

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. The following is a summary of the new additions.

2021.2

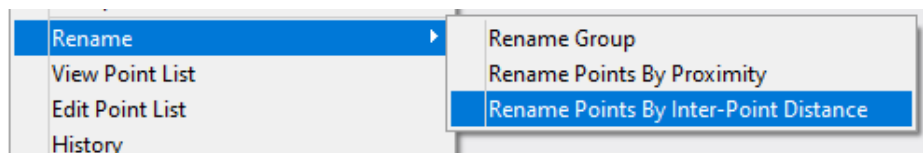
Basic Operations

Middle Mouse button

The middle mouse button has been wired up to be used with the SA Treebar to control object visualization. Middle button click on an object in the tree will center the graphic view on that object and Ctr+click will toggle the object's visibility state from visible to hidden, and back again.

Right Click Rename for Groups

Points within a group can be renamed easily now through a right-click Rename option, that including both *Proximity* and *Inter-Point Distance*. This streamlines renaming groups for best-fit or group to group comparisons.



F2 Associations

Relationships and Feature Checks now offer a preview of the data associated with them. When the *Associate Data* option is selected a pre-populated list of what is currently linked to that feature is displayed,

allowing direct editing of this existing list or full replacement.

Improvements to Alignments

Geometry Relationship Criteria can now be used to in a Sequential Relationship fit. This provides the ability to directly include GR-Features in this sequential optimization.

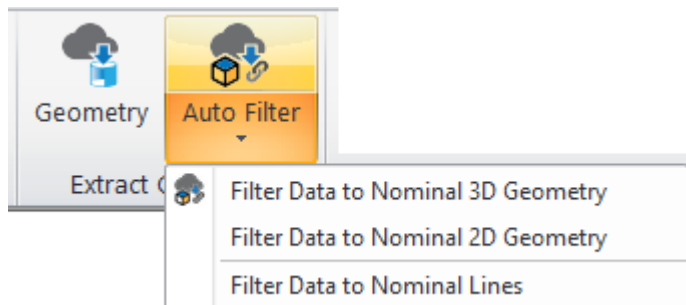
Inspection Improvements

A clear button has been added next to the projection plane control in the Features tab. This provides a convenient means to remove a currently set projection plan. This facilitates the *Auto-Detect* feature inspection process workflow.

Cloud and Mesh Improvements

Expanded Cloud Extraction Tools for Professional License Holders

Both the direct *Extract Geometry* from point cloud and the *Filter Data to Nominal 2D Geometry* options have been opened to Professional license holders and users.



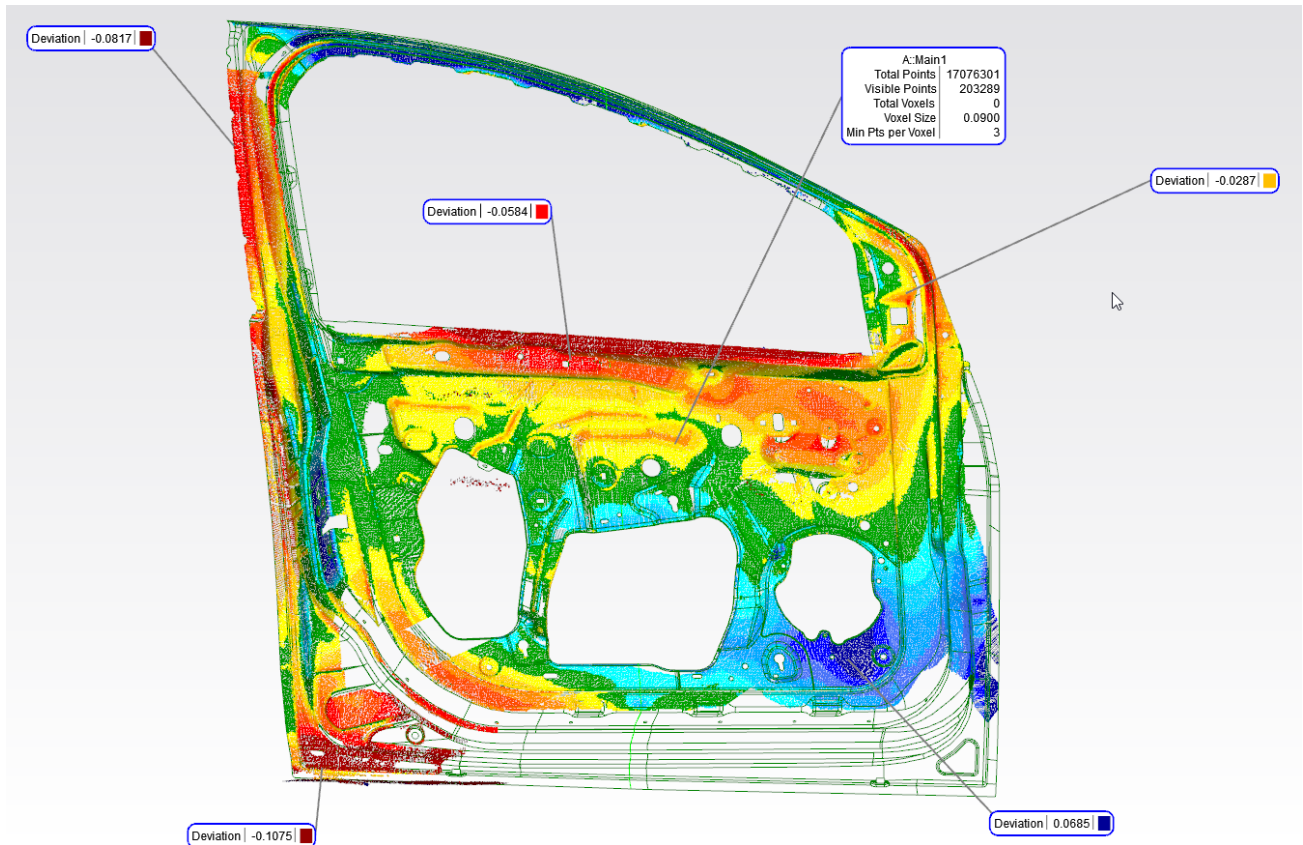
Default Cloud Configuration

The Users Options now offers default point cloud visualization settings. An option is now available to control the display of newly measured clouds: raw points display, voxel Display, or RT-Mesh display.

Real-Time Colorized Scanning

It is now possible to generate a colorized voxel error map in real-time with a live instrument. To do so use the voxel display mode and link it to the CAD or reference object using a "Clouds to Objects Relationship". When you do so, each voxel will be colorized with the error deviations computed while you measure.

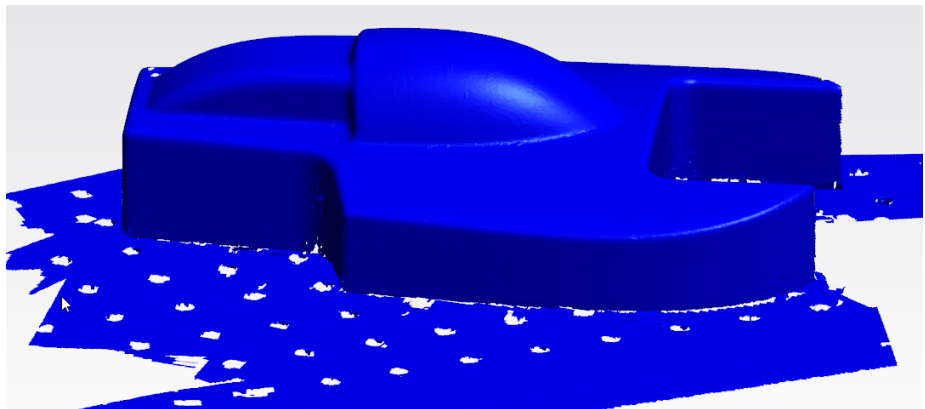
The voxel size now automatically increase as coverage increases allowing greater areas to be scanned without a loss in performance.



Colorized Scanning - <https://youtu.be/IHjIVP0yDnU>

A new improved Real-time (RT) Meshing is now available.

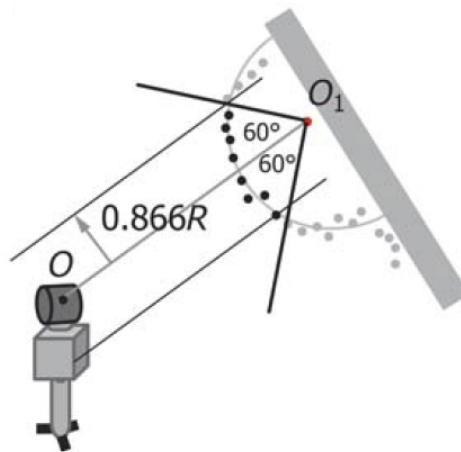
SA's realtime meshing has been re-architected to provide a high quality visualization of the surfaces that are scanned. This type of point cloud display looks great and can greatly aid in visualizing the extent of data coverage.



Live Meshing - <https://youtu.be/HWiDO7eVy4M>

ASTM E3125-17 Sphere Extraction

Automatic detection of spherical-target center points, from point clouds, now includes an option to perform a “final fit” which implements ASTM E3125-17 fitting algorithms. This advanced outlier rejection method takes advantage of the associated instrument’s line of sight vector to refine the fit algorithm and ensure the most accurate point location possible is detected.



Sphere Extraction: https://youtu.be/bJXzIR3_tG0

Cloud to Swatch (surface Point)

Cloud to Swatch relationships have been significantly updated for use as “Surface Points”. The auto-vectors have been reduced to a single vector defining the averaged deviation at the reference location. They also now produce a Swatch Point, much like a cardinal point, that can be turned on or off and collected within a single point group, facilitating deviation reporting.

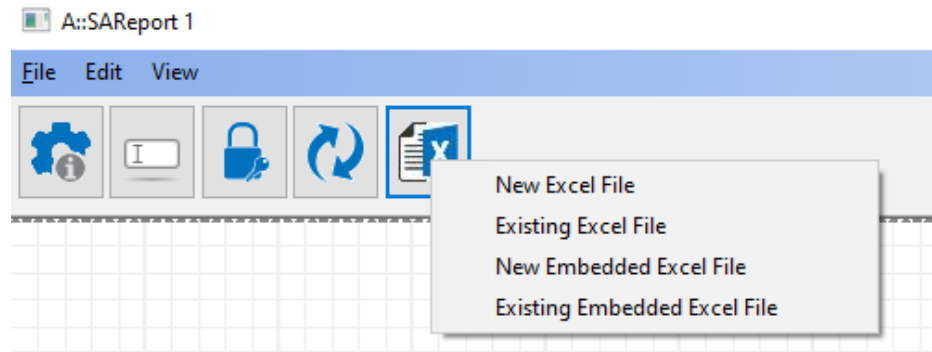
GD&T Enhancements

Added ability to build GD&T Annotations from MP scripts. The set of new MP command open the doors to dynamic annotation construction. Full GD&T Toolbar capability has been added for automation.

Reporting Improvements

SA Report to Excel Directed Links

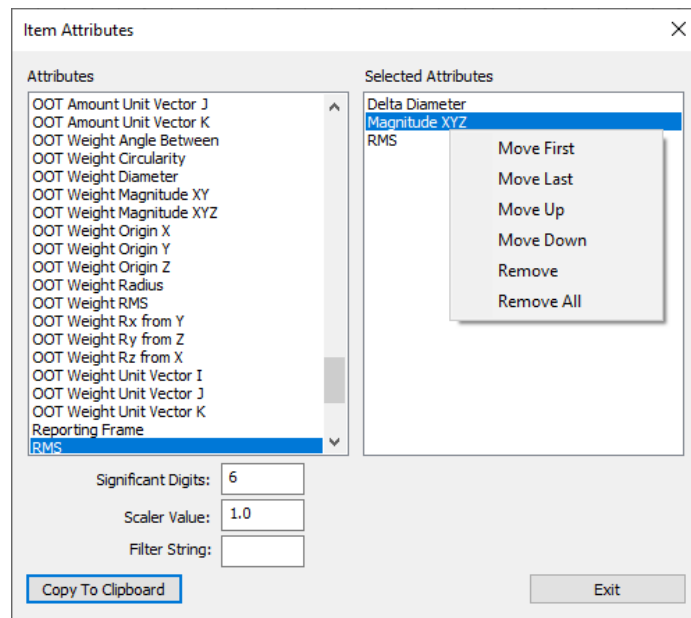
An SA Report can now be linked to an Excel (*.xls) file with even greater control. When this is done, workbook address (Sheet/Row/Column) can be set for any particular table or graphic within the SA Report. This provides the ability to direct export of specific data to specific cells with an Excel File. Doing so allows users to build Excel computations and charts based on measured data and have this data update automatically when the export takes place.



Excel Export: <https://youtu.be/nrBmMmPJGMo>

Improved Custom Table Construction

An expanded dialog has been added to facilitate column selection for custom feature tables.



Added list of Relationship Associations

The relationship summary table has been expanded to include a list of the associated input objects to improve clarity in reporting. This additional information is optional and can be turned off as needed in the reporting options.

Instrument Updates

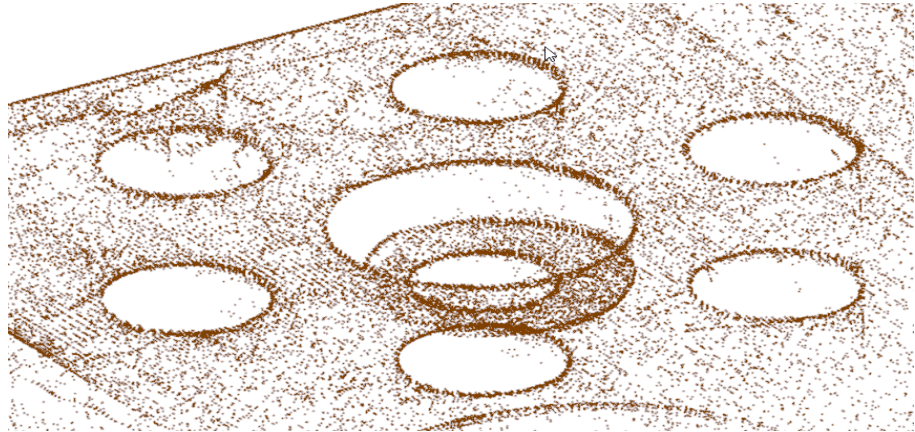
When using the Connect button in SA, a network “ping” is used to quickly verify an instrument is available. If the instrument does not respond the connection dialog will now appear leading users to adjust

the instrument connection IP and settings as needed.

New Scan Line Filter Options

(Available for all PCMM Arm models and Leica AS1 & LAS scanners)

Line scanners now offer a new **Minimum Angle Filter** option that can be used to reduce the number of cloud points returned in flat regions, while maintaining full density along edges and curves. This filter preserves the data density on features of interest while greatly reducing file size.



Example Filter in use - <https://youtu.be/NOBKqNJ1JhQ>

Leica Laser Trackers

AT960/Hexagon Arm Update

Leica AS1 Scanner is now supported for use on both the Leica AT960 Laser Tracker and Hexagon Absolute PCMM arms.



Leica AT901 and AT40x

If the “FindTarget” command fails when using the OVC, the video stream is now automatically reactivated.

Leica AT9x0 and ATS600

Several key updates were made to support the latest drivers and firmware updates. See Readme for details.

Faro Laser Trackers

Support has been added for use of External Triggers as part of MP script automation processes.

Nikon Laser Radar

The new Nikon - APDIS Laser Radar is now supported in SA. This is a fully redesigned interface which supports MV300 and MV400 LR systems.

The original interface is still available for MV200 users.



MP Updates

Added arguments to “*Locate Instruments (USMN)*” and “*Locate Templated Instruments (USMN)*” to support the execution of Monte Carlo uncertainty field analysis via MP.

“*Extract Sphere Centers from Point Cloud*” has been modified to include “Final Fit” and “Cone Angle” arguments to support the ASTM E3125-17 fitting algorithms.

“*Get Dimension Value*” now will return tolerance settings.

New MP Commands

- **Browse for Directory.** This command provides a means to select a directory directly facilitation runtime (user interaction) controls for basic functions like saving a file.

- **Geom Relationship Ignore Input Points.** Provides a means to programmatically move associated points into an ignored points list. This provides a convenient means to perform outlier rejection.
- **Make GD&T Datum Annotation.** Provides the ability to build a GD&T datum annotation from MP/SDK.
- **Make GD&T Feature Check Annotation.** Provides the ability to build a GD&T datum annotation from MP/SDK.
- **Make Surface Face List - Runtime Select.** Provides a means to ask a user to select graphically, building a list of surface faces for analysis.
- **Construct Point From Survey Target Center.** Detects surveyor target locations, using saved intensity data within a scan. This command uses a seed point and a proximity distance to search for a corresponding target point.
- **Get Point to Point Relationship Statistics.** Returns the statistics from a Point to Point relationship.
- **Wait For Trapping to Complete.** This step pauses the MP script when trapping is active and allows it to continue when trapping progresses.