

### New MP Commands

- **Construct Surface From Annotation Links.** Command builds a new surface based upon the referenced CAD faces included in the input annotations.
- **Make Annotation Ref List from a Collection.** Creates a list of GD&T Annotations from a collection.
- **Make Annotation Ref List- WildCard Selection.** Creates a list of GD&T Annotations using a wildcard selection method.
- **Reverse B-Splines.** Reverses the direction of the selected b-Splines
- **Get Gradient AT Projected Point On Surface.** This command projects a point onto the selected surface and returns the normal vector of the surfaces at the projected point.

- **Get Gradient AT Projected Point ON Surface Edge.** This command projects a point onto a surface, returning the normal vector, then the point is projected back to the reference B-Spline. The edge offset avoids ambiguous surface UV directions on a surface edge.
- **Export ASCII Frames.** Exports the selected frames in a pre-defined ascii format.
- **Get Current Instrument Position Update.** Returns the last position update from the selected instrument as well as a time from last update.
- **Set Point Position in Working Coordinates.** Allows a constructed points position to be directly modified.
- **Transform Points by Delta (About Working Frame).** Allows a selection of points to be moved a specified distance.
- **Set Probe Offset Frame Online (Measure Raw Frame).** Allows an offset frame to be programmatically assigned to a selected probe definition through measuring a frame.
- **Set Probe Offset Frame Offline (Select Previously Measured Frame).** Allows an offset frame to be programmatically assigned to a selected probe definition through selecting a previously measured frame in SA.
- **Get Tracker/EDM Theodolite Uncertainties.** Returns the uncertainty variables from the selected instrument model.
- **Set Tracker/EDM Theodolite Uncertainties.** Sets the uncertainty variables in the selected instrument model.
- **Make Vector Group To Vector Group Relationship.** This command builds a Vector Group to Vector Group relationship which can be used for gap analysis and sequential surface evaluation.
- **Set Vector Group To Vector Group Cylindrical Zone.** Defines the corresponding proximity zone used to correlate vectors in a VG to VG relationship.
- **Set Vector Group To Vector Group Fit Weights.** Sets the fit weights in a VG to VG relationship for gap alignment and optimization applications.
- **Set Vector Group To Vector Group Fit Gradient Factor.** Sets the VG to VG gap gradient factor used to define a progressive relationship constraint.
- **Set Vector Group To Vector Group Relative Polarity.** Used to determine the analysis method used by a VG to VG relationship.