



FARO[®] VR VIEWER
FARO[®] VR APP
FARO[®] VR GENERATOR
USER MANUAL

APRIL 2017

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1. Health & Safety Warning

FARO® VR Viewer supports the Oculus Rift. If you use one of these devices together with FARO® VR Viewer you must consider the Health & Safety Warnings of the Oculus Rift.

<https://www.oculus.com/legal/health-and-safety-warnings/>

2. Introduction to FARO® VR

FARO VR is a set of application that work hand in hand to give you and your customers a way to experience the world of VR PointClouds. The main Program is the FARO VR Viewer. It is free to use, but you need to feed it with point cloud data. There are currently two ways to do so: The FARO VR App for SCENE and the VR Generator. The FARO VR App is a plugin for SCENE, that can prepare one or more scans to be viewed in the VR Viewer just by selecting the scans and pressing a button. To give your customers who have no SCENE installed a chance to experience a VR PointCloud, we created the FARO VR Generator. With this application, you can export selected scans of a SCENE Project into a FARO VR PointCloud, which can be shipped to your clients, and be viewed with FARO VR Viewer.

2.1. FARO® VR Viewer

FARO® VR Viewer is an interactive viewer for point clouds supporting Oculus Rift. It allows the user to immerse into a point cloud and move freely through the environment. The viewer is a standalone application that can be distributed including VR PointClouds generated from SCENE® projects. To generate the VR PointClouds visualized in FARO® VR Viewer FARO® VR Generator can be used.

An Oculus Rift device is needed to run the FARO® VR Viewer software.



- If you want to view your own FARO® SCENE projects with FARO® VR Viewer, you must use FARO® VR Generator. FARO® VR Generator creates an installer including FARO® VR Viewer and your selected SCENE® project data prepared for Virtual Reality view.
- You can also view the scans with FARO VR App for SCENE.
- Please also consider the hardware requirements of Oculus Rift for optimal performance: NVIDIA GTX 970 / AMD 290 equivalent or greater, Intel i5-4590 equivalent or greater, 8GB+ RAM, Compatible HDMI 1.3 video output, 2x USB 3.0 ports, Windows 7 SP1 or newer
- Test your PC for compatibility with <https://ocul.us/compat-tool>

2.2. FARO® VR App for SCENE

The VR App for SCENE is a plugin that can be used in SCENE 6.2 and above. With this app, you can view one or multiple scans in FARO VR Viewer, directly from your SCENE Project.

2.3. FARO® VR Generator

FARO VR Generator is a stand-alone software tool used to create a FARO VR PointCloud from SCENE® projects. FARO VR Generator allows to open SCENE projects, select scans from the projects and export them to the FARO VR Viewer format. During the export step, the scans are compressed and the software automatically creates an installer. This installer package is freely distributable. It allows to watch and experience the exported SCENE project in VR and does not require a separate SCENE or FARO VR Generator license.

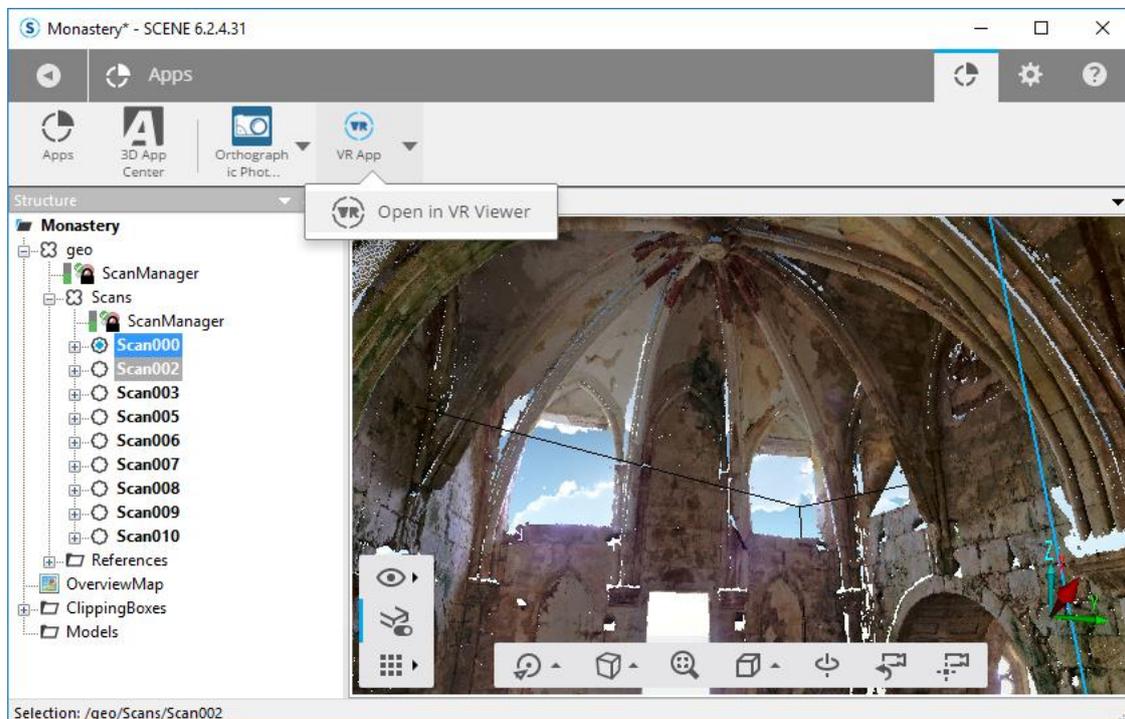
3. FARO® VR App

3.1. Installation

The installation is only possible in the new interface. Click on the "Apps Button" (3rd icon top right), then on the "Apps" Button (first icon in the toolbar). Here you can install VR App by pressing "install" and selecting the "VRApp.fpp".

3.2. Usage

You can select one or more scans by holding the CTRL button while left-clicking with your mouse. Then click "VR App" and "Open in VR Viewer". The scans will be loaded and exported and the FARO VR Viewer will be started afterwards. This may take a while depending on the size of the scans and the speed of the computer. You can preload the scans, by right clicking on the selected scans and clicking "Loaded". This makes the export a bit faster, as the scans are already in memory.



4. FARO® VR Generator

4.1. Installation

1. Run the FARO VR Generator installation file
2. Follow the on-screen instructions

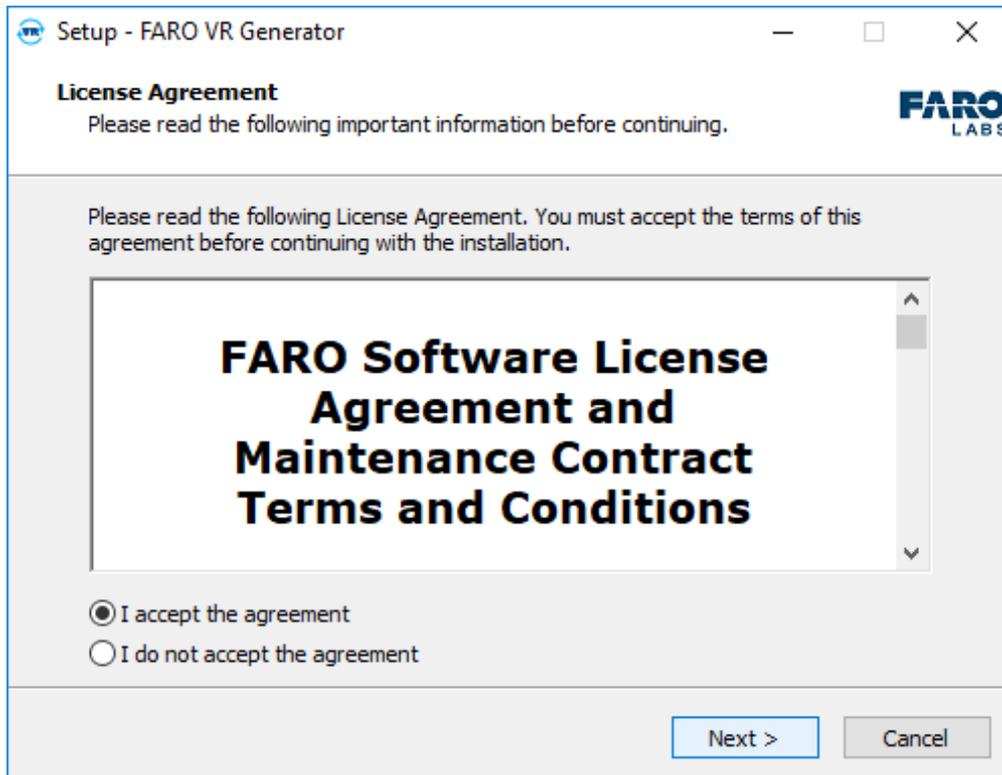


Fig. 4-1: FARO® VR Generator installer

4.2. First start

After FARO® VR Generator was successfully installed, start the software. If FARO® VR Generator is started for the first time the registration dialog will appear.

You must provide your personal license key in the field "License Key". Afterwards press "Activate Key". Please consider that there must be an **active internet connection** to complete the registration successfully. Fig. 4-1 shows the registration dialog.

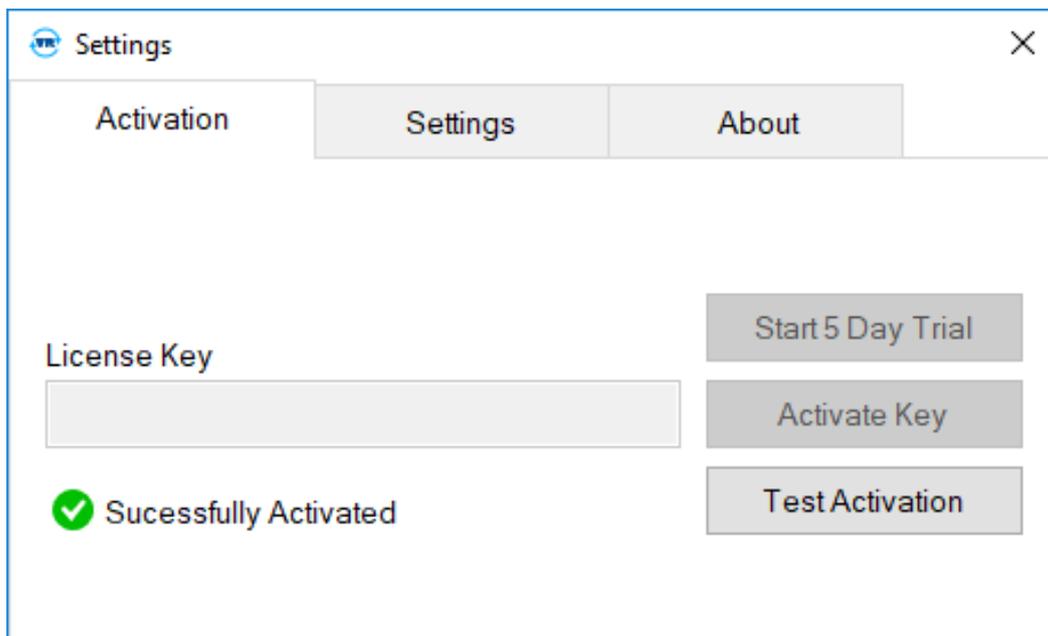


Fig. 4-1: Registration dialog



- An active internet connection is needed during the registration process to verify the license key. Please make sure that the machine is connected to the Internet.
- FARO® VR Generator has an auto update function. As soon as an update is available the system will inform you. There is the possibility to directly download and install the update.

4.3. Project View

On the left side, an overview of all available SCENE® projects is shown. FARO® VR Generator will automatically show all projects that are in the standard FARO® SCENE project folder.

Projects from other locations in the file system can be easily added by pressing the  button. FARO® VR Generator will create previews of all scans to make the selection as easy as possible. The load process of the previews can take some seconds. The software can still be used while the previews are loaded in the background. The preview is shown on the right side of the application.

The user can select scans by checking the box next to the scan name. Only scans from one project can be selected in one export cycle. If all scans in a project should be exported simply check the box with the project name. All scans will be automatically selected. By clicking a single scan, a preview of the scan is shown. Loading on previews can take some time. To load all scan previews right-click on the project name and select "Load all scan previews". Fig. 4-2 shows the process.

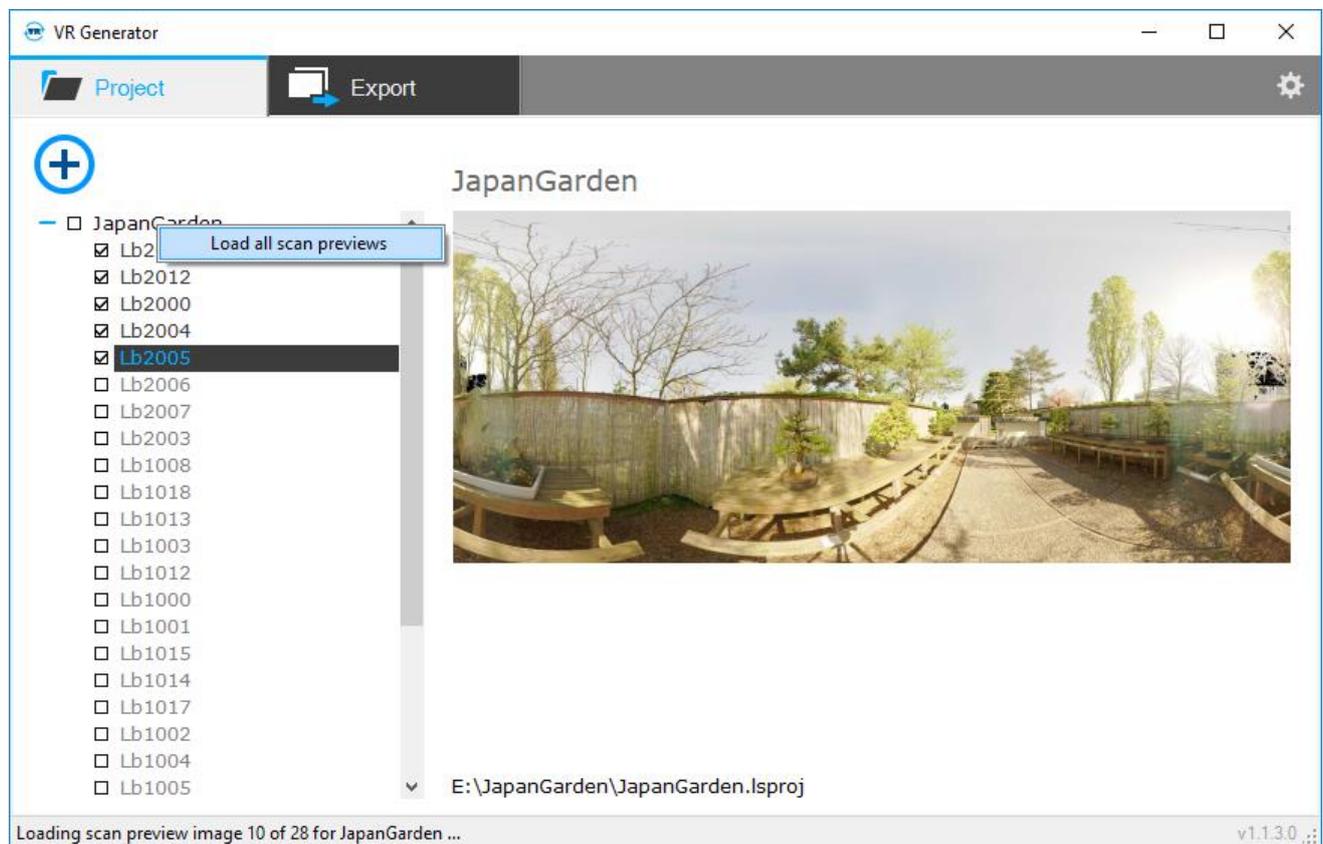


Fig. 4-2 – Select single scans or a complete project



- To achieve the best results when exporting VR point clouds the SCENE® project must to be completely registered. Additionally, the scans should be colorized for optimal VR experience.

After all scans are selected click on "Export" to change to the Export view.

4.4. Export View

In the export view the project is prepared for export. You can change the project name, the company logo the title image of the project. Fig. 4-3 shows the export view.



Fig. 4-3. Export view. Select a project name, company logo and a preview image here

On the upper left side, there is the field "Project Name". It must be filled with a project name. This name is shown in the FARO® VR Viewer to identify the project and it will be part of the default name of the exported installer file.

Furthermore, on the left side, there is an overview of all the scans to be exported. You can select the preview image of the project shown in FARO® VR Viewer by selecting one of the scans. If the project name itself is selected the standard preview image from FARO® SCENE is chosen. On the right side, you can always see a preview of the selected image.

On the bottom left you see information about the exported project. The size of the project, the approx. size of the setup file and the space needed on drive C: to generate the project. Press the blue arrow to calculate a more precise project size.

Furthermore, you need to select a logo, e.g. a company logo. This logo will be shown in the project overview of the VR Viewer FARO® VR Viewer. Change it by clicking on the logo itself.

If you want to add more scans or want to remove scans from the exported project, you can always go back to the "Project" tab and change your selection.

After all everything is set up correctly, press the  button. A save file dialog will appear (see Fig. 4-4).

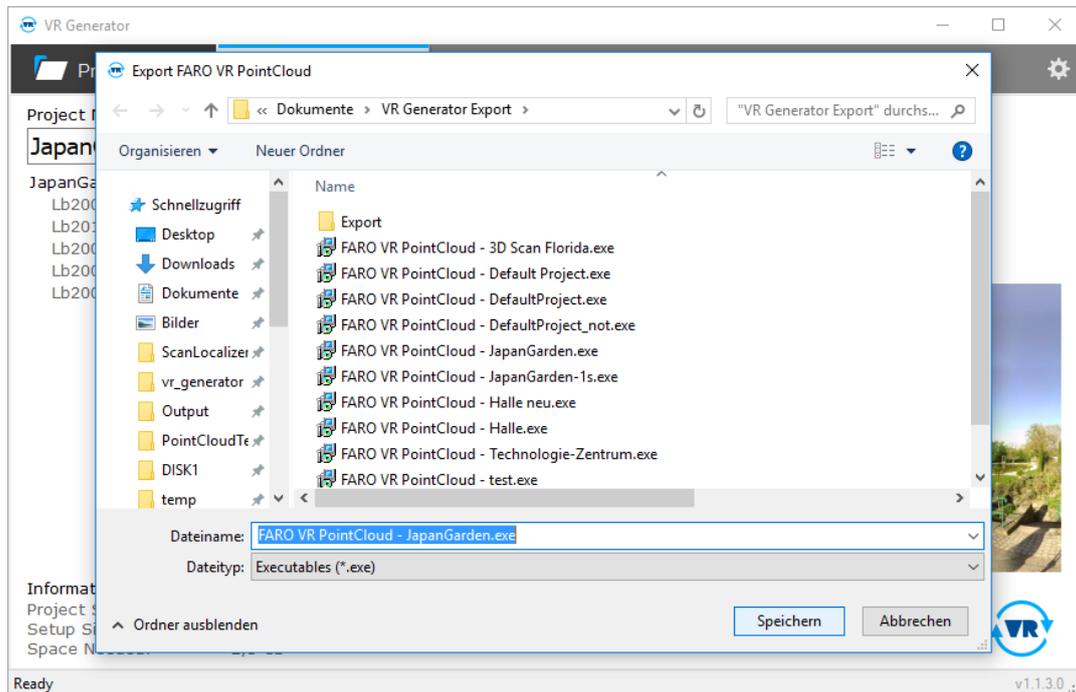


Fig. 4-4: Select the export folder for the installer of FARO® VR Viewer with data generated from a SCENE® project

Select the filename (or leave the default name) and path where the project should be exported to. The default path is the user folder "Documents\VR Generator Export". After pressing the "Save" button, FARO VR Generator starts to generate the VR dataset of the selected SCENE project, compresses the point clouds and generates a setup file. Fig. 4-5 shows the export process. Depending on the number of scans this process can take some time.

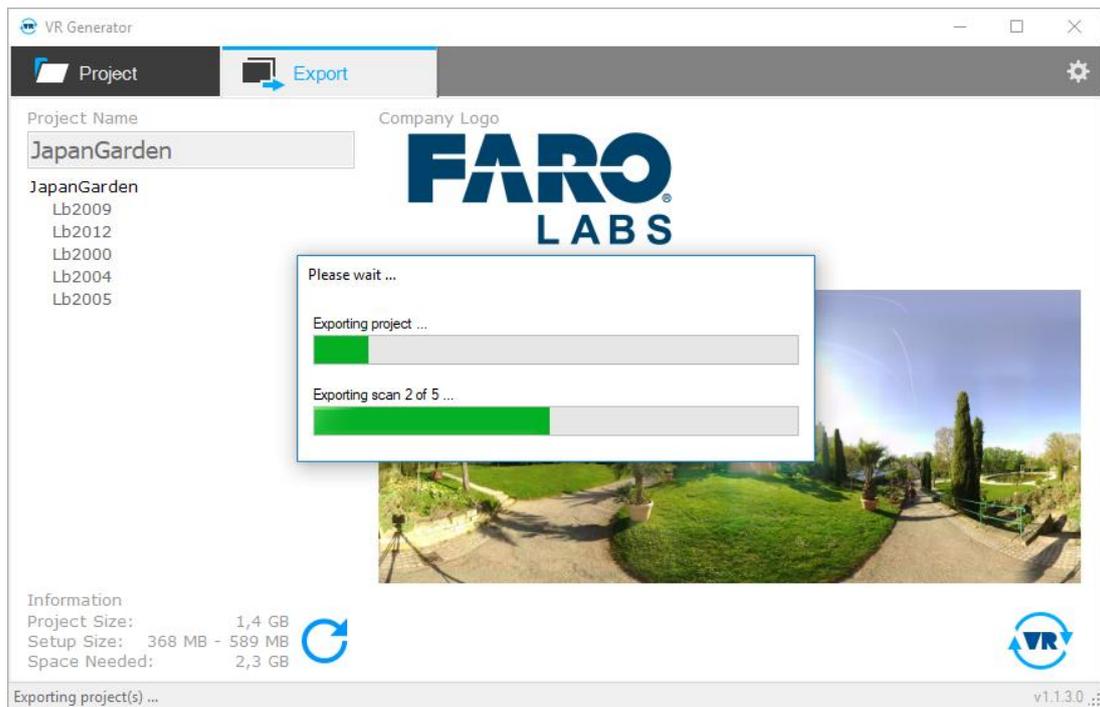


Fig. 4-5: Export of the SCENE® project

After the process is finished FARO® VR Generator has generated the installer file, e.g. "FARO VR PointCloud – Project Name.exe". You are free to give this setup file to your clients. When they start the installation, it will automatically download FARO VR Viewer.



- FARO® VR Point Cloud is free and is automatically distributed with VR projects generated with FARO® VR Generator.
- The project files generated with FARO® VR Generator can be distributed. Everyone who receives VR projects generated with FARO® VR Generator can use them without purchasing additional software licenses.

4.5. Installation of FARO VR PointCloud and FARO VR Viewer

1. Run the FARO® VR PointCloud installation file previously generated with the FARO® VR Generator
2. Follow the on-screen instructions

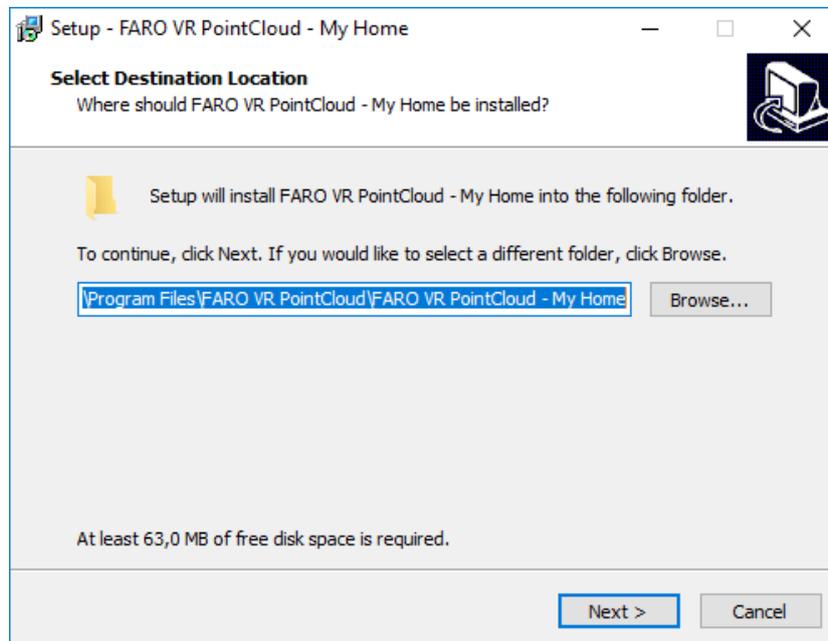


Fig. 4-6: FARO® VR Viewer installer

The installer will install the VR project files. If the viewer FARO® VR Viewer is already installed on the system, the new project will directly appear in the menu selection. If FARO VR Viewer is not installed, the installer will download FARO VR Viewer from the Internet and install it on the system.



- If the VR Viewer FARO® VR Viewer is not installed on the system, make sure that there is an Internet connection available during installation. FARO VR Viewer will be automatically downloaded and installed from the Internet.

5. FARO VR Viewer

The FARO VR Viewer is automatically installed by VR PointCloud Setup. However, you can make sure to have the current version by downloading it on:

<https://s3.eu-central-1.amazonaws.com/farolabs/downloads/FARO+VR+Viewer+Setup.exe>

Double click the setup file and follow the instructions on screen.

5.1. Prepare Oculus Rift

The Oculus Rift must be properly connected to the system and all drivers (graphics driver, Oculus Rift driver, Xbox controller driver) must be installed. Please make sure that the Oculus Rift is running correctly by using the included test programs. If the device is properly installed FARO® VR Viewer can be started.



For more information, how to setup the Oculus Rift correctly please refer to <https://www.oculus.com/setup>

5.2. Get Started with the VR Experience

Find the Icon "FARO VR Viewer" and double click it. After the application is started, put on the Oculus Rift. You can only interact with FARO® VR Viewer if you have put on the Oculus Rift. First the Main Menu is shown. It includes the project selection and a tutorial. See Figure 5-1 for details. Navigation in the FARO® VR is done with the head. You see a white dot in front of you. Navigate the white dot to an element in the menu. The element will be highlighted. Interact with the **Confirmation button** on your Oculus Remote or X-Box controller that came with your Rift.

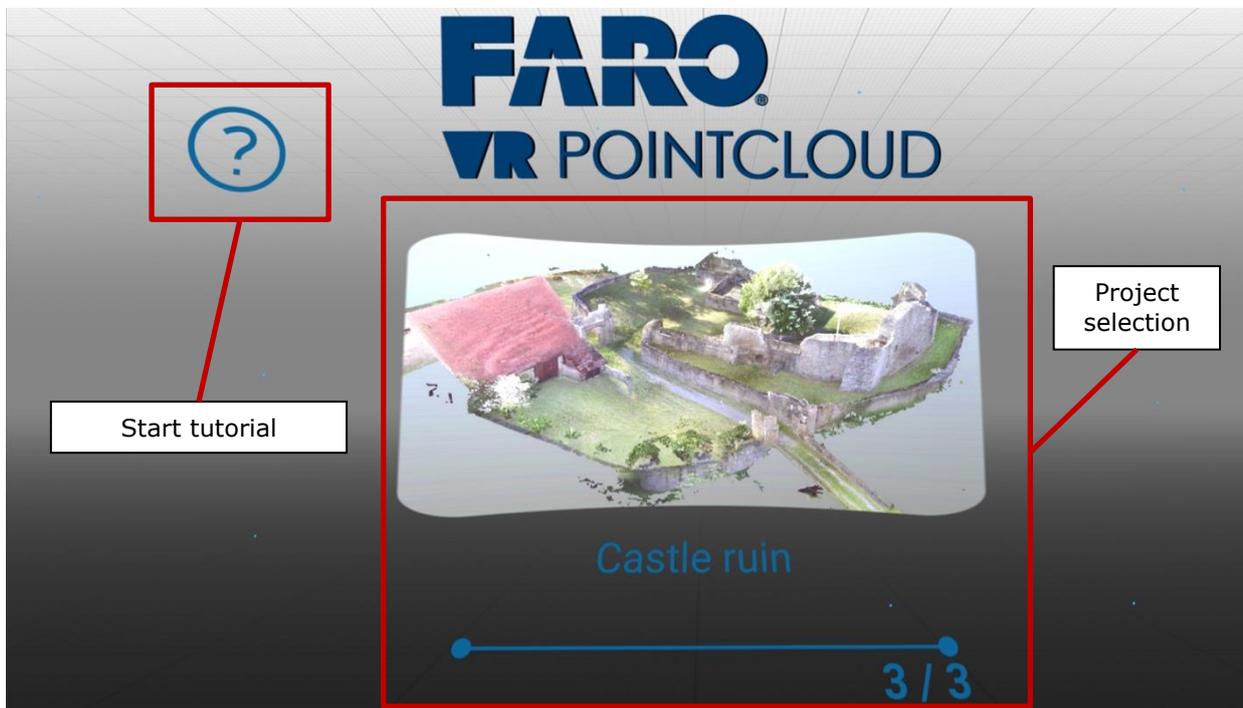


Figure 5-1: Main Menu

5.3. Tutorial

As a first step, it is recommended to start the tutorial. Move your head to the left side until the white dot is over the **Question Mark** symbol. The **Question Mark** symbol will now show **Start Tutorial** (see Figure 5-2). Press the **Confirmation button** and follow the instructions of the tutorial.



Figure 5-2: Start the tutorial

5.4. Open a project

After the tutorial was successfully finished, you can dive into the project point clouds. FARO® VR Point Cloud will show all installed projects that have been generated with FARO® VR Generator.

After a project was loaded you will see a miniaturized **Overview** of the project. You can move and rotate the **Overview** and you can select a scan to jump in. Figure 5-3 shows this overview. It is always possible to jump back to the **Overview** and the menu with the **Back button** of the control device.

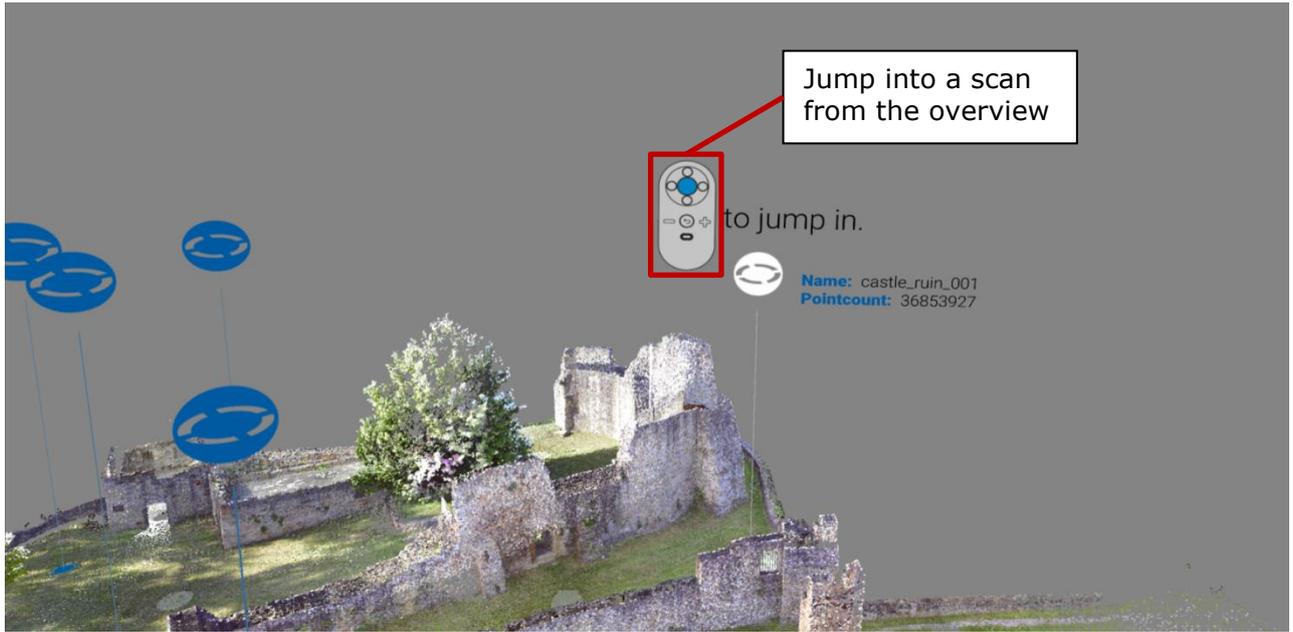


Figure 5-3: Project overview. Scan positions are marked

After a scan was highlighted and selected a 360° picture preview is shown. You can directly look around by moving the head. It is not possible to navigate with the Control Device in this view. In the meantime, the point cloud is loaded. You can abort loading the point cloud at any time during the load process by pressing the **Back button**. This is indicated by the Loading Icon (see Figure 5-4)

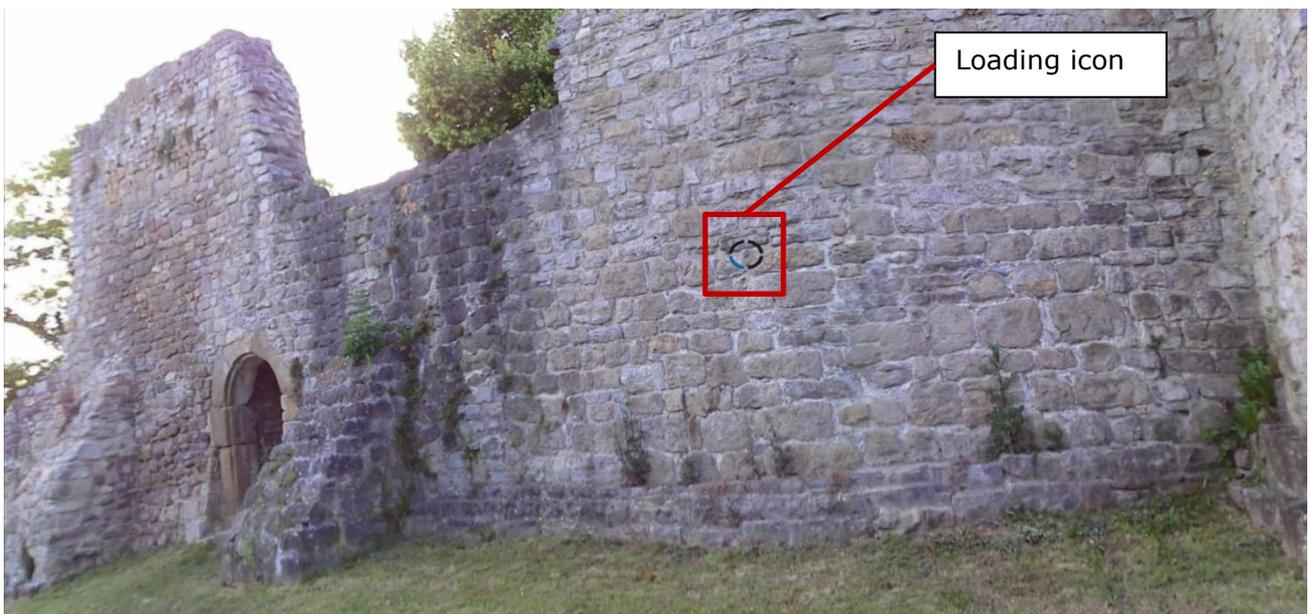


Figure 5-5: Loading symbol in the 360° view

As soon as the point cloud is loaded a short notice will appear on the screen (see Figure 5-6). You can use any button on the control device to hide the 360° preview picture and jump into the point cloud. The Point Cloud view is shown in Figure 5-7.



Figure 5-6: Message Point Cloud successfully loaded



Figure 5-7: Point Cloud View

5.5. Navigation in the Point Cloud View

FARO® VR Point Cloud supports both controllers delivered with Oculus Rift. The Oculus Remote and the Xbox One wireless controller. After you have pressed a button on the control device it will be automatically recognized. Figure 5-8 shows the button configuration of the Oculus Remote and the Xbox One wireless controller in the Point Cloud View.

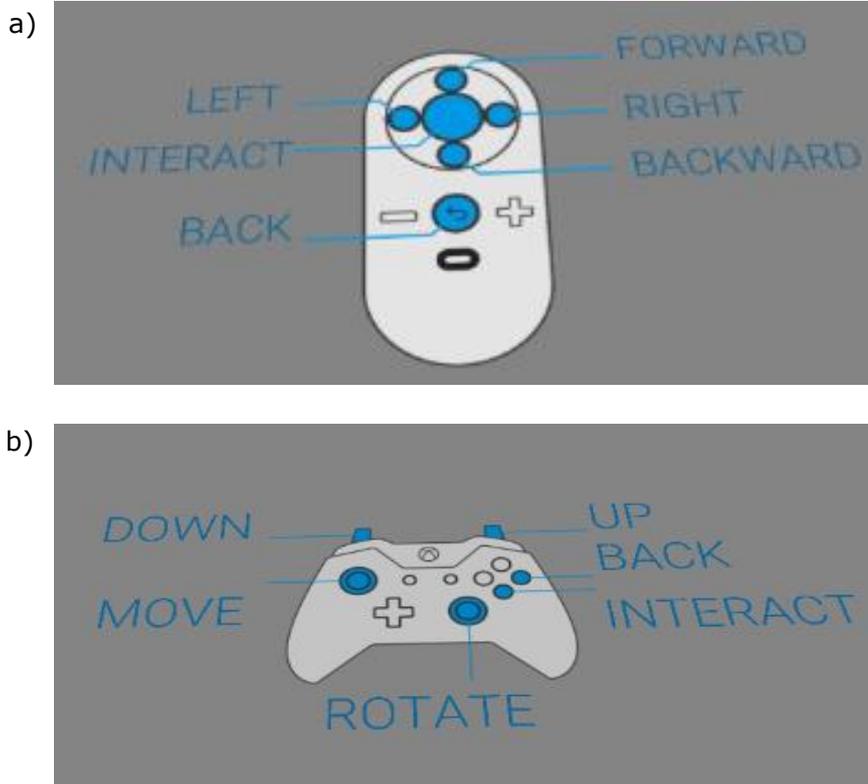


Figure 5-8: Button configuration of a) Remote Control b) Gamepad

6. Technical Support

This software is a FARO® LABS software release and is currently not supported by the common FARO® support channels. **Only** direct Email support from the FARO® Labs team is available.

If you have any problem using one of our products, please follow these steps before contacting our Technical Support Team:

- Be sure to read the relevant sections of the documentation to find the help you need.
- Document the problem you are experiencing. Be as specific as possible. The more information we have, the easier it will be for us to solve the problem.
- If you still cannot resolve your problem, have your device's Serial Number available *before mailing*.
- **E-Mail:** faroeulabssoftware@faro.com

E-Mails will be answered within 48 hours if possible. Although we can't guarantee support within 48 hours in the "Technical Sneak Preview" Program.

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8. Implementation Notes

Unity 5

FARO® VR Viewer uses Unity5 Pro License. Copyright © 2016 Unity Technologies

Inno Setup

FARO® VR Viewer uses Inno Setup for the installer.

Except where otherwise noted, all of the documentation and software included in the Inno Setup package is copyrighted by Jordan Russell.

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Draco

FARO® VR Generator uses Draco.

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