

## Software Press Releases

### TracePro 7.8. new features/enhancements ---

#### Lighting Toolkit

- Gives users a full-featured capability to analyze automotive lighting systems
- Provides visualization tools and regulation tables

#### Path Sort Filtering

- Allows users to apply a Boolean filter to specify the exact paths by which rays propagate through the system
- Users can both visually size the rays filtered and see the corresponding irradiance map on the target surface

#### New True Color Plot Settings

- Irradiance/Illuminance
- 3D irradiance/Illuminance
- Luminance Maps

## TracePro 7.7. new features/enhancements ---

- Analysis and Simulation Mode Change
- New Candela Viewer
- Improved Photorealistic Render
- New Freeform Surface Types in 3D Interactive Optimizer
- New Automotive Toolkit

## TracePro 7.6. new features/enhancements

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- New diffuser Surface Property catalogs
  - BrightView, Covestro Makrolon .060" and .118" thicknesses, Luminit catalogs
- Create Repetitive features on curved surfaces with the new Texture Optimizer
- Analysis Toolkit
- New Macro Editor - Notepad++
- RayFile Editor Wavelength Editor
- Source Editor now works with Grid, Surface Source and File sources
- Simplified Menu Structure
- Incident Ray Table – now includes Optical Path Length

## TracePro 7.5. new features/enhancements

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(Released on October 16<sup>th</sup> 2014)

- Improved licensing process with new CodeMeter key.
- New Scatter Model Features
  - 1D BSDF Models
  - BSDF Database and Editor
  - Composite BSDF Modeling
- Texture Optimizer II with 10 RepTile features available for optimization
- Check for Updates
- 3D Interactive Optimizer enhancements: "periodic" segment type; import BSpline surface from a file; after-scheme commands to retrieve the position of control point.
- Photorealistic rendering enhancements: set the maximum number of photons to trace
- Group node icon in Model Tree
- New Solar Utility with Sun Tracking and Turbidity
- 7.4.x updates:
  - RepTile enhancements: new RepTile geometry shape (polygon); and a new Simplified RepTile Display mode for faster display have been added.
  - Help menu: new menu selections Online Tutorials and Online Examples.
  - 3D Interactive Optimizer: create curved faceted reflector; new Beam Width operand; new object types Reflector and TIR lens; and Zoom All icon in the Surface Editor.
  - IES/LDT Analysis: Road luminance
  - Surface Source Property Generator: rectangular pattern generator.
  - Texture Optimizer: Support for Asphere RepTile.

## TracePro 7.4.3 highlights

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(Released on May 21<sup>st</sup> 2014)

### *New*

- RepTile Geometry: Polygon
- Selections on Help Menu: 'Online Tutorials' and 'Online Examples'
- Simplified display mode for RepTiles
- Scheme Command: (analysis:incident-close)
- Scheme Command: (model:get-all-objects); this is synonymous with the ACIS command (part:entities)

### *Update*

- Ensure old group name is properly cleaned up after changing the name of a group node
- Fix to Copy/Paste a group node
- Substantial performance improvements to photorealistic rendering
- Remove a race condition during photorealistic rendering
- Fix access to cancel button during Photorealistic rendering
- The main ini file is now named 'TracePro.ini' and will no longer change with the series version number of the software
- Insert/Part and File/Merge now read properties in OML files from TracePro Bridge for SolidWorks
- Draw inner boundary for annular grid sources
- Modify dialog box items to fit Italian text
- Fix to read-only flag for Fluorescence properties
- Fix Solve For calculation in the Surface Property Editor for a Grating Property with no polarization; this occurred after a grating order was deleted in the Editor.
- Italian translation update
- Ensure proper use of model units in the auto setup for the Prescription Property
- Fix display in Surface Source Editor when a Surface Source Property is used (some of the columns were off-by-one)
- Substantial multi-threaded performance improvements when raytracing models with RepTiles
- Properly set enclosing sphere and bounding box for ray files with no rays
- Fix incorrect flux report in model with several file sources when one or more ray files in the middle have no rays
- Fix raytracing issue with transformed hyperbolic cylinders
- Fix RepTile display issue when Use Surface Bounds is selected
- Fix Incident Ray Table erroneous data in case with coincident surfaces in Simulation mode
- Incident flux on a sheet body is now properly reported in the flux report

### **TracePro Utilities Revisions...**

- ▶ Fluorescence Property Generator:

- Fix the wording of concentration
- ▶ Texture Optimizer:
  - Update to Help system
- ▶ 3D Interactive Optimizer:

#### *New*

- Capability of creating curved facet reflector using radial symmetric object
- Operand - beam width
- Surface types - Reflector, Conic reflector, TIR lens
- Object type - Reflector, TIR lens
- Icon to zoom all in the surface editor
- More pages for the missing commands

#### *Update*

- Fix the issue that data is not properly retained in saved .io2 file when Window region and Language is set to Italy
- Fix the issue that failed in exporting radial symmetric object by an asymmetric profile
- Fix the issue that program hangs with too many absolute variables
- Modify the document about light source
- ▶ Solar Emulator:
  - Fix the issue that cannot apply Sun model as a surface source property

## TracePro 7.4.1 highlights

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(Released on January 20<sup>th</sup> 2014)

- Update: Properly export surface properties on RepTile surfaces in model when using Tools|Database|Export
- Update: Fix toolbar positioning and refresh
- Update: Fix for Photorealistic Rendering when surface sources reside on coincident surfaces in model
- Update: Verify Bulk Scatter coefficient range for valid values
- Update: Fix for non-English version when double clicking on property tree node
- Update: Documentation updates for RepTile
- Update: Read radius from Bridge OML file
- Update: Fix issue with ray incorrectly escaping RepTile cell due to tolerancing issue
- Update: Fix RepTile display issue regarding the depth/height for Enhanced Prism
- Update: Fix minor memory leak on internal data structure
- Update: Fix crashing problem with RepTile using surface bounds as RepTile bounds
- Update: Fixes to aspheric intersector (regression in 7.3.9)
- Update: Fix memory leak when using file sources
- Update: Fix bug in asphere RepTile

### TracePro Utilities Revisions...

- ▶ 2D Texture Optimizer:
  - Update: Fix the issue of exporting a Fresnel lens
- ▶ 3D Texture Optimizer:
  - Update: Fix the issue of setting an object reference to an instance of an object when saving and reloading an \*.io2 file

## TracePro Bridge 7.4.1 highlights

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(Released on January 20<sup>th</sup> 2014)

- New: Add support for surface bounds on RepTile
- Update: Fix typo on setting shape combo box
- Update: Enable y and z components of the boundary up vector when changing back to rectangular boundary
- Update: Use new logo in the About... dialog
- Update: Update to new TracePro icon



## TracePro 7.4. new features/enhancements

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(Released on December 19<sup>th</sup> 2013)

- Photorealistic Rendering (all TracePro Editions)
- RepTile using Surface Bounds as Boundaries (TracePro Expert Only)
- New RepTile Geometry Types – Asphere and Torus (TracePro Expert Only)

## TracePro 7.3.8 highlights

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(Released on November 1<sup>st</sup> 2013)

- Update: Remove RepTile properties on object after a Boolean operation to that object
- Update: Able to read in user-supplied model
- Update: Notify user if a ray file does not have its wavelengths in ascending order
- Update: Fix raytracing bug with multi-wavelength binary ray files with caching off
- Update: Significantly improve performance when reading large ray files
- Update: Beam Local X is updated in the graphic on the Polarization tab of the Grid Source dialog to properly show the beam propagation is into the screen
- Update: Documentation updates to help system
- Update: Add error message for Volume Flux/Gradient Index incompatibility
- Update: Fix raytrace issue where ray entered RepTile cell through edge in an incorrect way in some circumstances
- Update: Properly evaluate multiple wavelength surface properties on RepTile surfaces

### TracePro Utilities Revisions...

- ▶ Surface Source Property Generator
  - Update: Fix the issue that the estimated colors are different between the Wavelength editor and the Irradiance map
- ▶ Texture Optimizer:
  - New: Add new supported reptile - flattened cone
  - New: Add new texture pattern - position file
- ▶ 2D Texture Optimizer:
  - Update: Fix the issue that the description about Candela profile operand in the section of "Operand" in on-line help is missing
  - Update: Fix the issue that descriptions about Pan/Zoom capabilities are missing
  - Update: Fix a numerical precision issue that prevented an extruded body from being closed
- ▶ 3D Texture Optimizer:
  - New: Add the capability of creating tapered sweep object
  - Update: Fix the issue that List doesn't allow nested expression
  - Update: Fix the issue that saving file using the European decimal separator for the property values
  - Update: Do not permit inputting a Knot-degree value less than 2

## TracePro 7.3.7 highlights

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(Released on September 16<sup>th</sup> 2013)

- New: New TracePro logo for splash screen
- New: Caching of ray files for faster ray tracing
- New: New macro command, (view:set-ray-file-caching ... ) to control ray file caching
- New: New macro commands:
  - (raytrace:set-detect-ray-starting-in-bodies-on )
  - (raytrace:set-detect-ray-starting-in-bodies-off )
  - (raytrace:get-detect-ray-starting-in-bodies? )
- Update: Fix conservation of energy issue where lost flux could be double-counted on a coincident surface
- Update: Fix conservation of energy issues interacting with coating DLLs that use Mueller Matrices including the Moxtek polarizers
- Update: Fix reported crash that involved a sequence of steps with Translating Objects, Undo, and using the Orbit cursor
- Update: Greatly improve raytrace performance on enhanced prism texture RepTile with large (1000:1) aspect ratio
- Update: Fix aperture gamma rotation angular units in code V translator
- Update: Previously known as 'Source files', TracePro now refers to these as 'Ray files'
- Update: Fix RepTile display issue on Log RepTiles
- Update: Documentation change in macro examples due to permissions in Windows
- Update: All references to "source file" renamed to "ray file"
- Update: Fixes to advanced selection – removal of obsolete source file and properly handle fluorescence
- Update: Fix SQLite error message when importing properties
- Update: Icons updated to 2013 TracePro logo
- Update: 32-bit TracePro now only installs on 32-bit Windows
- Update: Check return value to prevent crash on a corrupted surface source property
- Update: Add warning when defective bodies are encountered
- Update: Check bounds when using (analysis:set-3d-irradiance-max ... ) to prevent improper values that could lead to a crash

### TracePro Utilities Revisions...

- ▶ BSDF Converter:
  - New: Add an option to select whether the imported data was measured relative to the Specular direction or relative to the surface Normal when loading a CASI file
- ▶ Texture Optimizer:
  - Update: Fix the issue that Pointed Cone shape is not working when the patterning mode is fixed position
- ▶ 2D Texture Optimizer:
  - New: Add new command - makehexlensarray
- ▶ 3D Texture Optimizer:

- New: Add capability of creating ring geometry to sweep object using elliptical surface
- New: Add new command – makehexlensarray
- Update: Fix displaying issue of sweep object using 2D path
- Update: Fix the issue that the step number is not working with radial symmetric object
- Update: Fix the issue that only displays aspheric variables for single segment, aspheric variables on other segments won't be displayed in the variable list
- Update: Fix the issue that applying pick-up will make the control point messed for symmetric profile surface
- Update: Fix the issue of displaying lens object with two profile surfaces in silhouette mode
- Update: Fix the issue that left-click on control point is too sensitive

## TracePro 7.3.6 highlights

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(Released on August 15<sup>th</sup> 2013)

- New: New macro command, (edit:get-selection ), to get list of selected objects and surfaces
- New: Add macro command for OPL analysis
- Update: Fix raytrace issue on submitted model
- Update: Fix to macro recording of RGB transparencies
- Update: Fix a RepTile display bug on submitted model
- Update: Fix incorrect importance sampling flux for scattering into medium with index other than unity
- Update: Read in surface sources when inserting a part
- Update: Fixes for DMD parameterized RepTile
- Update: Improve source editor performance
- Update: Minimum pixels reduced in Luminance Maps to permit larger aspect ratios
- Update: Fix for submitted model where rays were terminated incorrectly due to errant determination of overlapping bodies
- Update: Improve rotational symmetry calculation for Polar Iso Candela plots
- Update: Suspend system tree updating when running a scheme file
- Update: Improve system tree selection performance
- Update: Fix to RepTile display of Enhanced Prisms – the orientation angle was ignored
- Update: Properly display Surface Source Property dialog when double-clicking on source tree
- Update: Improve performance of simulation file processing
- Update: Save RGB values to file when saving Luminance map as a text file
- Update: Fix inverted pixels in y direction on Irradiance Viewer

### TracePro Utilities Revisions...

- ▶ General:
  - New: Add new after-scheme function - CINT
- ▶ BSDF Converter:
  - New: Add capability of loading Ophir binary files
  - Update: Change UI wording to TracePro Candela Distribution file to signify the only Candela distribution files are supported and not ISO Candela files – 5694
- ▶ IES/LDT Analysis:
  - New: Display the FWHM region
  - Update: Fixes to error messages and display issues
- ▶ Texture Optimizer:
  - Update: Raytrace data is now deleted before generating texture file to reduce memory consumption
- ▶ 2D Texture Optimizer:
  - Update: 2D raytrace can now handle coincident surfaces
  - Update: Fix the issue that fails in applying property for a radial symmetric

▶ 3D Texture Optimizer:

- New: Add Wireframe and Silhouettes modes for object editor
- Update: Fix the issue where the aspheric coefficients are not working as variables
- Update: Fix the issue that unable to open .io2 file saved from 7.3.4 if there is close loop profile in it
- Update: Fix the issue that undoing an action of deleting control point will crash program

## TracePro 7.3.5 highlights

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(Released on June 27<sup>th</sup> 2013)

- Update: Fix rare and intermittent crash during RepTile raytracing (regression in 7.3.4)
- Update: Improvements to random number generator to yield complete new ray sets from all sources when the random number seed is changed and the random number generator is used
- Update: Create reflector error messages are now posted in a consistent manner across all six reflector types
- Update: Allow saving files as \*.emf with an '=' in the filename
- Update: Fix identified crash with regards to reverse raytracing
- Update: Fix to macro (modify:3d-compound-reflector... ) with regards to parameter reading

## TracePro 7.3.4 highlights

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(Released on June 18<sup>th</sup> 2013)

- New: Add new scheme command... (raytrace:get-source-name ... )
- Update: Fix Insert Reflector dialog refresh issue
- Update: Fix hang when saving to ACIS R15 and earlier
- Update: Add new scheme commands...
  - (insert:spherical-reflector ... )
  - (insert:parabolic-reflector ... )
  - (insert:elliptical-reflector ... )
  - (insert:hyperbolic-reflector ... )
  - (modify:spherical-reflector ... )
  - (modify:parabolic-reflector ... )
  - (modify:elliptical-reflector ... )
  - (modify:hyperbolic-reflector ... )
- The macro recorder now records these new forms instead of the older ones: (insert:conic-reflector ... ) and (modify:conic-reflector ... )
- Update: Fix initialization of combo box in Insert reflector dialog
- Update: Fix issue with vertex display switch
- Update: Fix issue where macro processing was stopped. A warning is now printed and the macro processing will continue.
- Update: Properly update internal flag for photometric/radiometric Surface Source Property
- Update: Fix hang in customer model using asymmetric table BSDF, BTDF beyond the critical angle, and high-index material
- Update: Fix crash for table BSF with high index material and BTDF beyond the critical angle
- Update: Quantum efficiency renamed to Conversion efficiency in Fluorescence Property Editor

### TracePro Utilities Revisions...

- ▶ General:
  - Update: Changes SlimDX version to January 2012
- ▶ BSDF Converter:
  - New: Add FRED file interpreter
- ▶ IES/LDT Analysis:
  - New: Add new feature that the UGR value can display in the text box
  - New: Add new option for version selection for LCS analysis that user can choose either TM-15-11 or TM-15-07
  - New: Add the capability that the report template can have multiple pages
- ▶ Source Property Generator:
  - New: Add new feature to generate volume source
  - New: Add new feature to generate planar source
- ▶ 2D Texture Optimizer:
  - Update: Fix the issue that the exported object cannot be loaded in SolidWorks



- Update: Fix the issue that when load a saved file with multiple objects, the indices table won't be updated
  - Update: Fix the issue that generate geometry results in corrupted geometry in TracePro 7.3.3 (was OK in TracePro 7.2.9)
  - Update: Fix the issue that symmetry not maintained during optimization
- ▶ 3D Texture Optimizer:
- Update: Fix the issue that modifying aperture info in the dialog for lens object is not working
  - Update: Fix the issue that drawing 3D object fails if the mesh has too many vertices
  - Update: Fix multiple issues that fail exporting geometries in TracePro
  - Update: Fix the issue that performing undo/redo will crash in some cases
  - Update: Fix the issue that 3D display freezes after computer is recovered from locked
  - Update: Fix the issue that CV and CC for Bi-conic surface cannot be variables
  - Update: Fix the issue that when clicking on non-popup area will move the selected control point
  - Update: Fix the issue that the extruded object failed when creating
  - Update: Fix the issue that ray display incorrect for reflective extruded surface
  - Update: Fix the issue that variable name not retained when saved, move using that variable not executed

## TracePro Bridge 7.3.4 highlights

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(Released on June 19<sup>th</sup> 2013)

- Update: 32-bit installer will not install onto 64-bit Windows
- Update: Quantum efficiency renamed to Conversion efficiency in Fluorescence Property Editor

## TracePro 7.3.3 highlights

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(Released on May 7<sup>th</sup> 2013)

- Update: Add "Detect Ray Starting in Bodies" to Raytrace Options dialog in TracePro LC
- Update: Fix displayed flux values in Wavelengths table of Grid Source dialog and Surface Source dialog. These were incorrect for the case of multiple wavelengths and weights

### TracePro Utilities Revisions...

- ▶ 2D Interactive Optimizer:
  - Update: Fix the crash when exporting radial symmetric object
- ▶ 3D Interactive Optimizer:
  - New: Add new operands – RMS and Contrast for the uniformity calculation

## TracePro 7.3.2 highlights

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(Released on April 29<sup>th</sup> 2013)

- New: Add scheme commands for setting/getting the irradiance map window size
- (analysis:irradiance-get-window-size ... )
- (analysis:irradiance-set-window-size ... )
- Update: Fix source ray sorting for Irradiance Maps, Incident Ray Tables, and Polarization Maps after simulation mode raytraces
- Update: Fix incorrect results in Polarization Map in submitted model
- Update: Fix incorrect non-reporting of overlapping objects with coincident surfaces in customer model
- Update: Additional Japanese translations
- Update: Fix crash in 3D Irradiance Map on user supplied model
- Update: Improvements in detecting whether a full audit is required
- Update: Documentation updates

### TracePro Utilities Revisions...

- ▶ IES/LDT Analysis:
  - New: Add new analysis function - UGR
- ▶ 2D Interactive Optimizer:
  - Update: Fix the creation method of radially symmetric objects in order to facilitate exporting to SolidWorks
  - Update: Increase the resolution of the saved Candela file for optimization from 10 degrees to 1 degree
- ▶ 3D Interactive Optimizer:
  - Update: Fix the issue that when loading file with user-defined variables, the variable won't change during optimization
  - Update: Fix the issue that the button will be disabled if user aborts the variable scanning process
  - Update: Fix the hang when using absolute variable and setting its boundary to a negative number
  - Update: Fix the issue that when moving a referring point of a pick-up control point, the pick-up control won't be updated immediately
  - Update: Change the way to create an extruded object, the extrusion direction is no longer along both sides but along the normal of selected surface
  - Update: Fix the crash when editing Candela profile in optimization dialog
  - Update: Disable the Conic segment type for 3D Path
  - Update: Fix the issue that the control points for Conic segment cannot be set as a pick-up
  - Update: Increase the resolution of the saved Candela file for optimization from 10 degrees to 1 degree
  - Update: Add new menu item – Reset DDE as a recovery to re-build DDE connection if TracePro crashes

## TracePro 7.3.1 highlights

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(Released on March 26<sup>th</sup> 2013)

- New: Add new math functions (MAX and MIN) for RepTile parameterization
- New: New macro command: (file:save-objects-as ... )
- Update: Fix potential crash in 3D Irradiance Map when ray intersection point is far from the face
- Update: Fix color button in Analysis Ray Colors...
- Update: Display Selected Rays for an Irradiance Map now maintains the ray color selections in Analysis/Ray Colors
- Update: Properly update the surface source tree when using the (property:apply-name) command to change the entity name
- Update: Improvements to dialogs with property sheets
- Update: Additional language translations
- Update: Add a new optional argument to the macro functions (entity:get-by-name ... ) and (entity:get-by-names ... ) which limits the search to only objects with the raytrace flag turned on
- Update: Sort vertices for edge selection output

### TracePro Utilities Revisions...

- ▶ Texture Optimizer:
  - New: Adds two new supported values: "pjr"-projected radius and "a"-area for the export filter
- ▶ 2D Interactive Optimizer:
  - Update: Fix the issue that copying an object won't copy attached surface property
  - Update: Change the message shown when user wants to modify geometry profile with the Optimization window open
  - Update: Fix the issue that program crashes when editing Y starting position for a ray
- ▶ 3D Interactive Optimizer:
  - New: Add two new operands: irradiance and intensity
  - New: Enable the function of performing a single run
  - New: Add a check to disable simulation prompt if TracePro is in simulation mode before starting optimization
  - Update: Fix the issue that copying object won't copy attached surface property
  - Update: Fix the issue that the after-scheme command -move is not working
  - Update: Fix the issue that the function of variable scanning is not working
  - Update: Change the way of creating a radial symmetric object to avoid the failure when loading model into SolidWorks
- ▶ Solar Emulator:
  - Update: Properly set the correct side of the Sun model as the emitter when the selected aperture shape is Circular

## TracePro 7.2.7 highlights

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(Released on February 15<sup>th</sup> 2013)

- Update: Fix property copying issue after a Boolean operation
- Update: Fix an issue where properties were incorrectly re-applied after undoing an operation subsequent to a Boolean operation
- Update: Properly update surface source data in the model tree after the source is modified in the Surface Source Editor
- Update: Fix hang during audit of submitted model
- Update: Improvements to torus intersector to deal with numerical precision issues
- Update: Disable type combo box on Irradiance Viewer Options when appropriate
- Update: Fix command (raytrace:set-wavebands...) and make (raytrace:get-wavebands...) consistent with it
- Update: Fix issue with creating a lens with the given set of specified parameters; and also fix identified crash
- Update: Properly initialize the number of rays per pixel and only enable the control when the quality is custom
- Update: Greatly improve UI performance when interacting with a model with many grid sources
- Update: Fix message problem regarding adding and deleting grid sources
- Update: Update controls in the Polarization Options dialog to properly work with the evaluator control
- Update: Improve performance of deleting multiple grid sources at once
- Update: Update flux values in the File Source dialog properly to take wavelength weighting into account
- Update: Improve error handling of macro processing
- Update: Fixed behavior of the view option for analysis:ray-sorting to match the documentation
- Update: Fix issue where getting sources by name failed when dealing with a lot of sources
- Update: Fix bug where the progress dialog stopped updating during the audit when voxelization and faceting of faces took a while. This also prevented the macro output window from updating too.
- Update: Fix crash associated with UI interaction with rotate dialog before raytrace and system tree after raytrace
- Update: Fix color palette issue
- Update: Fix bug that caused the palette top axis label to be incorrect for relief plots
- Update: Fix minor bug in the writing of bmp files
- Update: Use current process ID when naming temporary xml files for reading and writing
- Update: Fix multi-node drag/drop bug
- Update: Fix example description for entity:get-face-closest-to-point
- Update: Properly cleanup spheres associated with pre TracePro 3.4 file sources – repeatedly opening and closing the same file crashed TracePro with a HOOPS message
- Update: Properly post a TracePro message when a source file is missing – if not responded to, the previously modeless dialog could lead to a crash if the user attempted to use TracePro
- Update: Fix crash when converting pre TracePro 3.4 surface sources – regression in TracePro 7.2.2
- Update: Fix undo/redo after modify:trough-reflector
- Update: Fix macro recording of rotate file source

## TracePro Utilities Revisions...

- ▶ BSDF Converter:
  - New: Add the capability of specifying variables for ABg/Elliptical ABg fitting
- ▶ IES/LDT Import:
  - Update: Fix the error when loading an LDT file
- ▶ Source Property Generator:
  - Update: Fix the issue that fails to export a property with a uniform beam shape
- ▶ Texture Optimizer:
  - Update: Fix the dot pattern reversal issue
- ▶ 2D Interactive Optimizer:
  - Update: Fix hang reported by customer
  - Update: Fix the issue pertaining to applying material to a spline surface
- ▶ 3D Interactive Optimizer:
  - New: The draft angle of an extruded object can be variable
  - New: Add a new option for the downhill simplex algorithm. The random seed number can be generated by the system clock.
  - New: Add new surface type – 3D path
  - New: Add new parameter – draft angle for extruded object
  - New: Add capability of creating twisted object by selecting lens object with two Type-B surfaces
  - Update: Fix the issue that a variable can be included or not in the optimization dialog
  - Update: Fix the issue that the pickups are not working when loading the saved io2 file
  - Update: Fix the crash when moving control point for lens object with two spline surfaces
  - Update: Fix the issue that user-defined variable is not working when doing variable scanning
  - Update: Fix the crash when saving file with user-defined variables

## TracePro 7.3. new features/enhancements

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(Released on November 1st<sup>th</sup> 2012)

- New Solar Emulator Utility (all TracePro Editions)
- New Utilities now available in TracePro LC:
  - 2D Interactive Geometry Modeler
  - 3D Interactive Geometry Modeler
- New RepTile Geometry Types (TracePro Expert Only)
  - DMD (Digital Micromirror Device)
  - Block
  - Chiseled Log



## TracePro 7.2.3 highlights

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(Released on September 11<sup>th</sup> 2012)

- New: New RepTile feature: Block
- New: New RepTile feature: Chiseled Log
- Update: Fix bug where surface sources are lost after pasting (regression in 7.2.2)
- Update: Fix bug where surface sources are lost after saving document (regression in 7.2.2)
- Update: Fix the irradiance viewer for true color
- Update: Fix display selected rays issues
- Update: Fix surface property retention when lenses and reflectors are modified
- Update: Fix raytrace issue when the texture up vector does not match the boundary up vector
- Update: Fix irradiance value displayed in the status bar
- Update: Fix parameter issue in the Insert Reflector dialog
- Update: Fix dialog control for "Auto importance sampling..." in Luminance dialog
- Update: Fix to copy/paste issue regarding surface sources

### TracePro Utilities Revisions...

- ▶ BSDF Converter:
  - New: Add the capability of switching the display between Surface Normal coordinates and the Specular coordinates
  - Update: Fix the incorrect name for the format – Radiant Imaging
- ▶ Texture Optimizer:
  - Update: Fix the compatibility issue when loading saved file in old format
  - Update: Fix the issue that the MD smooth is not working correctly if the X- or Y- reverse is checked
- ▶ 3D Interactive Optimizer:
  - New: Add new aperture shape – rect for the lens object type
  - Update: Fix the issue that crash on launch is the temporary folder is not existing
  - Update: Fix the issue that loading a io2 file with bitmap, an error will occur
  - Update: Fix the issue that the conic segment won't be changed when inputting CV and CC in the property window
  - Update: Fix the issue that when tracing zero rays in the object view, the utility will crash
  - Update: Fix the issue of the position

## TracePro 7.2. new features/enhancements

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(Released on July 20<sup>th</sup> 2012)

- DMD Reptile Texture Utility
- DMD Mirror RepTile geometry
  - allows you simulate DMD chips for design of projection TVs and digital cinema projectors
- 3D Interactive Optimizer Utility
  - allows you to graphically lay out the design of a reflector or lens, then optimize the design to meet a target by tracing rays in TracePro
- Material Properties
  - enhanced to include minimum and maximum wavelengths for defining the range of validity of the data in the property
  - New material property catalogs (Crystals, Metals, Kopp Glass, umicore, Vitron, OSLO Miscellaneous
  - New or updated materials in existing catalogs (Liquids, Plastic)
- Removal of Faceted Spline and Accelerated Raytrace
- Valid Wavelength Check

## TracePro 7.1.4 highlights

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(Released on May 16<sup>th</sup> 2012)

- Update: Change the names of the lens design translator DLLs to avoid a conflict with some anti-virus software
- Update: Allow file saving from the Irradiance Viewer
- Update: Fix crash when property name is blank
- Update: Fix database importing issue
- Update: Fix display issue with Log RepTiles
- Update: Fix tab order in Insert Thin Sheet dialog box
- Update: Reduce column width in Insert Thin Sheet dialog box
- Update: Use outward normal of the face when automatically calculating normal vector
- Update: Fix flux report when fluorescence is involved
- Update: Fix issue with refreshing Material Property dialog box
- Update: Fix raytrace error on a user-supplied model with a Direction Sensitive Grating
- Update: Fix demo-mode raytracing
- Update: Enable spaceball in 64-bit TracePro
- Update: Fix error message – “bulk absorbed flux with no object” is terminating rays in model with GRIN and Material property with bulk absorption on objects that share a coincident face
- Update: Fix raytracing error on submitted model where ray is not transmitting/refracting out of GRIN object
- Update: Fix Ray History incorrect OPL value when a GRIN property is applied
- Update: Fix display issue when modifying multiple surface sources
- Update: Fix identified crash after running macro using the F5 key from the Macro Editor
- Update: Fix copy/paste issue with surface source
- Update: Fix issue with grouping in the system tree
- Update: Fix unsmoothed display of CIE and true color when plot window is made small
- Update: Fix printing of smoothed CIE and true color plots
- Update: Fix display of smoothed CIE data in the irradiance viewer
- Update: Fix issue with Insert Lens to allow second face decenter
- Update: Fix internally found issue with flux on certain surface source properties
- Update: Fix issue with erroneous lens created in OSLO translator
- Update: Fix incorrect import of customer-supplied Code V file
- Update: Fix issue with Code V importer not importing some surfaces without a clear aperture defined
- Update: Fix default wavelength bug in the macro command property:apply-flux-surface-source
- Update: Intercept limit fixed for Total Scatters, Random Scatters, and Optical Scatters. These allowed one more scatter than they should.
- Update: Fix crash when ray is started in 1 of 2 GRIN objects that share a coincident face

### TracePro Utilities Revisions...

- ▶ BSDF Converter:
  - New: Add Add new options and functions for fitting BSDF by elliptical ABg model
- ▶ IES/LDT Import:

- New: Add capability of exporting IES (Type C only)/LDT file formats
- New: Add Polar/Rectangular Candela plots
- ▶ Surface Source Property Generator:
  - New: Add capability of creating multiple beam shapes
  - New: Add new feature of displaying irradiance map
  - New: Add capabilities of loading surface source property from files and TracePro database
  - New: Support new text format
  - Update: Fix the unit of exported data as Radiometric
- ▶ Interactive Optimizer:
  - Update: Fix the issue of wrong orientation of the generated biaxial object
  - Update: Fix the issue of not retained surface property in the generated biaxial object in TracePro

## TracePro 7.1.3 highlights

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(Released on April 6<sup>th</sup> 2012)

- Update: Fix ray distribution from surface source issue on submitted model
- Update: Add a new argument to the scheme command (property:apply-surface) to define the value of "Use fixed axis..." checkbox in Apply Properties/Surface dialog for anisotropic/asymmetric properties
- Update: Fixed incorrect azimuthal interpolation of anisotropic surface property with elliptical BSDF
- Update: Fixed rare crash when performing a raytrace immediately after cancelling a previous raytrace.
- Update: Fixed the issue of interpreting the emissivity values correctly for a Surface Source Property defined with Total Flux in lumens
- Update: Properly update Select Rays dialog for the Polar Iso-Candela Plot when the units change from Radiometric to Photometric
- Update: Fixed rare initialization issue with multi-wavelength file sources when wavelengths in the file did not match the tracing wavelength
- Update: Fixed issue with anisotropic surface property with elliptical BSDF not obeying "Fixed axis for zero-azimuth for asymmetric BSDF" setting
- Update: Fix incorrect ray tracing of embedded bodies when no Material Property is applied to embedded bodies
- Update: Zemax translator now supports new Zemax method of specifying wavelengths and weights
- Update: Fix the issue of invalid selection of "" for a Surface Property in the non-English versions of TracePro
- Update: Fix incorrect warning message about "suspicious gradient index" reported for points outside the object
- Update: Fix spline intersector for GRIN raytrace
- Update: Fix true color selection in the Irradiance Viewer
- Update: Fix intermittent and rare hang when bringing up grid source dialog for the first time
- Update: Prevent possible double-counting of GRIN OPD
- Update: Fix issues with member variable initialization and memory deallocation
- Update: Disable all other ray splitting options when Specular Rays Only is selected in the Raytrace Options
- Update: Do not translate the word "None" in property combo boxes in non-English versions of TracePro
- Update: Fix raytrace issues on submitted models
- Update: Fix associated with the Surface Source Property
- Update: Improved capabilities of the Surface Source Editor so that the Surface Source property can be applied to multiple surfaces at once
- Update: Fix incorrect interpolation of bulk scatter properties versus wavelength
- Update: Fix crash on submitted model when attempting to view Flux Report in a model with a source that does not trace all wavelengths
- Update: Fix UI issue with the source tree duplicating grid sources
- Update: Fix description of Random Rays in Raytrace Options of help
- Update: Account for lost flux and add an error message for an invalid grating property
- Update: Fix object grouping when merging a file

- Update: Reset binary flag properly when importing source files
- Update: Fix incorrect temperature interpolation of a temperature-dependent anisotropic grating surface property
- Update: Refresh system tree after applying a surface property
- Update: Fix issue with the system tree on the right
- Update: Fix bug associated with parabolic and hyperbolic reflector creation. This was a regression in 7.1.2
- Update: Fix bug when using surface temperature distribution with multi-wavelength surface property
- Update: Fix bug where the default temperature setting was being ignored
- Update: Enhancement to the surface property DLL – index of refraction and extinction coefficient are sent from TracePro to the user's DLL. This is done for both sides of the interface on a Per Surface Intersection basis.
- Update: Change Path Sort text file save template to "\*.txt"
- Update: Fix to faceted raytracing when a ray intersects the same spline surface in close proximity
- Update: Improvements to Progress Dialog and removal of raytrace update interval
- Update: Fix crash on submitted model after viewing Irradiance Map then selecting Ray Sorting – 5751
- Update: Improvements to raytrace engine for grazing angles of incidence

### TracePro Utilities Revisions...

- ▶ BSDF Converter:
  - New: Add capability of importing the Opsira file
  - Update: Fix the issue of failing in export the surface source property text file when Region and Language settings are set to French
  - Update: Fix the issue of crash when moving red block in BSDF-Beta plot to upper right corner of plot
- ▶ Fluorescence Property Generator:
  - New: Add a trackbar to adjust the ratio of residue flux in the CIE plot page
- ▶ IES/LDT Import:
  - Update: Fix the issue when switching 3D preview on and off, the size of 3D preview will become smaller
- ▶ Surface Source Property Generator:
  - New: Add the feature of displaying/editing/copying/pasting of data in a table.
- ▶ Texture Optimizer:
  - New: Add new patterning method – Diamond distributed
  - New: Add new supported geometry – Pointed Cone
- ▶ Interactive Optimizer:
  - New: Add a new after-scheme command "makepie" to create geometry in a pie shape
  - New: Add menu – Windows
  - New: Allow comments (//) in the after scheme macro
  - Update: Sort the name of catalog and properties
  - Update: Fix the miscalculation of flux when the target area is regional
  - Update: Fix the issue when executing the after-scheme command – move()

## TracePro 7.1.2 highlights

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(Released on January 23<sup>rd</sup> 2012)

- Update: More CHS and CHT translations
- Update: Improve spline representation of conics and aspheres to improve faceting of these surfaces
- Update: Added some message translations for CHS and CHT
- Update: Fix typo in message regarding Importance Targets
- Update: Fix documentation of edit:move in Macro Reference
- Update: Improved formatting of Remaining and Elapsed time in progress dialog
- Update: Fix crash associated with using the Translate Object button
- Update: Improve raytrace performance and responsiveness of progress dialog box. This may be significant for many rays that are traced quickly.
- Update: Fix Apply Property for large text sizes
- Update: Fix for cursor when finished orbiting or panning
- Update: Fix incorrect labels on Polar Candela Distribution Plot
- Update: Fix error reading CodeV GLA command in CodeV Translator
- Update: Fix repeated memory consumption during successive raytraces with RepTile Texture file
- Update: Fix copy/paste issue
- Update: Fix incorrect error message and abort of RepTile property when Boundary Up Vector is parallel to surface normal
- Update: Fix bad link in help for Apply Properties: Fluorescence

### TracePro Utilities Revisions...

- ▶ BSGDF Converter:
  - Update: Fix the issue that cannot drag the red block (control points of ABg curve) to value less than 1e-6
- ▶ Surface Source Property Generator:
  - New: Add the capability of input and modify control points in the data grid
  - New: Add the option of using Spline or Linear interpolation for fitting curve
- ▶ Texture Optimizer:
  - New: Add new capability of input condition for filtering the exported dot pattern
  - New: Add capability of selecting a region of cells in the contour plot mode
  - Update: Fix the issue of updating progress when generating and drawing dot pattern
  - Update: Correct the moving direction when mouse dragging in the trend chart
  - Update: Fix the issue of UI frozen when performing MD smooth
  - Update: Improve the performance of selecting cells in DataGrid View with huge number of cells
  - Update: Improve the performance of generating dot pattern for a big number of cells
  - Update: Fix the crash issue when aborting optimization if there is not any complete simulation yet
- ▶ Interactive Optimizer:
  - New: Add descriptions about the segment types in the online help
  - New: Add description about how to calculate the error value in the online help
  - New: Add new segment type : Asphere

- New: Add description about the command "Applyproperty" in the command reference
- Update: Fix the issue that the exported object does not match the Conic constant and Curvature values specified in the Property Editor
- Update: Fix the issue that Conic constant and Curvature values have changed after saving and reopening the .sod file
- Update: Fix the issue of program hangs when the start value of absolute variable is outside allowable range



## TracePro 7.1.1 highlights

(Released on December 16<sup>th</sup> 2011)

- Update: Fix case where Surface sources were lost because of large entity pointers
- Update: Improve color fidelity for True Color plots
- Update: Minor change to license log file
- Update: Surface sources were lost when importing models from the Bridge when the ACIS entity pointer is greater than the size of a long
- Update: Fix bug when faces are selected in component parts of SolidWorks when the assembly that references them is saved to an OML file.
- Update: Fix crash when selecting items with entity pointers larger than 2GB
- Update: Fix for source files larger than 2GB
- Update: Check for invalid importance sampling
- Update: Fix dropdown list for importance targets which could potentially get a bad value in it
- Update: Fix hang when changing to rotationally symmetric candela plot
- Update: Improve performance when reading source files
- Update: Fix crash when starting a grid ray inside an object with a GRIN material applied
- Update: Change radiometric units to analysis units
- Update: Peak value of Photopic Efficacy curve is 683 lumen/Watt
- Update: Fix the issue of recording wrong argument for command (raytrace:set-surface-source-discrete-wavelength)
- Update: Fix accuracy issues with intersections on toroidal surfaces
- Update: Fix updated path sort table
- Update: Cursor color fix
- Update: Update macro reference documentation for Ports and Files
- Update: Expose path sorting for LC
- Update: Raytrace improvements on spline surfaces
- Update: Change default on path sorting to off
- Update: Fix path sort problem
- Update: Fix incorrect percentage of total for multiple wavelengths
- Update: Fix a crash on an internally identified case
- Update: Recover surface source after an undo/redo
- Fix the issue of missing argument for defining the Rays/pixel value if the radiance quality is set to Custom in the scheme command (analysis:set-radiance-quality)
- Update: Fix raytrace issue on submitted model when the number of rings was increased to 200
- Update: Better window titles on Selected Rays dialog box and disable button if not applicable
- Update: Fix incorrect local coordinates when using surface source with emissivity = surface property absorptance and property is applied with anisotropic axis = surface normal
- Update: Fix incorrect azimuth interpolation of anisotropic surface property when there is no azimuth = 0 entry in the property
- Update: Fix incorrect overlapping body message during birefringent raytracing
- Update: Ignore Simulation mode settings for Luminance raytrace

### TracePro Utilities Revisions...

- ▶ Bitmap Source:
  - Update: Allow user to edit weights as well as wavelengths.
  - Update: Update to use CIE wavelengths and weights for RGB by default.
  - Update: Warn user when he attempts to open a non-image file or unsupported file type.
- ▶ BSDF Converter:
  - New: Add the capability of displaying ABg modeled curve in the profile editor
  - Update: Fix the issue of not accepting a value of less than 1e-6 for BRDF A coefficient
  - Update: Fix issue opening scatter files when language setting uses “,” as the decimal separator
  - Update: Fix the issue of loading Scattermaster file when the Language setting is French
- ▶ IES/LDT Import:
  - Update: Fix the possible exception in drawing when the loaded IES contains too large number of data.
- ▶ Texture Optimizer:
  - New: Improve the speed of generating dots and MD smooth by using multithreading techniques
  - New: Add new option to export texture property
  - Update: Implement the progress update in the Texture Window when drawing and exporting texture map
  - Update: Correct the moving direction of view port when mouse dragging in the trend chart
- ▶ Interactive Optimizer:
  - New: Add capabilities of import/export uniformity operands
  - New: Add feature of exporting object’s profile to a text file and update the on-line help
  - New: Add new segment type : Asphere
  - New: Add new after-scheme command for creating asymmetric aspheric surface
  - New: Add new capability that the baseline of the Fresnelized surface can be aspheric
  - Update: Fix the crash when optimizing if there is CIE<sub>xy</sub> or CIE<sub>uv</sub> target as operand and Window decimal separator is set to “,”
  - Update: Fix the issue of missing axis label after rotating object when Window decimal separator
  - Update: Fix the issue of failure in exporting model after right-click in Optimization log when Window decimal Separator is set to “,” is set to “,”
  - Update: Fix the issue of Candela options set by Interactive Optimizer, now the switch of smoothing and number of points in Candela distribution plot is defined in TracePro by users
  - Update: Fix the issue when the optimization results are sorted on the “Err” column, the incorrect plot will be shown once a result is selected
  - Update: Turn the simulation mode prompt off when optimizing
  - Update: Fix issue of calculating the error value of irradiance profile at single raytrace mode
  - Update: Fix issue of switching the variable scope for the user-defined variables in the optimization dialog

## TracePro Bridge 7.1.1 highlights

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(Released on December 16<sup>th</sup> 2011)

- Update: Fixed bug that produced an error message dialog when saving an oml file from a SolidWorks assembly or created a partial oml file. This would occur when a component was open in a separate SolidWorks document window and had faces selected in it.

## TracePro 7.1.0 new features/enhancements

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(Released on November 2<sup>nd</sup> 2011)

- Enhanced Path Sorting, including availability for Analysis Mode ray traces.
  - The Display Selected Paths feature enables you to visualize the rays for selected paths in the Model Window.
  - The Irradiance Map will also show results for only the selected paths.
- Enhanced 3D Irradiance/Illuminance Maps, including display in the Model Window and additional Options.
- Enhanced Ray Sorting, with several new choices in the Sort Type entry.
- Other Changes
  - Location of ray-trace temporary files
  - Limiting the number of threads in TracePro

## TracePro 7.0.7 highlights

(Released on September 9<sup>th</sup> 2011)

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- New: Add Scheme command: (view:get-data-directory )
- Update: Fix progress formatting when tracing pixels in 32-bit version
- Update: Fix issue with opening source file
- Update: Disable certain cells in the Surface Source Property Editor based on type
- Update: Fix incorrect Total Flux on smoothed irradiance map on curved surface
- Update: Remove Cancel button from Select Edition dialog
- Update: Update: Allow unicode model path
- Update: Evaluate vectors for being on the correct side of an interface inside materials with very large birefringence. This could lead to incorrect overlapping body messages.
- Update: Require Select by Area tool to have selection at least 3 pixels apart
- Update: Update: Fix issue with sorted combo box
- Update: Fix issue with BSDF interpolation
- Update: Fix plot crash when property name is ""
- Update: Fix incorrect raytrace after performing Prescription Set Data after initial raytrace
- Update: Fix calculation for skipping rays in Ray Sorting
- Update: Fix incorrect Ray Sorting display for Reverse Raytrace and Selected Surface
- Update: Added internal code check for validation
- Update: Refresh model tree node properly
- Update: Bulk Scatter DLLs can use the Win32 name with "\_x64" appended. This is the same convention as Surface Property DLLs and eliminates the need for two separate properties.
- Update: Fix crash in bulk scatter DLL found in internal testing
- Update: Fix Modify Lens Element when it deletes lens when specifying a cylinder with radius = 0
- Update: Additional cht and chs translations
- Update: Performance improvements while raytracing splines
- Update: Fix crash during Auto Importance Sampling when bad data is input
- Update: Disable update raysort button when the view is not applicable
- Update: Fix issue with circular boundaries not working with Textured RepTile
- Update: Fix incorrect average irradiance/illuminance value in Irradiance Viewer
- Update: Fix conservation of energy error message on re-importing exported geometry

### TracePro Utilities Revisions...

- ▶ General:
  - Update: Version numbers in Help/About are the same across all Utilities
- ▶ BSDF Converter:
  - Update: Clean up the title and help
- ▶ Fluorescence Property Generator:
  - Update: Fix an issue related to the user-defined equation
- ▶ IES/LDT Import:
  - Update: Change the default value of the emission unit to "Photometric Flux (lumen)"

- ▶ Texture Optimizer:
  - Update: Change the flux unit from "W" to "W/lm" in the Target map window
- ▶ Interactive Optimizer:
  - Update: Fix the issue when applying surface name to object will sometimes fail.
  - Update: Fix the issue when exporting model to TracePro, there is error indicating "Object reference not set to an instance of an object"
  - Update: Fix the issue that getting wrong value by using var() command.
  - Update: Fix the bug that optimization fails with "property-apply-surface"

## TracePro Bridge 7.0.7 highlights

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(Released on September 9<sup>th</sup> 2011)

- Update: Fixed bug with the display of an assertion failed error dialog when opening a part that was imported into Solidworks and had surface bodies that were suppressed. Picking retry from the dialog allowed the user to work with the part. However, if this part was inserted into an assembly the same error message would be displayed and after picking retry the assemblies system tree contained the suppressed surface bodies

## TracePro 7.0.4 highlights

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(Released on March 31<sup>st</sup> 2011)

- Update: Fix raytrace errors on submitted model
- Update: Make round numbers and consistent scale on volume flux viewer plots
- Update: Fix loading legacy file with incorrect Rep Tile Boundary Up Vector
- Update: Fix initialization issue found with user-supplied model
- Update: Improve performance and reduce memory consumption with large texture files on machines with many cores
- Update: Fix incorrect results or crash for surface temperature distribution with nx1 table
- Update: Update help for IES/LDT importer
- Update: Utility menu item changed from "IES Import" to "IES/LDT Import" to reflect new functionality
- Update: Fix scheme macros that output analysis results so they output the desired ANSI or UNICODE format
- Update: Fixes for 3D irradiance maps
- Update: Fix incorrect import of a Code V file which contains a lens with a zero center thickness
- Update: Perform automatic search for a network license
- Update: Fix crash when ray exits edge of Rep Tile cell with a birefringent material property applied
- Update: Bulk scatter now works with Constant Rep Tile and Variable Row Rep Tile
- Update: Fix units problem in foreign language versions of the user interface
- Update: Consolidate raytrace messaging to avoid tangled messages from multiple threads
- Update: Fix flux normalization for Solar angle type when Uniform Angle/Weighted Flux is chosen
- Update: Fix issue with refreshing the model view
- Update: Ensure tmp files from a previously interrupted run are deleted
- Update: Fix incorrect error message when using (raytrace:add-file-source) and source file is not found
- Update: Fix incorrect irradiance map from a sim file for planar faces
- Update: Fix problem of incorrect flux values for Irradiance Surface Source Property with Discrete Wavelengths in Surface Source Editor if the Editor is opened before an Audit is done
- Update: Fix incorrect flux values for Calculated Wavelengths with Surface source Properties and other issues with Surface Source Property flux values
- Update: Improve precision in Measure dialog
- Update: Fix aspheric intersector issue on submitted model with large aspheric coefficients on high order terms
- Update: Fix ray intersection issue due to numerical roundoff
- Update: Fix ray leaks on facet edges with faceted spline raytracing
- Update: Fix incorrect refraction directions for transmitted grating orders on submitted model
- Update: Check for reserved character in group name
- Update: Update: Update scheme command (raytrace:set-wavelengths ) so that it does not apply wavelengths to file sources with wavelengths in the file, and never applies flux and weight values to file sources Update Macro Reference to reflect these changes.
- Update: Update all analysis functions to correctly handle the rare case of split faces
- Update: Improvements to fluorescence calculations
- Update: Fix an issue dealing with trial licenses



- Update: Substantially reduce number of rays terminated due to edge intersections
- Update: Fix issue when using coating DLLs on a coincident
- Update: Fix crash in irradiance map with incident rays in Italian and Spanish versions
- Update: Improvements to raytrace performance
- Update: Fix to macro command: (edit:rotate-file-source ) to properly locate file source at correct center position
- Update: Fix issue with Irradiance map bounds checking on submitted model
- Update: Improvements to memory exception handling
- Update: Only perform user interface checks on active options with regards to Candela distributions
- Update: Reduce memory consumption on certain highly faceted faces
- Update: Remove races and reseeding issues associated with Coating DLLs and their use of the random number generator
- Update: Ensure audit is redone properly after healing
- Update: Low-level performance improvement to ray intersector
- Update: Fix to saving True Color irradiance map as a text file; the correct RGB values are now saved
- Update: Fix rare raytrace errors on certain spline intersections at grazing incidence
- Update: Incorporate raytrace performance improvements on spline intersections
- Update: Fix reported flux on Display Selected Rays dialog for irradiance map
- Update: On the Analysis menu, only enable " Select Rays..." when "Display Selected Rays" is checked
- Update: Changes to licensing log file format

### TracePro Utilities Revisions...

- ▶ General:
  - Update: Improve the rainbow color shown for the contour map and 3D plot
  - Update: Launch TracePro list will display all installed TracePro(s) including x86 and x64 versions
  - Update: Fix the double precision issue when using D3D library
- ▶ BSDF Converter:
  - New: Display the projected intensity map on the angular selector window
  - New: Add capability to export BTDF data
  - Update: Improved stability and performance
  - Update: Fix the hang when importing Alanod files
  - Update: Fix the European decimal separator issue
  - Update: Changes BSDF integral to TracePro algorithm to reduce the differences between BSDF Converter and TracePro
  - Fluorescence Property Generator:
    - Update: Fix the European decimal separator issue
    - Update: Add filename extensions when saving files
- ▶ IES/LDT Import:
  - New: Add the capability in importing Eulumdat file
  - Update: Fix the European decimal separator issue
- ▶ Surface Source Property Generator:
  - New: Add the capability of pasting a image file into the profile editor
  - Update: Fix the European decimal separator issue

- Update: Fix the issue that Surface Source Property Generator will crash at launch on some computers
- ▶ Interactive Optimizer:
  - New: Add new optimization operand – Uniformity
  - New: Add data grid view in the Candela profile and Irradiance profile editors
  - New: Increase variable types “Absolute variable” (new) and “Relative variable” (old)
  - New: Add the capability that the bitmap layer can be modified in the Property window
  - New: The variable indicator will be highlighted if its corresponding control point is selected
  - New: Add the capability that dragging and dropping the sod or olg file into the application window, the dropped file will be loaded automatically
  - New: Add new capability of selecting “Exiting” and “Incident” type for the Candela profile operand in the optimization window
  - New: Add an option in the Option window to save the Candela file in Polar or Rectangular type
  - New: Add an option in the Option window to define the sampling number for spline curve generation in TracePro
  - Update: Fix the crash when analyzing the Candela files saved by different language version of TracePro
  - Update: Fix crash attempting to optimize model with Spanish, Italian or Japanese version
  - Update: Moves the temp file folder to c:\temp to prevent the file access problem when user name includes Japanese characters
  - Update: Add a pre-check for variable setting before starting optimization
  - Update: Fix the European decimal separator issue
  - Update: Fix the issue when the loaded sod file contains the missing property in current TracePro database
  - Update: Add a pre-check for the operands setting before starting optimization
  - Update: Make the toolbox window remains “on top of” the optimization window
  - Update: Fix the wrong scheme command for the after-scheme command “loadmodel”

## TracePro Bridge 7.0.4 highlights

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(Released on March 31<sup>st</sup> 2011)

- Update: Improve tolerance on the license check for tampering with the clock because Windows time synchronization is not precise
- Update: The TracePro Bridge License Information dialog has been updated to search for the server name if the user leaves the Server host name field empty or enters a single space character
- Update: Prevent SolidWorks crash if the bridge encounters an access violation or other structured exception. A message box is now displayed indicating where the exception was handled
- Update: Fix SolidWorks crash when right clicking on an item in the System Tree or selecting in the SolidWorks feature manager tree. This would occur after collapsing an object in the System Tree while a surface was selected in the branch that was collapsed
- Update: TracePro properties are now copied from the prior active configuration when a new configuration is created for a part or an assembly
- Update: The option "Apply property to all configurations" is now checked for any properties that are copied when inserting a component into an assembly
- Update: Fix error message displayed after adding weight for wavelength of 1.457E-010
- Update: Fix error that occurred whenever an assembly component pattern was inserted or modified

## TracePro 7.0.3 highlights

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(Released on January 12<sup>th</sup> 2011)

- Update: Fix issued related to saving and reading source files
- Update: Remove installer conflict with other services running on ports 6001 and 6002
- Update: Fix errant flux report on submitted model
- Update: Fix bad raytrace results on submitted model
- Update: Update help: source file format to indicate values that are not used
- Update: Allow more facets for Faceted Splines raytracing and 3D Irradiance Map
- Update: Add macro command: (raytrace: get-surface-source-total-rays)
- Update: Replace the multi-threaded random number generator with one with a much longer period
- Update: Fix bug with specifying lens apertures

### TracePro Utilities Revisions...

- ▶ General:
  - Update: Fix CRI calculation bug
- ▶ Interactive Optimizer:
  - New: Add online help
  - New: Add new features to create ray fans and ray sequence
  - New: Add the capability of settling assymetric candela target
- ▶ Interactive Optimizer:
  - New: Support new CASI file format: [angle(deg), polar angle, BSDF
  - Update: Fix the bug while exporting property file of Asymmetric BSDF table type

## TracePro 7.0.2 highlights

(Released on December 9<sup>th</sup> 2010)

- Update: Improve random ray generation from surface sources
- Update: Allow ten minute time tolerance on licensing from multiple networked computers
- Update: Do not display importance sampling warning messages for luminance auto importance targets
- Update: Irradiance maps are now calculated over the projection of the actual surface instead of the projected plane of the map
- Update: Sim files now store normal vector information-the user is notified if an older sim file is opened
- Update: Fix to XML reader when the grid sources are saved with "Flux per ray" designation
- Update: Rays erroneously hitting surface outside face on submitted model have been fixed
- Update: Performance improvements to exit surface faceting
- Update: Ensure thread safety when processing geometric exception
- Update: Increase multi-threaded loop iteration count to reduce latency during raytracing
- Update: Fix incorrect warning message when tracing GRIN material
- Update: Fix to body selection problem for 3D irradiance map
- Update: Fix numerical instability in birefringent TIR case when the reflected extraordinary wave is also evanescent
- Update: Fix calculation of transmitted flux in fluorescence raytracing
- Update: Fix incorrect calculation of source flux when using surface source property and calculated wavelengths
- Update: Automatic calculation of irradiance map up vector prefer -y direction
- Update: Fix irradiance map problems for circular planes
- Update: Update time remaining every second with the best estimate at that point in time
- Update: Fix incorrect display of Display Selected Rays for irradiance map on certain models
- Update: Fix undisplay object problem

### TracePro Utilities Revisions...

- ▶ BSDF Converter:
  - New: Support new CASI file format: [angle (deg), polar angle, BSDF]
  - Update: Fix the bug while exporting property file of assymmetric BSDF table type
- ▶ Interactive Optimizer:
  - New: New Function: Generate Rays fan and Ray sequence
  - Update: Fix the bug while applying face's name and property, some faces will be ignored

## TracePro 7.0.1 highlights

(Released on November 30<sup>th</sup> 2010)

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- Update: Update estimated time to completion more frequently for very large ray sets
- Update: Improvements to performance and memory consumption on several user-supplied models
- Update: If a source file is not in the absolute location specified in the OML file, check to see if it is in the same folder as the OML file and inform the user that this file will be used instead. If it is not there, prompt the user to search for it.
- Update: Fix elapsed time in raytrace report for run times ranging from 1-2 hours and 1-2 days
- Update: Provide warning messages for improper importance sampling
- Update: Add newline to out-of-memory error message
- Update: Fix cases where the wait dialog remains displayed after a lengthy operation is complete
- Update: Update highlight mode due to HOOPS 17 change
- Update: Fix invalid estimate for remaining time that is caused by a divide by zero. It is not possible to estimate the time prior to the first step.
- Update: Enlarge text control to allow two full lines of output in the progress dialog
- Update: Remove duplicate macro recording when deleting sources
- Update: Pay attention to the voxelization type setting for accelerated raytrace option
- Update: Fix issue with fluorescence tracing in simulation mode
- Update: Fix issue with opening volume flux files
- Update: Fix crash after canceling a raytrace with a surface source in it – worker threads would be left running
- Update: Prevent crash during raytrace of RepTileTexture on submitted model
- Update: Fix Irradiance Map boundary line
- Update: Add support for large multi-threaded files – removes 2GB limit on file sizes
- Update: Put up wait dialog during lengthy file:open operations
- Update: Post error message if there are file handle issues with multi-threaded files

### TracePro Utilities Revisions...

- ▶ General:
  - Update: Fix string overlapping issue on some charts
  - Update: Fix the D3D resize issue
- ▶ BSDF Converter:
  - New: Add a preference dialog
  - New: Interpreter can now read Scattermaster files
  - Update: Fix issue with incorrect exclusion angle calculation for Scattermaster files
  - Update: Fix issue with exporting files and modify the export dialog
  - Update: Fix issue with signature file
  - Update: Fix issue with launching TracePro
  - Update: Fix issue associated with incident data selector
  - Update: UI modifications to the menu bar on the main window, the resize scale button, and the legend in the plot chart

- ▶ Surface Source Property Generator:
  - Update: Fix issue with wrong angular type when using Save&Export to generate the property file
  - Update: Fix issue with exporting the spectral data to TracePro
- ▶ Interactive Optimizer:
  - New: Add the feature of applying surface property and names to each facet when segment is Fresnel or Faceted with different creation type
  - New: Add the capability of optimizing with conic const and curvature for Conic segment
  - New: Add new segment type: Conic
  - New: Add new function – “Create model & Run scheme & Raytrace” in the popup menu when right clicking on the after-scheme column.
  - New: Add new option –steps for Radial symmetry creation type
  - New: Add new segment method: Facet
  - New: Add new variable for Sphere segment: Radius
  - New: Add new after-scheme command: makeflyeye
  - New: Add new creation type - Revolving
  - New: Add new segment type - ellipse
  - Update: Fix the issue when zoom-in/out the editing window, the up point of the bitmap will mismatch where it drawn
  - Update: Fix the bugs when applying Fresnel/Facet method to sphere/ellipse/conic segment
  - Update: Fix the issue with splitting segments
  - Update: Fix the European decimal separator issue with exporting the model to TracePro
  - Update: Fix issue with exporting model if the top and bottom segment are sphere
  - Update: Fix the non-closed loop issue with generating elliptical segment in TracePro. Now using spline segment to create model
  - Update: Fix issues with getting wrong object name in after scheme
  - Update: Fix issues when loading and saving a file with new features
  - Update: Fix resizing bug
  - Update: Fix issue when updating the control point property of an ellipse/sphere

## TracePro 7.0. new features/enhancements

(Released on September 30<sup>th</sup> 2010)

- Multi-threading
- Utilities menu with 7 Utility Programs including the Interactive Optimizer
- Removed Limitation of 35 Objects and 10 Sources (TracePro LC)
- Enabled Asymmetric BSDF models (TracePro Standard)
- New RepTile geometry (TracePro Expert)
  - Flattened Cone Geometry
  - Pointed Cone Geometry
- New Irradiance Map features
- System Tree enhancements

