RELEASE NOTES

TRIMBLE REALWORKS SOFTWARE
VERSION 10.2

System requirements

New Features and Changes

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Introduction

Trimble RealWorks (TRW) software is an integrated software suite for surveyors and engineers that takes advantage of point cloud data sets. 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 editions. 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 edition 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 edition, which includes all modeling functions, provides powerful tools for various tasks specifically related to the power, process, plant and related environments.

The Trimble RealWorks Advanced-Tank edition includes all features included in Advanced-Plant plus additional tools specifically for the storage tank inspection and calibration market.

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 2.5D, extract 3D information as well as measure and annotate. Trimble continues to also provide the RealWorks Viewer utility for visualization and analysis of 3D data with Trimble RWP files.

System requirements

- Operating system: Microsoft® Windows® 7,8 and 8.1,10 - 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. 500GB) – strongly recommended.

New Instrument Support

New Instrument Support			
Description	**New or changes**	**Feature**	**Benefit /comments**
Trimble TX6/TX8	New	Directly open RWP projects or TZF Scans with color information acquired using the newly released Trimble TX series scanners.	Enhanced productivity.
Automatic colorization for Trimble TX6/TX8 data	New	The new Trimble TX series scanners acquire color information. When accessing the TZF Scans, e.g. when extracting points or opening Scan Explorer, the TZF scans are automatically colorized. The color information is accurately matched to the scan points, and the application automatically detects the scan points that have to be colorized and the ones that should not (occlusion areas). High Dynamic Range images are processed to produce a single TZF Scan with reliable color information everywhere.	Enhanced productivity. Since the matching is run for every new TZF Scan, there is no need to re-service the instrument for camera calibration.
New Trimble SX10 instrument support	New	Manage the survey/scan/image data of the newly released Trimble SX10 instrument via the existing JOB / JXL file import.	Enhanced productivity. Survey and Scanning professionals can directly exploit the data from the Trimble SX10 using the existing workflows and tools.
Registration with Trimble SX10 data	New	Define stations in the field using survey methods then use the tools in Survey Workflow, e.g., Adjust Network; or use the instrument as a scanner in the field, then use the Scan-based Registration tools. You can even use Auto-register using planes (target-less) by first creating TZF scans: start TZF Scans>Create TZF Scan under the Edit tab.	Enhanced productivity. Benefit from the versatility of the Trimble SX10 instrument in Registration: survey professionals can use traditional conventional survey workflows; scanning professionals already familiar with Trimble RealWorks may use their favorite scan-based registration tools.
Production tools with Trimble SX10 data	New	Support for the Trimble SX10 instrument added to the Production tools. There are several tools in which the images can be used in Trimble RealWorks: e.g., once a plane is defined in Polyline Drawing, draw using the images directly in Station-based mode; create a Rectified Image; texturize a surface in Mesh Editing; share the colorized scan data by first doing	Produce deliverables using the scan and image data from the Trimble SX10 instrument.

Edit>Create TZF Scans, then
Media>Publish.

Registration			
Description	**New or changes**	**Feature**	**Benefit /comments**
Improved scan-based registration refinement	Enh	The algorithm used to Refine in the Cloud-based Registration tool and when using the Refine Registration using scans command without TZF Scans has been improved. Scans are better aligned after the refinement process.	Data quality and accuracy.
Cloud-based Registration tool: overlap information	Enh	In the Cloud-based Registration tool, after a transform between the moving cloud and the reference cloud has been computed, the tool now shows the overlap percentage along with the RMS error to help with registration quality assessment.	Productivity. Identify faster if the registration is incorrect.
Cloud-based Registration tool: display improvements	Enh	In the Cloud-based Registration tool, both the Reference and Moving views now display scans following the main Cloud Rendering option, with red and green image borders, whereas the combined view always displays scans in red vs green. This way, identifying points to match in the separate views is easier.	Improved visualization, improved productivity.
View-based 2D distance measurement	New	In Registration, when using isometric projection mode, the measurement toolbar now offers a new option to directly measure 2D distances in the current view. Pick two positions on the screen; the tool shows the corresponding distance. The distance doesn't have to be vertical; the picked positions on the screen don't need to be scan points.	Enhanced productivity, data quality. Quickly check the registration quality by measuring shifts between scans in the current isometric view. This can also be useful to quickly get a rough idea of the size of an object.
Cloud-based Registration tool: Registration visual check	Enh	In the Cloud-based Registration tool, the Cutting Plane button has been replaced by the Registration Visual Check, which enables to inspect the registration quality using interactive slicing of the point clouds.	Improved productivity. Checking the quality of the registration is now easier and faster.

Classification

Description	New or changes	Feature	Benefit /comments
Automatic indoor floor extraction	New	In the Sampling tool, a new option is now available: Extract Floor (Indoor). This option automatically segments the scan points corresponding to the lowest scanned floor inside a building. This option works like the Ground Extraction option. If you need to extract several floors, you can use the 'Add regions to floor' option and pick points on the upper floors to add them to the lowest floor; this will create a single point cloud with all floors combined. This tool can also be used for extracting man-made, quasi-flat, floors in outdoor environments.	Improved workflow, enhanced productivity. This is useful in particular as a first step before using - or from within - the Floor Flatness Inspection tool, to retrieve only the points on the floor, i.e., without the points on the walls or on the small objects that may lie on the floor. More generally, this tool can be useful when working with man-made indoor environments, from improved visualization, e.g., for key plan creation, to modeling using geometries.
Improved performance in Auto-Classify Clouds	Enh	The computation in the Auto-Classify Clouds command is now significantly faster, especially with massive datasets. On some datasets with one billion points, tests showed that the computation time was divided by two.	Enhanced productivity.

Inspection

Description	New or changes	Feature	Benefit /comments
Alignment stationing tool	New	The Inspection tab now contains a new tool: Alignment Stationing. This tool enables you to define regularly spaced positions along a polyline. You may run this tool both on imported polylines and polylines created in RealWorks. Once the stationing for the alignment has been defined, you can then use it in the inspection tools to define the part of the alignment you want to compute an inspection map on. The tool creates a new polyline, of type 'Polyline - with stations'. The station information appears when looking at its properties.	Improved workflow. You can now define the orientation of a polyline and define positions on it.

Inspection map of a specific part of an alignment	Enh	You can now create tunnel projection-based inspection maps using only a part of the 3D path. In both the Surface-To-Model Inspection and Twin Surface Inspection tools, you can define the Start and the End positions of the inspection map you wish to compute. These positions can be defined by keying in a distance or by picking on the 3D path. If the polyline has stationing information - see point above -, then the stations are used to define the Start and End positions.	Improved workflow, enhanced productivity for road or tunnel applications. Only produce the inspection map on the needed part, but still work with the full alignment.
Surface-to-model inspection: improvements for tunnels	Enh	In the Surface-to-Model Inspection tool, when both the 3D path and the 2D shape are planar, i.e., defined/drawn on a plane, there is now a switch button to select which one to use as 3D path and which one to use as 2D shape.	Improved workflow.
Orientation of cylindrical inspection map	Enh	When using cylindrical projection, in both Surface-to-Model Inspection and Twin Surface Inspection tools, the inspection map orientation now adapts to the verticality of the cylinder axis, i.e., whether the cylinder axis is nearly vertical or not according to the current coordinate frame.	Improved workflow for storage tank inspection and tunnel inspection.

Data Exchange

Description	New or changes	Feature	Benefit /comments
Trimble Data Exchange (TDX) import	New	Open a scan project registered in Trimble Business Center via the TDX import. The whole set of stations with their scans and images are transferred for further work in Trimble RealWorks.	Enhanced interoperability. Through the TDX import or export, the scans are kept in their original format, i.e., with no conversion cost.
Trimble Data Exchange (TDX) export	New	Export a scan project for further work in Trimble Business Center through TDX export. All stations with their scans are transferred for further work in Trimble Business Center.	Enhanced interoperability. Through the TDX import or export, the scans are kept in their original format, i.e., with no conversion cost.

Visualization and Navigation			
Description	**New or changes**	**Feature**	**Benefit /comments**
Innovative Hide Background display mode	New	Shape perception when visualizing point clouds has always been challenging, because of background points and foreground points shown interlaced on the screen. With the new Hide Background display mode, this is now made easier: the point cloud rendering engine automatically detects the foreground objects and hides the points that should be occluded by these objects. This way, only the scan points that should actually be visible from the current viewpoint are displayed.	Improved visualization and easier scene understanding. This display mode, unique to Trimble RealWorks, is useful in a number of situations, particularly when viewing indoor environments.
Improved navigation in Scan Explorer's station view	Enh	In the 3D view, when zooming, the view centers on the mouse cursor location. This is now true also in the Station view of the Scan Explorer window.	Improved navigation and productivity. Zoom in directly to the desired regions of interest.
Station-based mode: image filter	New	When visualizing data from the Trimble SX10 in Station-based mode, you can choose which type of images to display, between Overview, Primary or Telescope. Press the button at the far right of the Station-based view toolbar then tick the desired image type in the pop-up menu.	Improved visualization. Useful for Trimble SX10 data.
Station-based mode: custom distance for images	New	In Station-based mode, when viewing several images at the same time, some visual mismatches due to parallax may be seen on the images on the side. You can get a perfect visual match between the side images and 1. the central image and 2. the 3D data by setting the proper distance at which the images should be displayed. Key-in a value in the	Improved visualization. Useful for Trimble SX10 data.

		new edit field of the Station-based view toolbar, or simply increase or decrease the distance using the + and - buttons.	

General			
Description	**New or changes**	**Feature**	**Benefit /comments**
Multi-point distance measurement	New	The measurement toolbar now has a new option. Measure the cumulative distance over a series of 3D points.	Enhanced productivity. Useful for computing the overall distance along a path like a curb, a pipe or a powerline.
Quick access toolbar management	New	The quick access toolbar, i.e., the bar at the top of the application, is a way to efficiently access the commands and tools that you use most often. You just need to go to Customize Quick Access Toolbar>More Commands... and select the desired commands. In this version, it is now possible to share your customized toolbar, or to apply it again after the install of a new version of the software: simply export the customized toolbar to a QAT file by going to Support>Quick Access Toolbar>Export...	Enhanced productivity. Share common toolbar with your team for leveraging the best practices for your business.
Easier deletion of multiple stations in Registration	Enh	When deleting multiple stations at the same time, a single warning message is now shown.	Enhanced productivity.

RESOLVED ISSUES

General

[3D DISPLAY] Random freeze on specific AMD graphics card (Firepro W5100)
[3D DISPLAY] Random ghost points appearing with new AMD graphics card drivers
[AUTOMATIC REGISTRATION USING PLANES] Crash on specific dataset
[CLOUD TO CLOUD REGISTRATION] Different results depending on the stations selection order
[POINT CLOUD REFINEMENT] Z axis is sometime inverted
[POINT CLOUD REFINEMENT] Improved refinement of data not close to the instrument position
[DWG EXPORT] Meshes not accurately exported in case of large coordinates
[DWG EXPORT] Partial slices of Inspection Map not correctly exported
[DWG EXPORT] Units not correctly taken into account for 1D inspection
[PTX EXPORT] Point Cloud not accurately exported in case of very large coordinates, e.g., UTM

END