FARO®

SCENE

Version 7.1

Release Notes
December 2017

The following third-party products are referenced in these Release Notes.

- 3DConnexion SpaceMouse®
- Autodesk ReCap
- HTC Vive
- Intel® Core™ i7
- Intel® Xeon®
- NVIDIA Quadro®
- NVIDIA® 1080 GTX and 1060 GTX
- Oculus Rift
- OpenGL®
- SteamVR®
- Windows™ 7
- Windows™ XP

FARO does not support these products. Please contact the manufacturer for support.

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Introduction

FARO is pleased to announce the release of

SCENE 7.1

SCENE LT 7.1

SCENE Capture 7.1

SCENE Process 7.1

We would like to thank the users who gave valuable input for the improvement of the release. With this release, we deliver a new version of the FARO Laser Scanner software that will improve your productivity, your mobility, and ease of use.

Differences between the Members of the SCENE Software Family

SCENE

The complete workspace creation and manipulation tool. Contains all functionality of SCENE LT, and in addition the functions required for scan registration and export to SCENE WebShare Cloud.

SCENE LT

The free viewer that enables you to view existing FARO scans and workspaces. SCENE LT can import CAD models in VRML format in order to compare them with the scan points. It also allows for exporting scan points into various file formats, and to SCENE WebShare Cloud. SCENE LT does not allow you to filter scans, create objects for scan registration, or to perform scan registration.

SCENE LT offers the On-Site Compensation functionality, which allows you to test and improve the angular accuracy of the FARO Laser Scanner Focus^S 70, Focus^S 150 and Focus^S 350.

SCENE Capture

SCENE Capture provides everything you need to record your scans with the FARO Freestyle scanner. It is designed to run on a tablet computer and is pre-installed on the tablet computer included in the Freestyle Objects kit. The scan data is stored on a microSD card, which makes it easy to transfer the data to another computer.

Other features:

- Scanner calibration (does not replace factory calibration)
- White balance
- Capturing data
- Processing data
- Easy scan view
- Measure between points

SCENE Process

SCENE Process provides everything you need to process and finalize your entire Freestyle^{3D} scan project. Record your scans with the tablet computer and SCENE Capture, transfer the data and continue working with SCENE Process.

Because processing 3D data is a heavy operation for a computer, we recommend installing SCENE Process on a workstation or on a notebook PC with sufficient performance.

Other features:

- Easy registration functionality
- Level functionality

- Split scan functionality
- Meshing functionality

SCENE WebShare Cloud

SCENE WebShare Cloud is a secure cloud-based solution for storing and sharing scanning data with different project partners.

Scan data published with SCENE WebShare Cloud must be prepared with the respective SCENE features.

SCENE WebShare 2Go 2.0

WebShare 2Go 2.0 is a portable version of SCENE WebShare Cloud.

64-Bit Support

Because the amount of data created by 3D laser scanners and the processing capacity to achieve a fluent workflow requires a powerful 64-bit computer, SCENE versions from 5.3 are only available for 64-bit Windows systems.

Windows XP

SCENE versions from 5.3 on do not support Windows XP.

Online Help and Video Tutorials

FARO's Knowledge Base provides a variety of laser scanner hardware and SCENE software tutorials on the web. Access them from the Help menu within SCENE or with the following link: https://knowledge.faro.com/Software/FARO_SCENE/SCENE

Visit the FARO Customer Service area on the Web at www.faro.com to search our technical support database, which is available 24 hours a day, 7 days a week. The link to the technical support database is also accessible from the Help menu in SCENE.

New Features

This is a list of the most important new features of SCENE 7.1. For detailed information, please refer to the SCENE 7.1 User Manuals.

SCENE

Virtual Reality

With SCENE 7.1 we announce support for Oculus Rift and HTC Vive. With this virtual reality hardware, you can move through your Project Point Clouds, take measurements, read documentation, and make screen captures. Refer to the SCENE 7.1 User Manual for a full list of features and system requirements.

> ℹ Supersampling significantly increases the quality of your VR experience. We recommended that you activate supersampling in the SteamVR settings if you are using a powerful PC.

Markers

In addition to checkerboards and other targets, SCENE now detects Markers in Laser Scanner data. Markers, which have a unique ID, were already supported in Freestyle data. The support for Markers in Laser Scanner data means that they can be automatically detected in scans made by both the Laser Scanner and the Freestyle Scanner, so you can use one set of targets for both types of scanner.

Updates and News

SCENE now helps you stay up-to-date by providing you new information about software updates and other news when you start the SCENE with the new interface. SCENE also now provides direct access to the FARO Knowledge Base where you can get information about software updates, training, apps and so on.

Point Cloud Creation

Point cloud creation now supports the closed surface option for Freestyle data.

Bug fixes and Improvements in 7.1

Import / Export

- *Issue*: TIF files that were exported by SCENE might appear completely black or broken when imported back into SCENE.
  Resolution: This issue has been fixed

- *Issue*: If there were several revisions in the SCENE project, the registration of the scans was sometimes lost after the export to Autodesk ReCap. In addition, the export performed a decimation of scan points based on a ReCap standard value.
  Resolution: The scan transformation issue has been fixed. The decimation is turned off.

On-Site Registration
- *Improvement*: On-Site Registration Tasks creates ScanManager for the AutoCluster.

Performance Improvements

- *Improvement*: Changed relative weighting of different target types for target-based registration to better reflect varying accuracies. This changes target tensions after registration and leads to more accurate results.

- *Improvement*: Subsampling for top view and cloud-to-cloud registration can now be chosen down to 1 mm to register scenes with small dimensions more accurately.

Autosave
- *Issue*: Clicking on the **Load** button while autosave is loading causes SCENE to crash.
  Resolution: This issue has been fixed.

Miscellaneous
- *Improvement*: Dismiss Selection option in the selection context menu of the Quick View and 3D View

- *Improvement*: For images imported as virtual Scans, the registration options "Place in 3D" and "Place on Surface" are now available in the new UI.

Bug fixes and Improvements in 7.1.1

Localization

- *Improvement:* User manuals are now available in all supported languages.

- *Issue*: Some windows were sized incorrectly, and some double-byte characters did not display correctly.
  Resolution: This issue has been fixed.

Performance

- *Improvement:* The Quick View now loads much faster. With SCENE 7.1, we introduced a compensation step that took much longer than expected on some machines, especially on dual core processors. This compensation now runs in the background and updates the quick view image when finished. The Quick View is operational during the compensation. Pixel positions may change slightly after the compensation is applied.

- *Issue:* Meshes were generated too smoothly.
  Resolution: This issue has been fixed.

- *Issue:* SCENE sometimes crashed during a drag & drop operation for clusters in the structure view.
  Resolution: This issue has been fixed.

- *Issue:* SCENE sometimes crashed when loading an image.
  Resolution: This issue has been fixed.

Import / Export

- *Issue:* Importing a layout plan changed the global position of existing layout plans.
  Resolution: This issue has been fixed.

- *Issue*: SCENE did not recognize the file extensions BMP, PNG and TIF if written in capital letters.
  Resolution: This issue has been fixed.

- *Issue*: SCENE did not export images correctly if the export folder contained the word "tif".
  Resolution: This issue has been fixed.

Installation and licensing

- *Issue:* The license manager dialog did not correctly display all relevant licenses.
  Resolution: This issue has been fixed.

- *Issue:* SCENE would not load if the installation path contained Chinese, Japanese or other double-byte characters.
  Resolution: This issue has been fixed.

Virtual Reality (VR)

- *Improvement:* Measurements can now be taken on meshes and CAD models.

- *Improvement:* Sticks on the Oculus controllers and clickable trackpads on the Vive controllers can now be used to navigate in VR space.

- *Improvement* Models can now be hidden in VR using the settings in VR.

- *Improvement:* VR now respects the CAD object/mesh visibility as setup in the SCENE structure view.

- *Improvement:* Chinese and Japanese characters are now supported for annotation labels.

- *Issue:* Fixed a problem where VR could freeze shortly during measurements.

- *Improvement:* Measurement labels now change size automatically to make them visible regardless of distance.

- *Improvement:* Teleporting has been improved. Walls and floors are detected more reliably, which helps to avoid teleporting into walls.

- *Improvement:* Increasing the point size now dramatically improves VR performance. We recommended that you use increased point size on lower-end machines.

- *Issue:* Large projects and many objects in the structure view could degrade VR performance.
  Resolution: This issue has been fixed.

- *Improvement:* Length unit settings are now respected in measurements displayed in VR.

- *Issue:* If the workspace had a transformation, measurements points always were positioned at the 3D point 0,0,0.
  Resolution: This issue has been fixed.

- *Improvement:* Resizing the VR mirror window could result in a stretched view and areas with large points were not visible
  Resolution: This issue has been fixed.

SCENE Capture / SCENE Process

- *Issue:* The program sometimes crashed during "Plane Detection"
  Resolution: This issue has been fixed.

- *Issue:* Performance could degrade when "Default Scan Options / Interpolation" is on
  Resolution: This issue has been fixed.

- *Issue:* Point data was not visible when viewing an unprocessed Freestyle scan.
  Resolution: This issue has been fixed.

- *Issue:* Settings of 3D view (e.g. point size) were not saved correctly.
  Resolution: This issue has been fixed.

- *Issue:* Non-English text was rendered incorrectly in Onsite-Calibration view.
  Resolution: This issue has been fixed.

Known Issues

SCENE

Clipping Boxes

Clipping boxes are not rendered correctly with layout plans.

Problems with Intel graphics cards

We recommend using NVIDIA or AMD graphic cards.

If you use the Intel graphics card, use vendor-specific graphics driver and not the standard Microsoft driver.

Project Point Cloud

If a scan project was processed with pre-SCENE 6.1 versions, all scans must be processed with SCENE 6.1 to create a mesh in this project. The recommended workflow for processing in SCENE 7.1:

- Switch to new SCENE 7.1 User Interface.

- Process all FARO Laser scans and imported scans by recreating the scan point cloud using the process task in the "Processing" tab.

- Ensure "Create scan Point Clouds" is checked.

- Process all Freestyle scans by opening the scan's context menu and selecting **Operations** > **Process scan**.

- Delete project point cloud.

- Build project point cloud.

ReCap export

Freestyle scans are not exported.   In addition, scans imported in E57 format might be problematic and raise an error during the export.

- **Workaround for a project**: Create virtual scans of the Freestyle^{3D} data and the E57 scans. Exclude the E57 scans from the export.

- **Workaround for a single scans**: Export the data into E57 format and import those files into ReCap.

SCENE WebShare Cloud Export

SCENE WebShare Cloud export fails for projects in a path with Unicode characters.

Export

When trying to export a project located at a path that contains special Unicode characters, the export currently fails with an out of memory error.

Geo Referencing

Geo referencing of scan projects may introduce very large translations for each individual scan of the project. For example, a scan may be translated thousands of kilometers along the X and/or Y-axis, as shown in the following screen shot.

These translations may lead to problems with 3D visualization. This can also affect SCENE WebShare overview maps and the export of scan points. The export of scan points with very large translations might be inaccurate.

To avoid problems with the 3D visualization, we strongly recommend avoiding such large translations on individual scans.

If you need large translations, the best way is to apply them to the workspace (or at least to a scan cluster which is as far up in the project hierarchy as possible).

To transfer large translations away from individual scans, use **Operations** > **Registration** > **Move clusters** to Center of scans from the context menu of the workspace (or a scan cluster that is far up in the project hierarchy). This function computes the barycenter of all scans below the selected object and transfers the translation of the barycenter into the selected object. The global position of the individual scans will stay the same while local translations will be reduced to a necessary minimum, so visualization problems are also reduced.
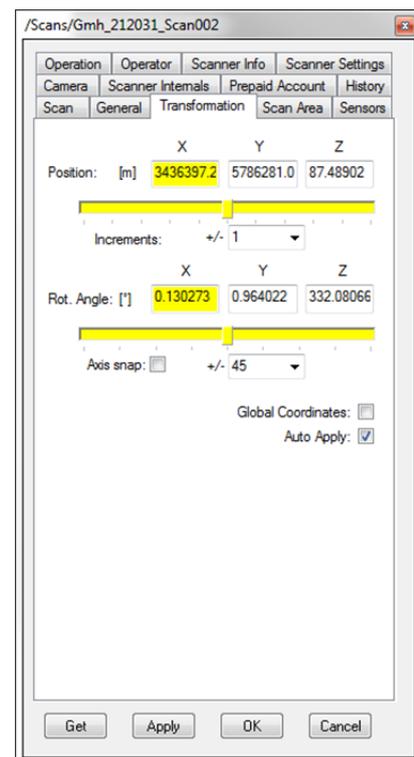
3D View

- After switching from SCENE to another Windows Program and back with e.g. Alt + Tab, the frame rate in the 3D View drops by about 50%. The frame rate can be restored by changing the point size in the view options and clicking ok.

- SCENE might suffer from instability issues on systems with some AMD/ATI graphics cards when opening one or more 3D views and the *Advanced Textures* option is enabled:
This option is disabled by default and can be found under **Tools** > **Options** > **View**. You may enable it, but if you experience problems when opening 3D views, disable it again. Stereoscopic view is now working even if Advanced Textures is disabled. NVIDIA users should enable *Advanced Textures* without any problems.

- Rendering performance with NVIDIA Quadro graphics processors:
On systems equipped with NVIDIA Quadro graphics processors, rendering performance in 3D view may be slow or intermitted. In order to improve rendering performance, start the NVIDIA Control Panel application (available in the Windows Control Panel) and select the global preset 3D App – Game Development under **3D settings** > **Manage 3D settings** > **Global Settings**.

- When a 3D View is opened out of a Planar View, it is not possible to create a virtual scan.

Point-to-Point Measurements in SCENE

When a scan or scan folder is rotated, existing point-to-point measurement objects are not updated, which might lead to incorrect distance measurements for these measurement objects. We therefore recommend not to make point-to-point measurements until scan registration is complete.

SCENE Process: scans may be lost

If Processing starts on a scan and is stopped before 3D data are shown, this scan may be lost. Workaround: wait until the 3D data is shown, then stop processing.

Computer System Recommendations

- Processing scan data is a demanding task for both the software and the computer system. To allow SCENE 7.1 acting as a high performance system, the computer hardware needs to comply with these requirements.

- SCENE 7.1 works with Windows 7 SP1, 8, 8.1, and 10.

- FARO recommends the following hardware specifications.

Minimal system specifications

- Processor: 64-bit (x64) with at least 2-gigahertz (GHz) (For example, Intel Core i7)

- Dedicated Graphics Card: OpenGL 4.1, or higher, at least 2GB Memory

- For VR Rendering:

    o NVIDIA 1060 GTX or similar

    o Oculus with Oculus Touch Controllers, or HTC Vive

    o SteamVR

- Main Memory: At least 16GB

- Hard Disk: 256 GB Solid State Drive

- Display: 1366 x 768

- Operating System: 64-bit Windows 7 SP1 or higher

Recommended system specifications:

- Processor: Intel Core i7/Xeon, 8 physical cores

- Graphics Card: Dedicated graphics card, Open GL 4.1 or higher, at least 4 GB Memory, optional for stereo rendering: NVIDIA Quadro

- For VR Rendering:

    o NVIDIA 1080 GTX or similar

    o Oculus with Oculus Touch Controllers, or HTC Vive

    o SteamVR

- Main Memory: At least 64GB

- Hard Disk: 512GB Solid State Drive + Regular HDD

- Display: 1920x1080

- Operating System: 64-bit Windows 7 SP1 or higher

To make use of the stereoscopic 3D viewing capabilities, a NVIDIA Quadro graphics card, a 3D monitor or 3D projector as well as the suitable 3D goggles are required.

To make use of the SpaceMouse support, a 3DConnexion SpaceMouse device with the latest drivers is required. The User Manual describes how to do the settings.

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