



**Elysium
InfiPoints®**



Elysium InfiPoints Operation Manual

Vol.5. Exporting Files for VR

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Elysium Co. Ltd.

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1. Introduction

This manual explains how to create an InfiPoints for VR project file.

Since InfiPoints for VR has graphic memory restrictions, there is a limit of data size to handle the data smoothly. It is recommended to create a filtered point cloud project file for InfiPoints for VR.

With InfiPoints for VR, you can reproduce the state which you saved by InfiPoints onto the VR device. In addition to the point cloud file, other elements such as modeling elements (plane/pipe/structure/duct), CAD/polygon models, notes, layer status, scene information (viewpoint information), motion path, which are in the state of "show" will all be displayed in InfiPoints.

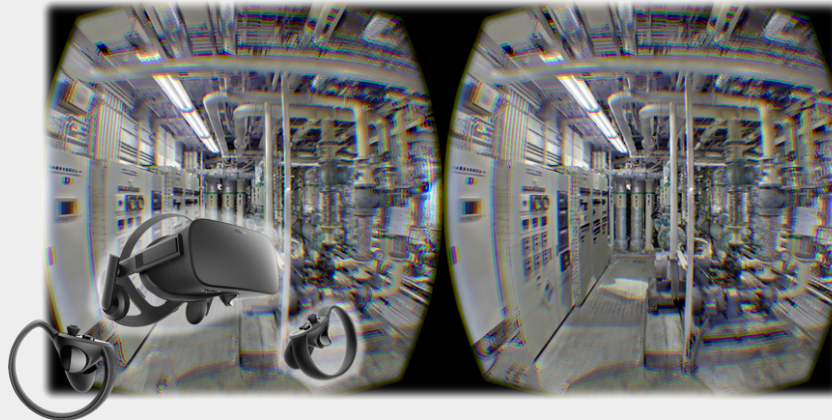
Refer to the "InfiPoints for VR Manual (InfiPoints_for_VR.pdf)" for operation procedures.

What is InfiPoints for VR

"InfiPoints for VR" is an InfiPoints viewer for VR devices.

Currently supported devices are: "Oculus Rift" and "Oculus Rift S" (Facebook Technologies, Inc.); and "HTC VIVE", "VIVE Pro", "VIVE Cosmos", and "VIVE Cosmos Elite" (HTC Corp.).

You can explore the digital clone of the engineering site, measure distances, conduct virtual meetings and more.



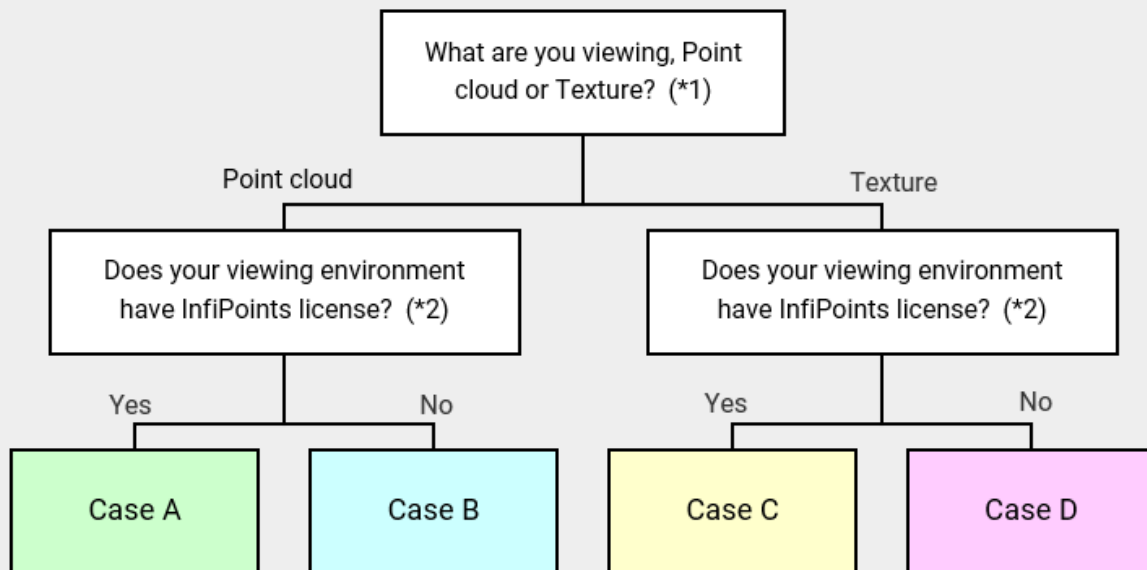
InfiPoints is a trademark of Elysium Co. Ltd. Oculus Rift, Oculus Rift S and Oculus Touch are trademarks or registered trademarks of Facebook Technologies, LLC.



HTC VIVE, VIVE Pro, VIVE Cosmos, VIVE Cosmos Elite, and VIVE Controller are trademarks or registered trademarks of HTC Corporation. Other products are trademarks or registered trademarks of their respective owners.

Identify the Workflow

Use the diagram below to identify your workflow.



(*1) Drawing the Point Cloud on VR Device

The computer to which the VR device is connected must have an equal high specification as the computer that uses InfiPoints. Also, due to the nature of VR, you may be more concerned about the flickering of the point cloud on VR than when using InfiPoints.

This kind of problem can be avoided by using "texture" instead of using the point cloud. However, since texture is applied to planes and pipes, point cloud without planes or pipes cannot be viewed. Also, there is a slight gap between the actual point position and the texture position, so you have to take this fact into account when measuring.

Another advantage of using texture instead of point cloud is the significant reduction of data size.

(*2) How to View the Point Cloud on VR Device

There are two ways to view the point cloud on a VR device.

- A. View the revision saved in InfiPoints by specifying them in InfiPoints for VR
 - A standard license for InfiPoints or an optional license for VR is required for viewing.
- B. Create a Viewer File for VR with InfiPoints, and then execute the Viewer File for VR to view it
 - An optional license for VR is required to export Viewer File for VR.
 - No license is required when you are just viewing.

Workflow for Case A

Case A



1. Create Resolution Decreased Point Cloud Data

- For comfortable viewing experiences with VR devices, always perform [2, Creating Point Cloud Data Optimized for Visualization](#) on the point clouds.

2. Save the project file

- Regarding the point cloud, save the data with only the optimized point cloud displayed.
- Viewing becomes difficult when the point cloud overlaps the modeling elements, so save the file with the overlapping modeling elements hidden.



Please refer to [3.1, "Saving as Project"](#) for details on operation procedures.

3. View on VR Device

- Start InfiPoints for VR, and open the saved project file.



One of the following licenses is required for viewing:
InfiPoints Standard (IFP-STD) or InfiPoints VR Option (IFP-OCLOP)



Please refer to "Elysium InfiPoints for VR Manual" (InfiPoints_for_VR.pdf) for details on VR operation procedures.

Workflow for Case B

Case B



1. Create Resolution Decreased Point Cloud Data

- For comfortable viewing experiences with VR devices, always perform [2, Creating Point Cloud Data Optimized for Visualization](#) on the point clouds.

2. Export Viewer File for VR

- Regarding the point cloud, export the data with the optimized point cloud displayed.
- Viewing becomes difficult when the point cloud overlaps the modeling elements, so export the file with the overlapping modeling elements hidden.



Please note that the following license is required to export Viewer File for VR.

InfiPoints VR Option (IFP-OCLOP)



Please refer to [3.2, "Exporting Viewer Files for VR"](#) for details on operation procedure.

3. View on VR Device

- Double-click "StartInfiPointsVRViewer.vbs" in the folder of Viewer File for VR.



No license is required when you are just viewing.



Please refer to "Elysium InfiPoints for VR Manual" (InfiPoints_for_VR.pdf) for details on VR operation procedures.

Workflow for Case C

Case C



1. Create Texture for Plane and Pipe

- Create texture for both plane and piping elements.



Please refer to "Creating and Editing Texture" in "InfiPoints Operation Manual Vol.2 Point Cloud Utilization - Simulation & Data Utilization" for details about the operation procedures.

2. Save the Project File

- Regarding the point cloud, save the data with only the optimized point cloud displayed.
- Viewing becomes difficult when the point cloud overlaps the modeling elements, so save the file with the overlapping modeling elements hidden.



Please refer to [3.1, "Saving as Project"](#) for details about the procedure.

3. View on VR Device

- Start InfiPoints for VR, and open the saved project file.



One of the following licenses is required for viewing:
InfiPoints Standard (IFP-STD) or InfiPoints VR Option (IFP-OCLOP)



Please refer to "Elysium InfiPoints for VR Manual" (InfiPoints_for_VR.pdf) for details on VR operation procedures.

Workflow for Case D

Case D



1. Create Texture for Plane and Pipe

- Create texture for both plane and piping elements.



Please refer to "Creating and Editing Texture" in "InfiPoints Operation Manual Vol.2 Point Cloud Utilization - Simulation & Data Utilization" for details about the procedure.

2. Export Viewer File for VR

- Regarding the point cloud, export the data with only the optimized point cloud displayed.
- Viewing becomes difficult when the point cloud overlaps the modeling elements, so export the file with the overlapping modeling elements hidden.



Please note that the following license is required to export Viewer File for VR.
InfiPoints VR Option (IFP-OCLOP)



Please refer to [3.2, "Exporting Viewer Files for VR"](#) for operation procedures.

3. View on VR device

- Double-click "StartInfiPointsVRViewer.vbs" in the folder of Viewer File for VR.



No license is required when you are just viewing.



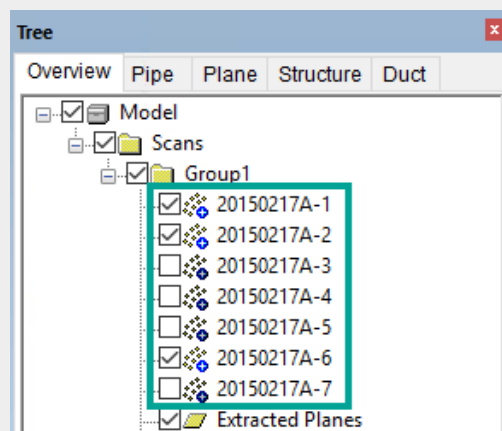
Please refer to "Elysium InfiPoints for VR Manual" (InfiPoints_for_VR.pdf) for details on VR operation procedures.

2. Creating Point Cloud Data Optimized for Visualization

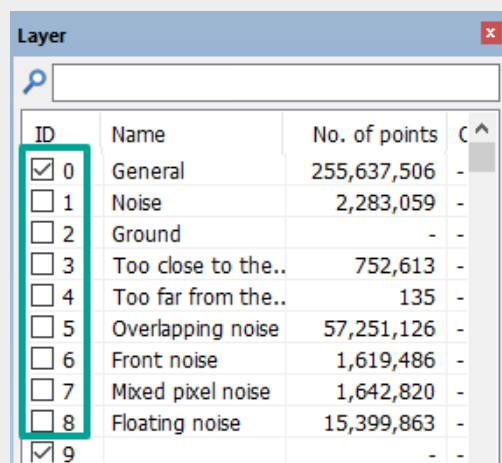
This section explains how to create point cloud data optimized for visualization through exclusion of points in hidden/noise layers, thinning, interpolation for sparse area, etc. The way to merge multiple point cloud parts into one is also explained.

Preparations for Optimizing Point Cloud Data for Visualization

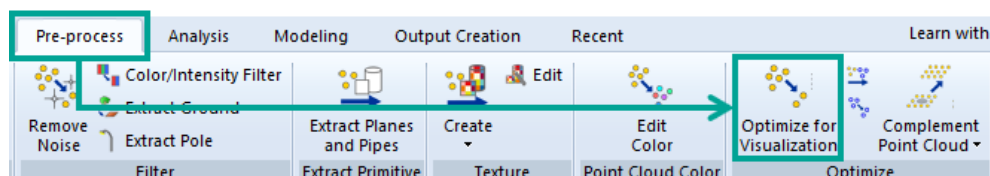
- Uncheck unnecessary scan shots for the filtered point cloud in [Tree (Overview)] panel.



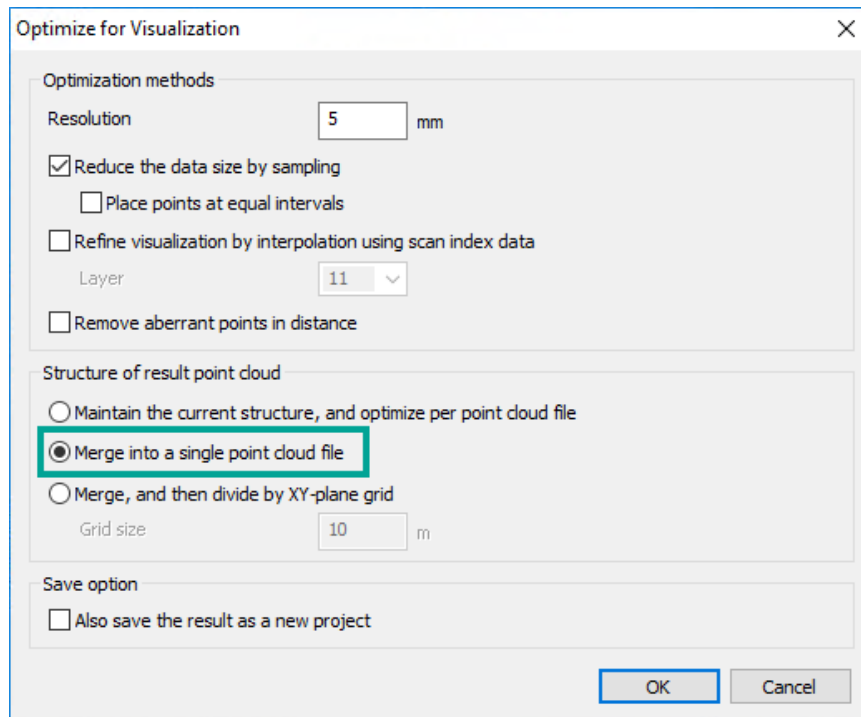
- Uncheck unnecessary layers for the filtered point cloud in the [Layer] panel.



1. Select [Optimize for Visualization] () in the [Pre-process] tab.



2. "Optimize for Visualization" dialog will appear. Select the option "Merge into a single point cloud file" in "Structure of result point cloud", and click [OK].



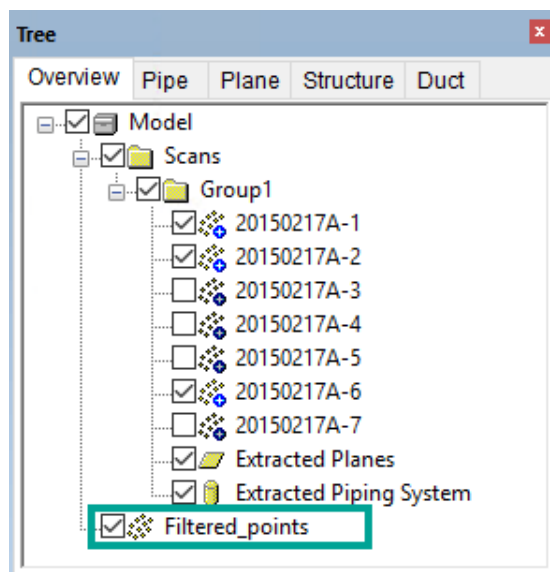
All target scan shots will merge into a single point cloud when the "Merge into a single point cloud file" option is selected.

Before creating a Viewer File for VR, it is recommended to create filtered point clouds that are merged into a single point cloud part.



There is a data size limit for smooth viewing due to graphic memory limitations.

3. Filtered scan shot (Filtered_points) will be created.



3. Create Project Data

InfiPoints for VR can display the point cloud data, etc. on Oculus Rift / Oculus Rift S / VIVE / VIVE Pro by importing the project data created with InfiPoints. InfiPoints license is required to import the project data.



InfiPoints for VR supports visualization of projects saved in both InfiPoints Ver.5.0 or later, and Ver.4.1.4 or former.

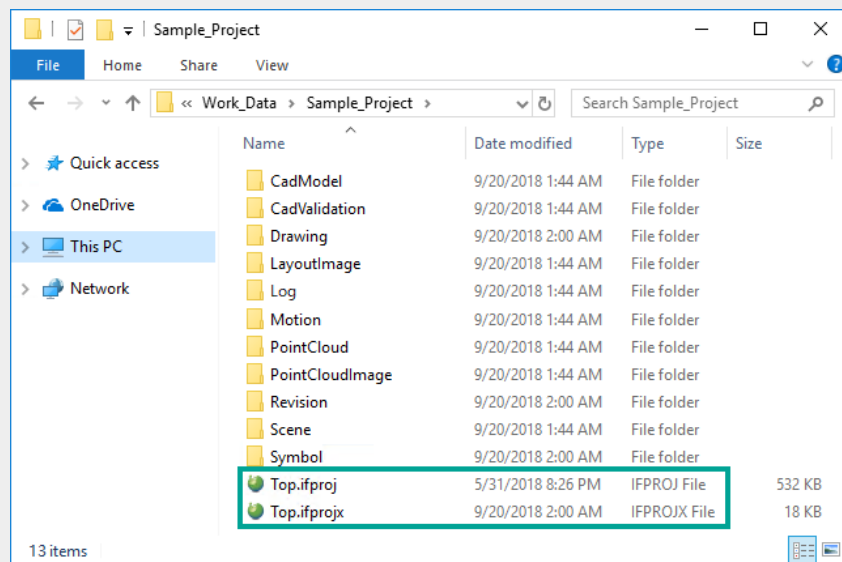
If there is no InfiPoints license, you can open Viewer File for VR by InfiPoints for VR. InfiPoints license is not required if InfiPoints for VR is opened from the viewer file.

3.1. Saving as Project

What is a Project

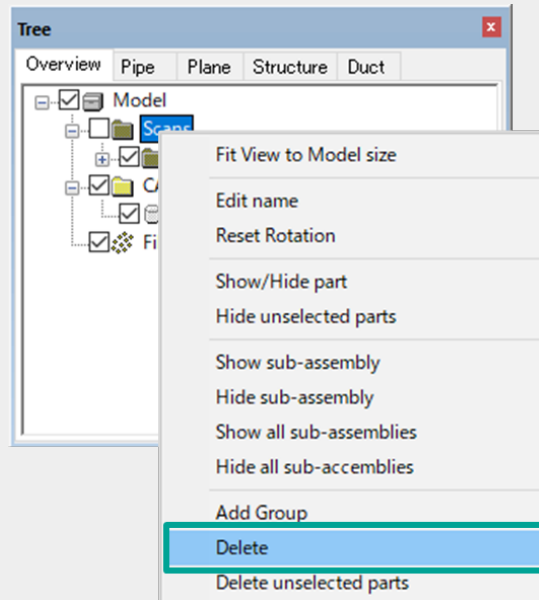
A project is a file to manage each data in InfiPoints. InfiPoints stores the editing history as project revisions.

Other than the imported point cloud data, created 2D drawings and 3D objects are all saved inside the project folder.

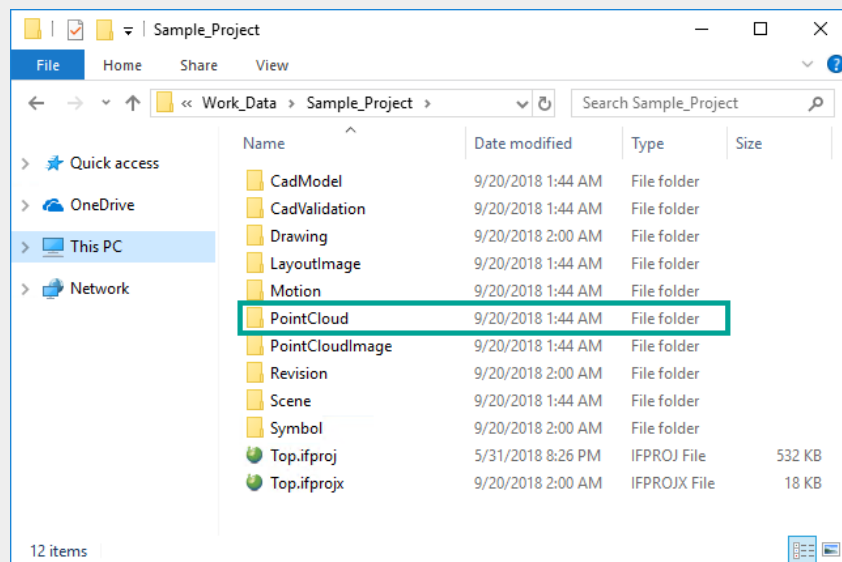




Preparation for Project Creation

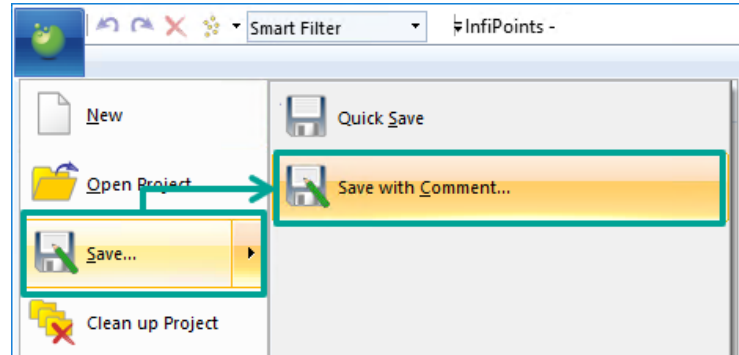
Delete unnecessary scan shots and other elements in the structure tree and only retain filtered scan shots (Filtered_points) and models that you want to display.



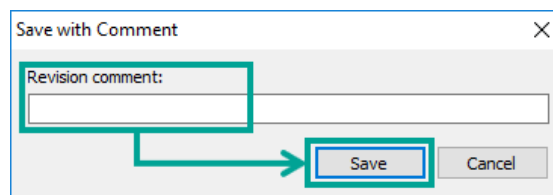
Even if the point cloud part is deleted in the structure tree, the scan shot data itself is not deleted. The point cloud data is saved under the "PointCloud" folder in the project data.



1. Select [Application Menu] () > [Save] > [Save with Comment] ().




2. "Save with Comment" dialog will appear.
Enter a comment for the new revision and click [Save].

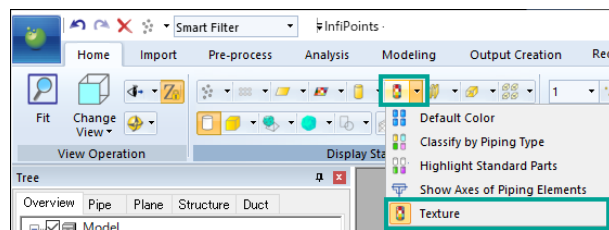
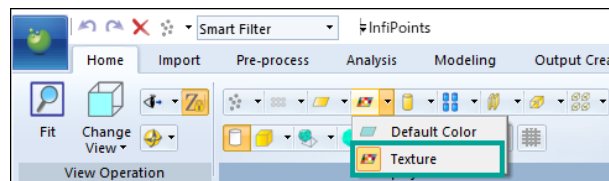


Please note that once a revision is saved, it cannot be overwritten.



Click [Quick Save] () to save a new revision without a comment.

The VR will start in the same display state as when it was saved in InfiPoints. To display texture on the VR side, enable [Texture] and save. Switching the display status of planes and pipes on the VR side is not available.



3.2. Exporting Viewer Files for VR

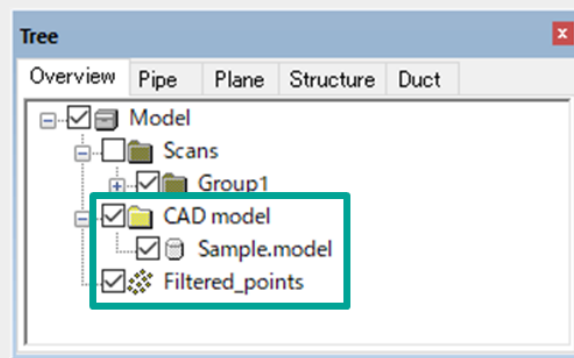
Export a specialized Viewer File for VR for other departments or partners not having an InfiPoints license.



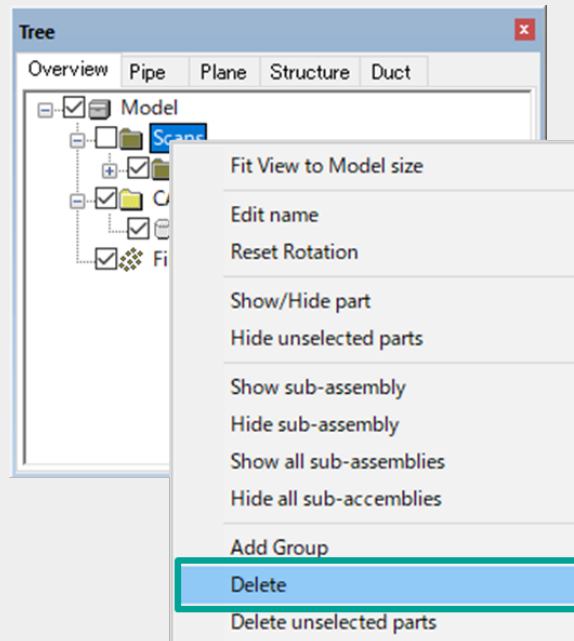
The option license "InfiPoints VR Option (IFP-OCLOP)" is required to export Viewer Files for VR.

Preparations for Viewer File for VR Export

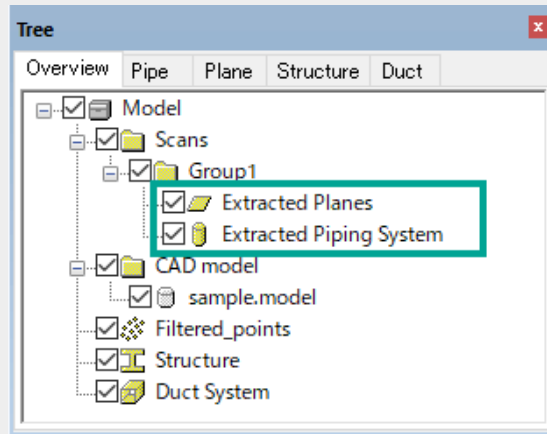
- Check elements to be displayed in the viewer file such as filtered points (Filtered_points) or CAD models in the structure tree of the [Tree (Overview)] panel.



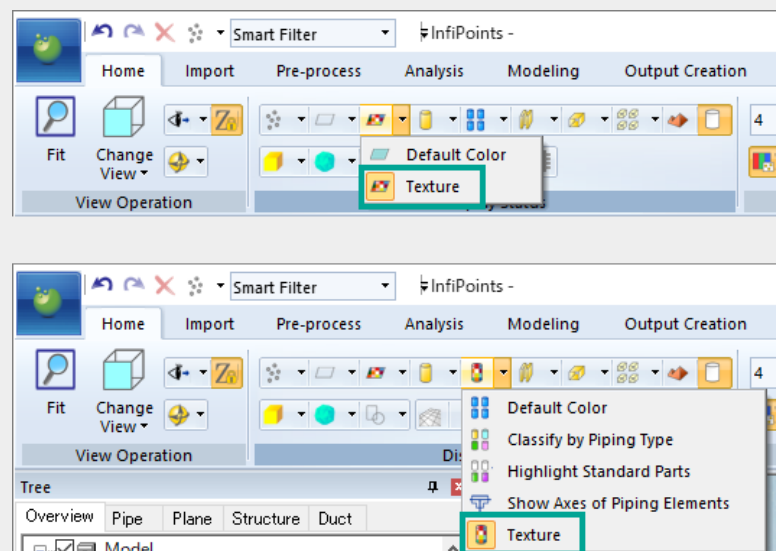
- Hidden scan shots in the structure tree will be included in the viewer file. Delete the unnecessary scan shot in the structure tree to lighten the viewer file size.



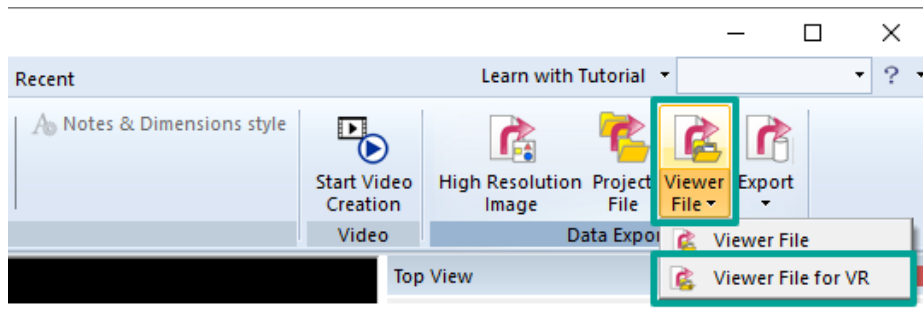
- When displaying plane elements or piping elements as texture, perform the following settings.
 - With texture in the created state, delete all the point cloud parts from [Tree (Overview)] panel, and enable "Extracted Planes" and "Extracted Piping System".



- Switch the display method for planes and pipes to "Texture".

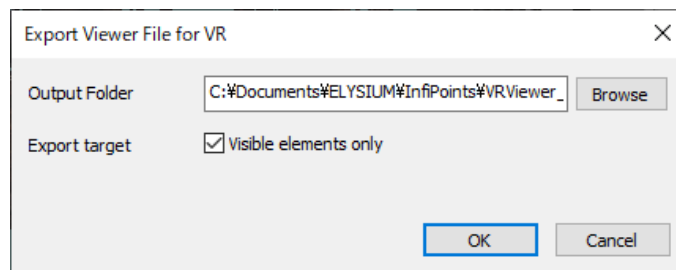


1. Select [Output Creation] tab > [Viewer File] > [Viewer File for VR] () from the Ribbon menu.

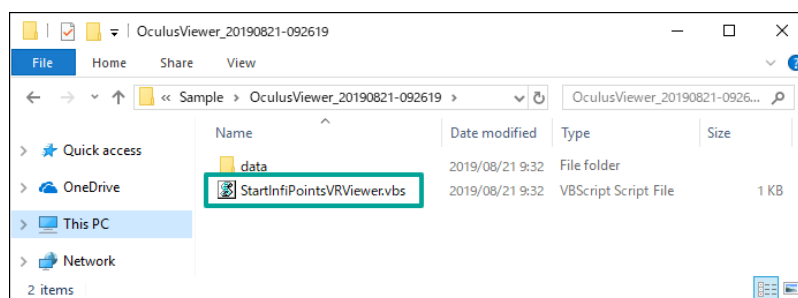


- An optional license "InfiPoints VR Option (IFP-OCLOP)" is required to create Viewer File for VR.
- Even without the optional license, you can still view the data on your VR device. In that case, open the data saved in 3.1, "Saving as Project" with InfiPoints for VR.

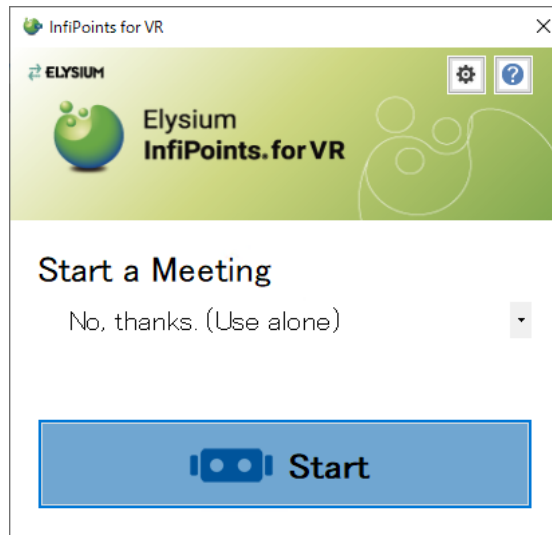
2. "Export Viewer File for VR" dialog will appear. Specify the location to output to, and click [OK].



3. Viewer file for VR is exported.



Double-click the exported vbs file (StartInfiPointsVRViewer.vbs) to start the viewer.



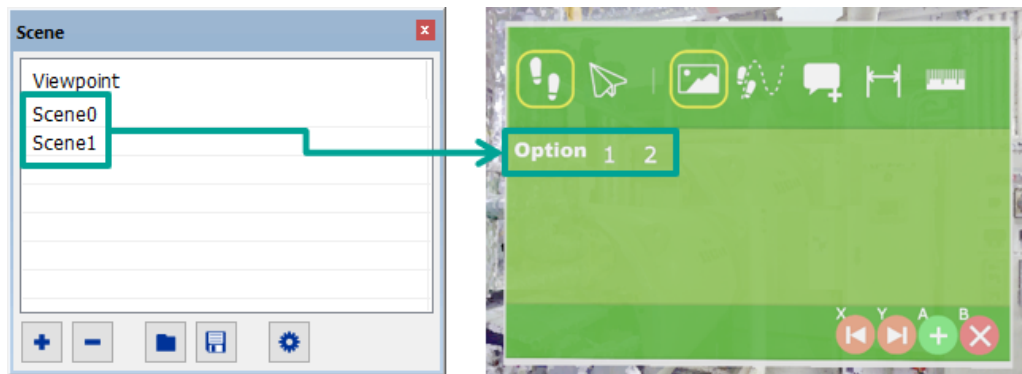
Be sure to distribute the entire folder including the data folder along with the vbs file.

4. Useful Functions

4.1. Save View Point

Open saved view point information at [Scene] in InfiPoints for VR.

Refer to [Close Look into a Certain Region Only] > [Saving a Scene] in [InfiPoints Operation Manual Vol.2. Point Cloud Utilization: Simulation & Data Utilization] for more information about saving view point information.



View point information (Scene) includes layer view on/off information as well. If the applied view point information includes some of the layer view turned off, the display performance may degrade. For a smooth VR experience, it is recommended to have all layer views turned on.

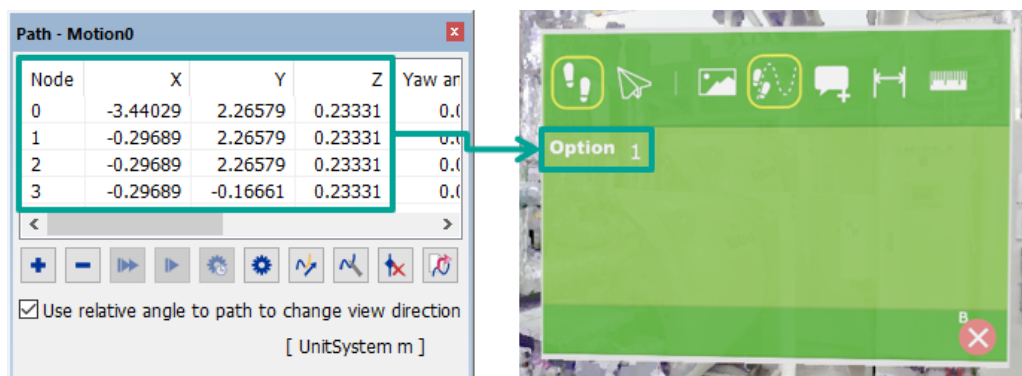


View point information (Scene) name set in InfiPoints will appear when the cursor is on the scene number.

4.2. Create Path

Open created path at [Motion] in InfiPoints for VR.

Refer to [Creating a Movie] > [Creating Path] in [InfiPoints Operation Manual Vol.2. Point Cloud Utilization: Simulation & Data Utilization] for more information about creating a path.



4.3. Import Models

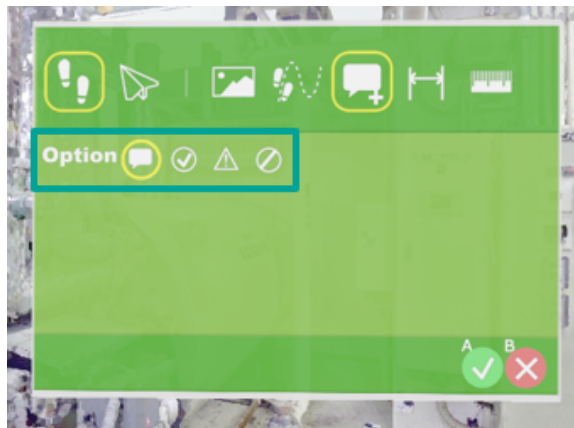
Import CAD models into InfiPoints to view in InfiPoints for VR.

Refer to [Detecting Collisions] > [Importing CAD Data] in [InfiPoints Operation Manual Vol.2. Point Cloud Utilization: Simulation & Data Utilization] for more information about importing models.

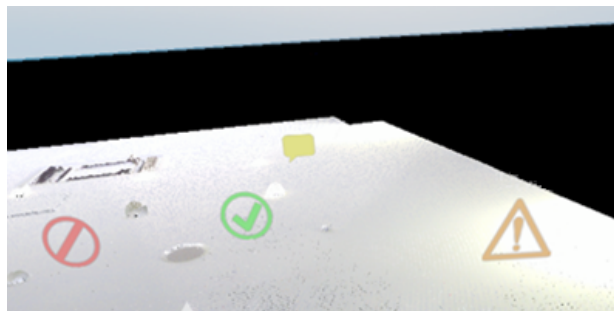
4.4. Set Notes (Markings)

Set notes (markings) will appear in InfiPoints for VR.

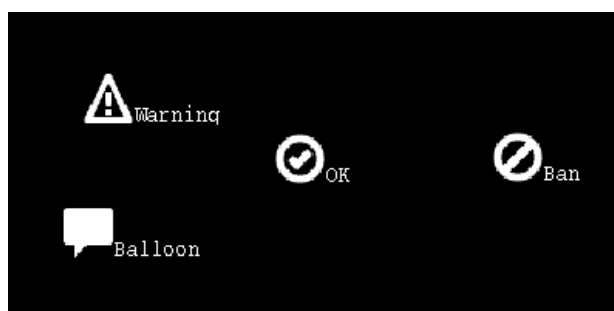
Refer to [Creating Dimensions] > [Setting Notes or Links] in [InfiPoints Operation Manual Vol.2. Point Cloud Utilization: Simulation & Data Utilization] for more information about setting notes (markings).



- Add markings in InfiPoints for VR.



- Added markings in InfiPoints for VR can be edited in InfiPoints.



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