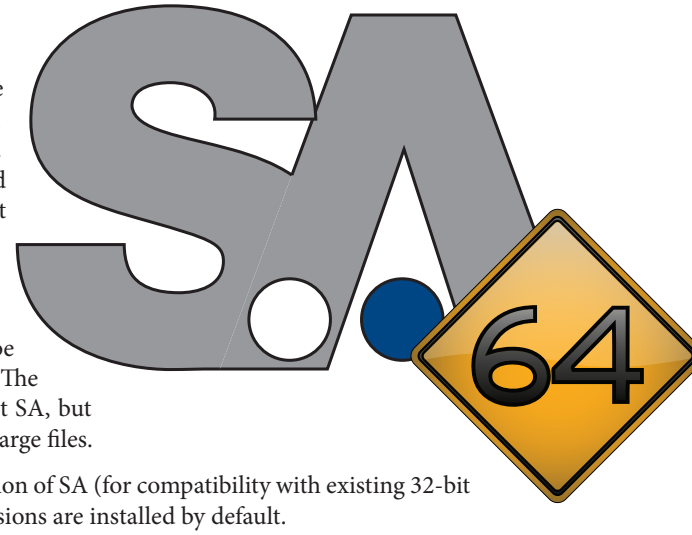
WHAT'S NEW IN SA

SA 2011.12.22

SA 64-bit



The 64-bit version of SA is here!

SA 64-bit provides significant performance improvements (20% or more in some cases), and enables handling enormous data sets and CAD files. For example, 500 million cloud points can be handled comfortably in 64-bit SA on a system with 16 GB of RAM.

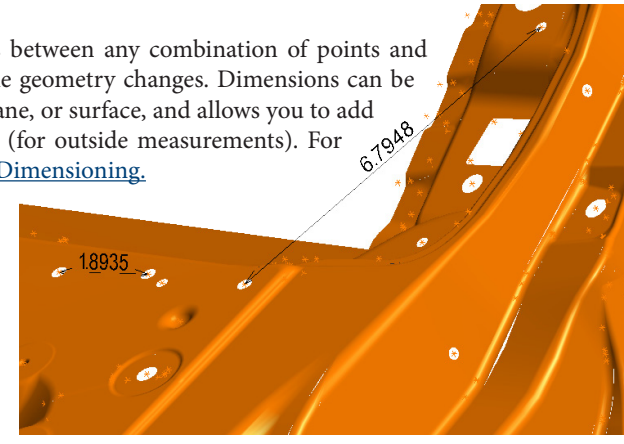
From the 64-bit version of SA, you can now save .xit files into two formats: `.xit`, and `.xit64`. The traditional `.xit` files can be opened by both 32- and 64-bit versions of SA. The `.xit64` format can only be opened by 64-bit SA, but will maintain all data when saving extremely large files.

The SA install now contains both a 32-bit version of SA (for compatibility with existing 32-bit systems), and a 64-bit version of SA. Both versions are installed by default.

To run the 64-bit version of SA, select it from the Windows Start menu.

Dimensioning

Create dynamic dimensions for lengths and angles between any combination of points and objects. These dimensions update in real-time as the geometry changes. Dimensions can be placed to compare against an object's axis, origin, plane, or surface, and allows you to add offsets (for inside measurements) or subtract them (for outside measurements). For more information on Dimensioning, see Chapter 9, Dimensioning.



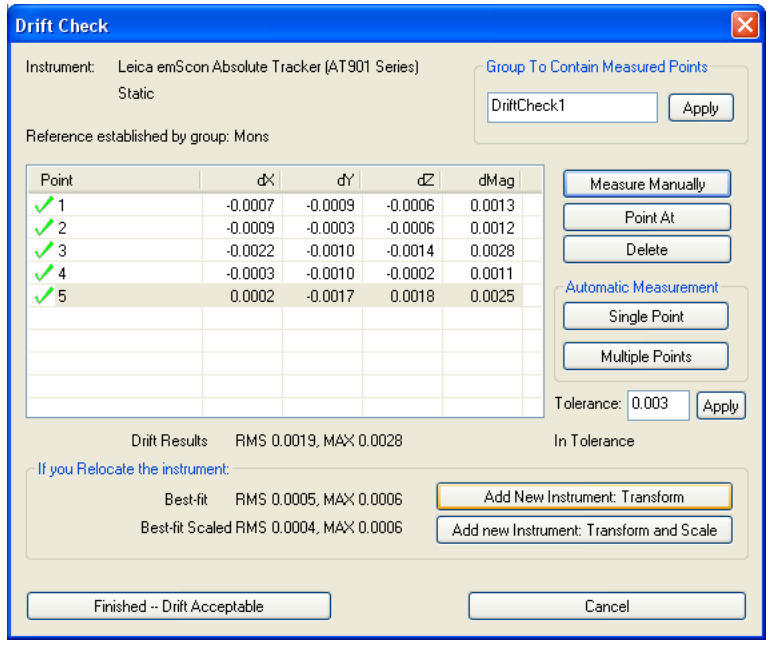
SA Remote Update

With the 2011.12.09 update to SA Remote, you can now record measurements while in a watch update mode.

Automatic Drift Check Refitting

The *Instrument➤Drift Check* command now automatically shows what your deltas would look like if a refit were performed both keeping scale constant and allowing scale to vary.

If a best fit with fixed scale significantly improves the results, that indicates that the instrument has moved relative to your monuments. If a best fit with scaling is required, then your reference system has scaled, and therefore the part has likely scaled as well.

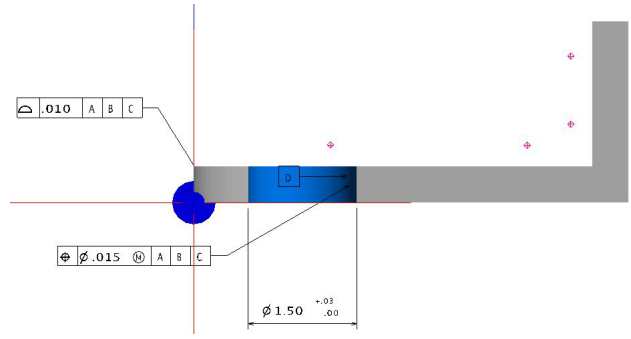


Two new buttons: **Add New Instrument: Transform** and **Add new Instrument: Transform and Scale** will conveniently add another instrument, activate its interface, and place you into a completed ***Measure Nominals*** dialog, allowing you to apply a best fit or best fit with varying scale without measuring any additional points.

Set Viewpoint from Frame

The viewpoint can now be directly set from an existing frame using *View➤View Control➤Set Viewpoint From Frame➤No Clipping* and *View➤View Control➤Set Viewpoint From Frame➤Clip Behind XY-Plane*. The second of the two new commands

will set up a clipping plane such that everything closer than the XY plane is removed from the view. This essentially yields a cross sectional cut through a surface:



For more information on setting a viewpoint from a frame, see Chapter 4, Set Viewpoint From Frame.

New MP Commands

For details on these new MP commands, see the MP Command Reference.

- **Instrument Operations➤Get Instruments with Observations on Target.** Returns the list of instruments that have observations on (measurements of) the specified target.
- **View Control➤Set Point of View from Frame.** Sets the point of view to match the orientation of a given coordinate frame, optionally clipping the view in front of the frame's XY plane.
- **Analysis Operations➤Query Clouds to Objects.** Queries one or more point clouds to one or more objects, creating point groups or vector groups in the process.
- **Analysis Operations➤Get Geom Relationship Criteria.** Retrieves the nominal, measured, delta, low tolerance, and high tolerance values (as applicable) for a specific geometry relationship parameter.
- **Analysis Operations➤Reverse Surface Normals.** Reverses the normals of specified surfaces.
- **Construction Operations➤Construct Objects from Surface Faces-Runtime Select.** Creates a set of primitive geometric shapes (planes, cylinders, spheres, cones, lines, points, and circles) from CAD surfaces selected by the user at runtime.
- **Construction Operations➤Points and Groups➤Construct Points from Surface Faces-Runtime Select.** Creates points from CAD surfaces selected by the user at runtime.
- **Construction Operations➤Planes➤Construct Planes from Surface Faces-Runtime Select.** Creates planes from CAD surfaces selected by the user at runtime.
- **Construction Operations➤Cylinders➤Construct Cylinders from Surface Faces-Runtime Select.** Creates cylinders from CAD surfaces selected by the user at runtime.
- **Construction Operations➤Spheres➤Construct Spheres from Surface Faces-Runtime Select.** Creates spheres from CAD surfaces selected by the user at runtime.
- **Construction Operations➤Lines➤Construct Lines from Surface Faces-Runtime Select.** Creates lines from CAD surfaces selected by the user at runtime.
- **Construction Operations➤Cones➤Construct Cones from Surface Faces-Runtime Select.** Creates cones

from CAD surfaces selected by the user at runtime.

- **Construction Operations➤Circles➤Construct Circles from Surface Faces-Runtime Select.** Creates circles from CAD surfaces selected by the user at runtime.
- **Construction Operations➤Polygonized Surfaces➤Construct Polygonized Surface from Point Clouds.** Creates a polygonized surface (mesh) from a set of input point clouds. This command is the MP equivalent to the *Construct➤Polygonized Mesh➤From Point Clouds* menu command.
- **Construction Operations➤Cones➤Construct Cone.** Creates a cone.
- **Excel Direct Connect➤Run Macro.** Runs a macro stored in an Excel workbook.
- **Excel Direct Connect➤Write➤Write Picture.** Places a picture stored in the SA tree into an Excel workbook.
- **Utility Operations➤Get Tick Count.** Returns an approximately millisecond-accurate tick count (timer value) of the computer clock, in seconds.
- **Utility Operations➤Scale Objects.** Scales a list of objects about the working coordinate frame.
- **Analysis Operations➤Relationship Operations➤Relationship Attributes➤Make Vector Tolerance.** Creates a vector tolerance that can be fed into another command, such as Make Point to Point Relationship.
- **Analysis Operations➤Relationship Operations➤Relationship Attributes➤Make Vector Constraint.** Creates a vector fit constraint that can be fed into another command, such as Make Point to Point Relationship.

Independent Decimal Precision Settings

You can now set independent decimal precision settings for the following different types of values:

- Lengths
- Angles
- Scales
- Unit Vectors
- Weights

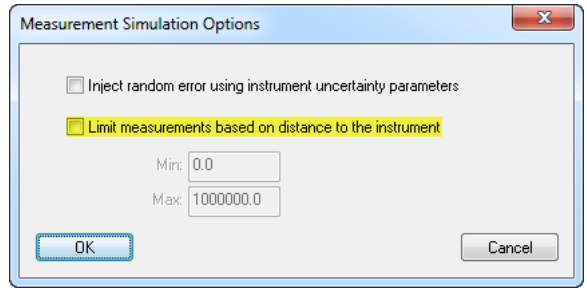
For more information, see Chapter 5, Decimal Digits For Display.

Angle Representations

You can now control whether angles are represented in the -180° to 180° range, or in the 0° to 360° range. For more information, see Chapter 5, Angle Representation.

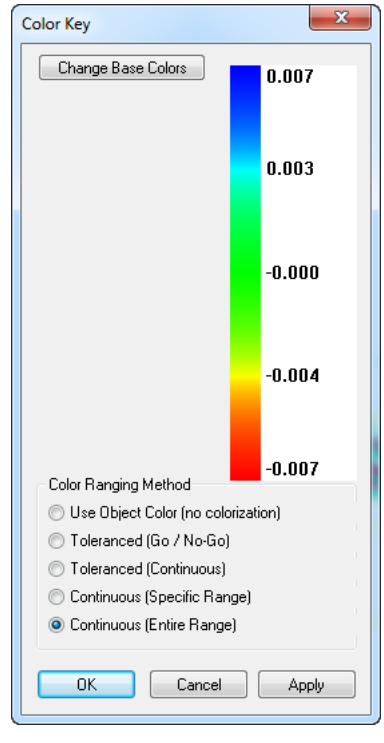
Measurement Simulation Ranges

When fabricating measurements for a simulation, you can specify a distance envelope, measured from the instrument. Any points outside of this envelope will not have measurements fabricated:



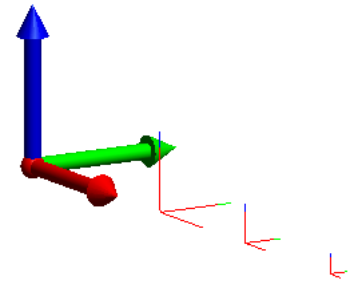
Vector Groups: Continuous (Entire Range) Color Ranging Method

A new *Continuous (Entire Range)* color ranging method has been added to Vector Groups. This option examines the max and min deviations in the vector group and uses this range to span the entire color range.



Multiple Frame Sizes

Frames can now be assigned a custom size separate from the default frame size in the User Options:



This is useful when different sized features have related coordinate frames, and you want the coordinate frames to be similar to the scale of the features.

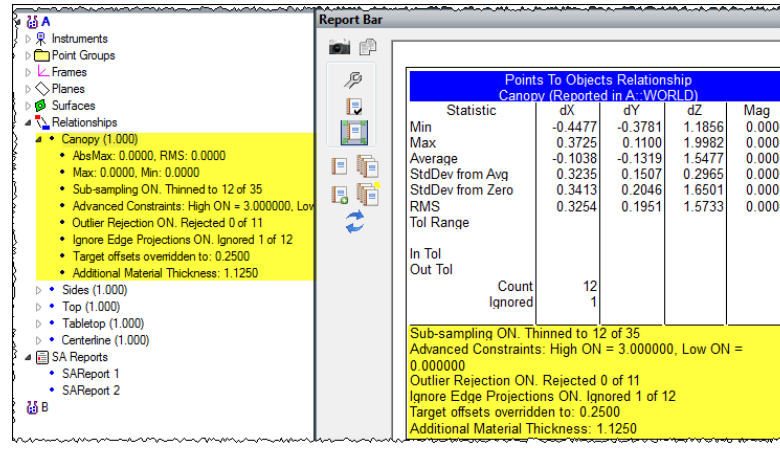
Printing Invisibility

Right-click an object in an SA Report and toggle the *Printing Invisibility* option to prevent the item from appearing in printed reports.

Relationship Reporting Details

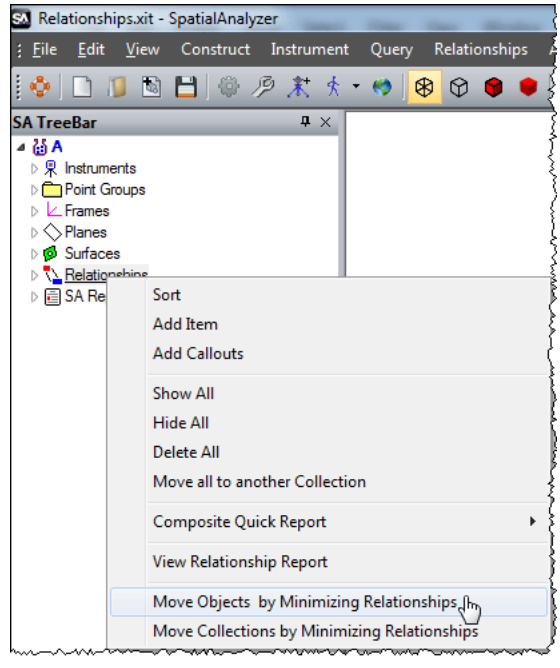
Relationship summaries in the tree, report bar, and SA reports now contain additional reporting details, including:

- Subsampling
- Constraints
- Outlier rejection
- Ignored edge projections
- Overridden target offsets
- Added material thickness



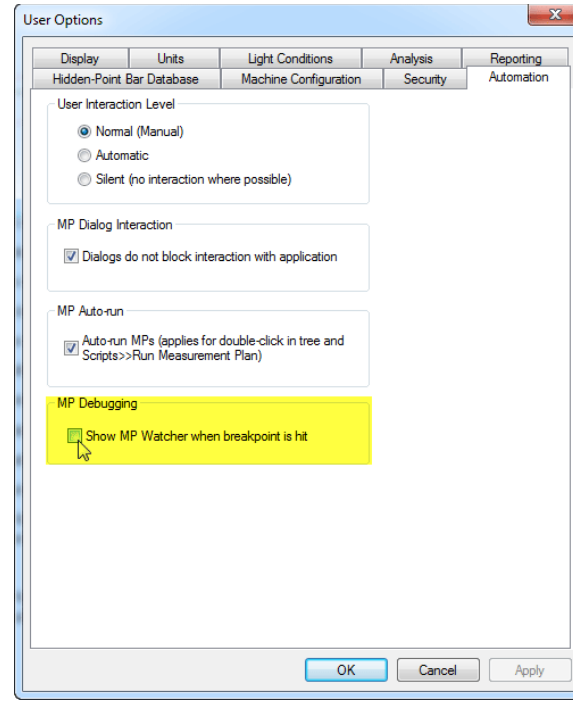
Relationship Minimization Context Menu

You can now minimize relationships by right-clicking any relationship category in the tree and selecting the desired command from the context menu:



MP Watcher

An option has been added to automatically show the MP Watcher when an MP breakpoint is hit. This option can be enabled in the *User Options➤Automation* tab, as shown at right.



Geometry Fitting: Object Association

If all measurements used in a fit are associated with a single instrument, then the resulting geometry is now also associated with the instrument (does not apply to cloud points).

Geometry Relationships: Cardinal Points

Fit only and *Fit & Compare to Nominal* Relationships now have a setting to enable the creation of dynamically updated cardinal points for the fit.

Hexagon SE Absolute Arms with CMS and Perceptron v5 Shark Scanners

Support has been added for Perceptron v5 Shark and CMS scanners for use with Hexagon Absolute SE arms. Once set up in RDS Control Panel, both will act like integrated scanners. Just mount the scanner, switch it on, and go. For quick-starts for these instruments, see Chapter 7, Romer Absolute (SE) with Perceptron ScanWorks v5 Shark or Romer Absolute (SE) with Hexagon CMS Scanner.

For additional improvements, changes, and fixes, refer to the SA Readme file.