

# RELEASE NOTES

## TRIMBLE REALWORKS SOFTWARE VERSION 8.0.1.

### **System requirements**

### **New Features and Changes**

Trimble Navigation Ltd, 10368 Westmoor Drive, Westminster, CO 80021, USA

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**Corporate Office**  
10368 Westmoor Drive  
Westminster CO 80021  
USA

www.trimble.com

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# Introduction

Trimble RealWorks (TRW) software is an integrated software suite for surveyors and engineers that takes advantage of the rich point cloud data sets provided by the Trimble TX5, Trimble FX and Trimble CX 3D scanners and the Trimble VX Spatial Station. Trimble RealWorks is full-featured software that enables you to visualize, explore, register and manipulate an as-built scene of point cloud data. It incorporates a set of useful tools and empowering functions that are particularly suited to civil survey, building, heritage, forensic, plant and other applications. It also allows surveyors and engineers to produce compelling 2D and 3D deliverables for direct output or export to AutoCAD® and MicroStation®.

Trimble RealWorks software is available in a selection of formats ranging from a base version, which includes standard registration and contouring functionalities, to a full function version including all modules. The software allows surveyors and engineers to offer enhanced deliverables in both 2D and 3D format, which clients can then, for example, visualize, manipulate, print, or partially edit.

With Trimble RealWorks Advanced, users have access to advanced registration features and can also leverage the powerful 2D/3D inspection tools as well as cross-section, ortho-projection and profiling features to produce compelling civil survey deliverables.

Trimble RealWorks Advanced-Modeler module provides a fast and intuitive 3D modeling capability. It is particularly suited to civil engineering surveys and applications such as site refurbishments where modeled and textured structures enhance or complete the impact and scope of a surveyors' or engineers' final deliverable.

The Trimble RealWorks Advanced-Plant module, which includes all modeling functions, provides powerful tools for various tasks specifically related to the power, process, plant and related environments.

To further enable surveyors and engineers to communicate their results to clients and stakeholders, and to reach new levels of success, RealWorks offers its Publisher capability. With Publisher users can prepare self-contained packages that enable final clients, colleagues, and partners to visualize and explore projects in 3D as well as to measure and annotate. Trimble continues to also provide the RealWorks Viewer utility for visualization of RWP files.

## System requirements

- Operating system: Microsoft® Windows® 7 or 8 - 64-bit
- Processor: minimum 2.8Ghz (Quad-Core) or higher, (additional cores with Hyper-Threading support strongly recommended)
- RAM: minimum 8GB (16GB and higher recommended)
- VGA card: OpenGL 3.2 compatible with minimum 1GB VRAM (3GB or higher recommended)
- 3-button mouse

### **Other requirements:**

Solid State Drive (SSD) for maximum performance (pref. 256GB) – strongly recommended.

# New Features and Changes

<i>Performance 3D point cloud engine</i>			
Description	New or changes	Feature	Benefit /comments
<b>Large dataset management</b>	NEW	Fast project opening based on progressive point loading	Easier to work with large datasets. Improved workflow, enhanced productivity
<b>Large point clouds - loading manager</b>	NEW	New Loading Manager provides user selectable maximum number of points to load, irrespective of total project size. The more RAM you have, the more points-per-session you can load. If total project point quantity is at or below the selected maximum in Load Manager, then all points will load; otherwise those points loaded will be a proportion of the total number of points, with that proportion diminishing progressively as total project size increases. The Loading Manager edit field remains visible throughout, for easy access.	Improved workflow. Work on large datasets (virtually unlimited project size) and load only what you need. Fast loading/unloading.  <i>Suggested max load acc. to RAM:</i> 8GB - 250 million 16GB - 500 million 24GB - 750 million 32GB - 1 billion 64GB - 2 billion <i>Note: larger amounts of data may take progressively longer to open.</i> <i>This feature replaces the Sub-project manager.</i>
<b>Large point clouds - tool behaviors</b>	NEW	In most tools, the points to be processed are the ones that you actually choose to load.	Enhanced productivity. Obtain quick results by loading small amounts of points. Load more when needed.
<b>Large point clouds - import/export</b>	NEW	Import and export are now no longer dependent on the amount of loaded points.	You can import and export scan files whose size is greater than your computer RAM.
<b>Large point clouds - segmentation</b>	NEW	Segmentation is now no longer dependent on the amount of loaded points. An optimized algorithm efficiently processes the full data (on disk). In addition, dynamic visual feedback is displayed while segmenting, allowing you to perform several segmentations in a row and then run the full computation at the end, when creating the segmented point cloud.	Enhanced productivity. Segmentation of details is significantly increased, and can be performed on the full resolution of the scan.
<b>Large point clouds - new point cloud rendering engine</b>	NEW	TRW now has a completely new engine for point cloud rendering and picking that fully exploits today's graphics card capabilities (shaders). You can load large amounts of points in RAM and still navigate and operate smoothly. While loading, you can measure points, pan, rotate and start tools. When a project is fully loaded, you can view the full scanned details when zooming in.	Improved usability. The more powerful the graphics card, the better the display (more points displayed at fluid frame rates).  <i>The 'using video memory' option has been removed from the preferences.</i>
<b>Large point clouds - new scan file format / new project file format version</b>	NEW	A new scan file format (RWCX) and a new point cloud database file format version (RWP) have been introduced to enable the new features related to massive datasets.	Allows Load Manager operation and rendering optimizations.

## Advanced Registration

Description	New or changes	Feature	Benefit /comments
<b>Target-less registration: Auto-register using planes</b>	NEW	Fully automatic registration based on vertical planes extracted from the scans (target-less). The stations that are matched together are then put in common groups. A target-less registration report is generated, showing residual errors and percentage of common points between matched stations. The report can be saved as an RTF file.	Enhanced productivity. In standard indoor environments with planar walls, you can now register scans automatically without having to position targets in the environment. This methodology can also be used in outdoor environments where a built environment includes vertical planar elements like facades. <b>"Auto-register using planes" is available in TRW Advanced and above.</b>
<b>Refine Registration using TZF scans</b>	NEW	When working with TZF scans, this functionality refines the registration using the scan data. A target-less registration report is generated, showing residual errors and percentage of common points between matched stations. The report can be saved as an RTF file.	Enhanced accuracy. This feature can be implemented after any registration method has been applied (using target-based registration, cloud-based registration, or transform using RMX files). <b>"Refine Registration using TZF scans" is available in TRW Advanced and above.</b>

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## Registration enhancements

Description	New or changes	Feature	Benefit /comments
"Auto-extract targets and register" – more robust	Enh	Improved auto identification and extraction of targets (B/W & spherical); more robust algorithm.	Enhanced productivity through higher hit rates.
"Auto-extract targets and register" – accuracy	Enh	The full position and orientation of extracted B/W flat targets are now refined for improved positioning.	Enhanced accuracy.
"Auto-extract targets and register" - auto-naming	Enh	Created/matched targets are now automatically named according to the matches. You can also rename them after any matching operation by right-clicking the mTarget and doing 'rename targets'.	Enhanced usability. All targets within an mTarget are given the same name.
Target Analyzer - manual extraction	Enh	Manual target extraction in Target Analyzer is now more robust.	Enhanced productivity and accuracy where manual extraction of B/W and spherical targets is required.
Target Analyzer - target display, accuracy	Enh	Target centers are now displayed in Target Analyzer with sub-pixel accuracy.	Enhanced accuracy.
Target-based reg'n tool - matching	Enh	Matching has been improved to take the complete network into account. The performance of the matching operation has also been improved.	Enhanced accuracy and productivity. When working with topo stations, all the other stations are now matched first, then matched as a whole set to the topo station.
Target-based reg'n tool - leveled/ Unleveled	Enh	Hybrid cases with both leveled and unleveled stations are now more effectively taken into account.	Enhanced workflow and accuracy.
Cloud-based reg'n tool - accuracy	Enh	The 'Refine' algorithm has been improved for improved accuracy. Point normals are now taken into account in the algorithm for a more accurate result.	Enhanced accuracy.

## Collaborate and share

Description	New or changes	Feature	Benefit /comments
<b>Publisher</b>	NEW	Publish a self-contained package (add title, comments, images, video) at user-definable resolution, for 3rd party viewing via Internet Explorer.	Empower your customers and stakeholders with easy-to-view project packages that they can navigate and explore; measure and annotate; save screens to PDF, JPG, BNP or PNG. No software installation required.
<b>Scan Explorer: annotation</b>	NEW	Annotate station-based views in Scan Explorer and save screens to PDF, JPG, BNP or PNG.	Fast sharing of project info with customers, colleagues and stakeholders.

## Import / Export

Description	New or changes	Feature	Benefit /comments
<b>Export: E57 - gridded</b>	NEW	TZF scans can now be exported to E57 format as a regular grid.	Enhanced productivity and support of third party supporting only gridded E57 files. <i>Go to File/Advanced Exports/Convert to E57/PTX/PTS.</i>
<b>Import: support multi-scan PTX files</b>	Enh	It is now possible to import PTX files that contain several scans. Every scan will be converted into a new TZF scan.	Improved data format support.

## Comfort / Performance

Description	New or changes	Feature	Benefit /comments
<b>Scan Explorer: one-click plane extraction</b>	New	Pick a point on a plane in station view and automatically obtain all points located on the plane around this point.	Enhanced productivity for modeling man-made structures with planes. <i>Transfer obtained points to TRW or 3<sup>rd</sup> party package to fit entity.</i>
<b>Key plan generation</b>	Enh	Key plan now generated using current (active) rendering of the displayed cloud	Improved workflow. You can now create a key plan that is most suited to your needs.
<b>Point cloud extraction</b>	Enh	Point cloud extraction is now faster in the case of large point clouds (both in 'Create sampled scans' and from Scan Explorer')	Enhanced productivity.
<b>Scan Explorer: improved user interface</b>	Enh	Auto-hide project explorer pane.	Improved usability. Keep the whole window for visualization
<b>Project cloud in OfficeSurvey configuration and target scans</b>	Enh	For clarity, the project cloud in OfficeSurvey/Modeling configuration no longer shows target scans.	Improved workflow.
<b>Color-coded intensity display</b>	Enh	When viewing point clouds with the 'color-coded intensity' rendering option, the color range has been increased for enhanced perception.	Enhanced usability and visualization.
<b>Shortcuts</b>	Enh	Shortcut addition: 'center on point' = X	Enhanced productivity. Press the X-key while navigating.

The following functionalities have been removed:

Sub-project manager (no longer required)

Partial loading manager (no longer required)

Edit/advanced/erase points (required in order to preserve the database from possible corruption)

**END**