FREDOPORTRAIT

TOOLSET ABOUT CAMERAS, VIEWS AND IMAGES

OVERVIEW

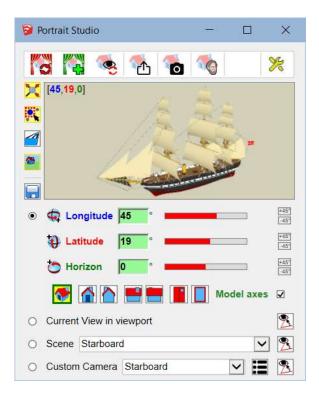
VERSION 1.2 – 20 JUL 2019

BY FREDO6



The **Plugin page of FredoPortrait** is hosted on the Sketchucation web site at:

https://sketchucation.com/plugin/2202-FredoPortrait



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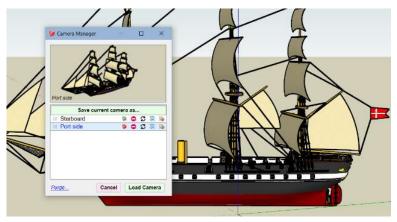
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1. Overview

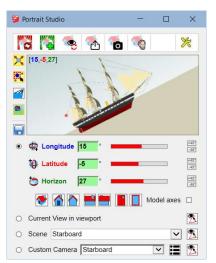
FredoPortrait is a suite of tools dealing with cameras, views, scenes and images.

In version 1.2, FredoPortrait provides the following capabilities:

Custom Cameras: you can save a view camera in the model or at SketchUp level
and activate it later on. This is useful if you wish to transfer cameras within a model,
for instance, between scenes, or across models.

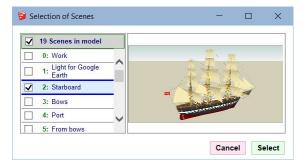


Create cameras with accurate specification, namely by setting the camera orientation with 3 angles, latitude, longitude and horizon inclination, with or without zoom extents on the selection.

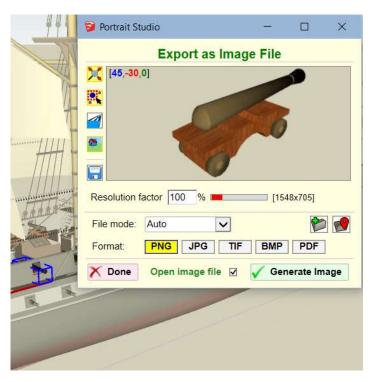




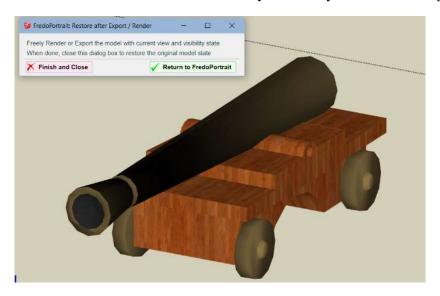
You can then **create a scene** or **update scenes** with the camera:



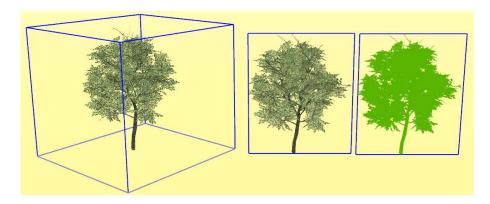
Export images of the selection, showing only selected objects or entities, in raster formats (PNG, JPG, TIFF, BMP) and vector format (PDF). Creating images on the selection is apparently not possible with the native *Export 2D graphics* function of SketchUp.

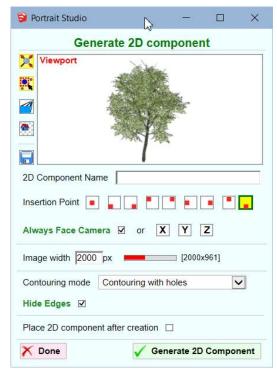


Render or Export 3D for the selection, including only selected objects or entities. FredoPortrait temporarily sets the view with only the selection visible. You can then render or export the model and, once done, go back to the original state of the model. This is much easier than to set layer visibility for individual objects.



- Generate 2D and FaceMe Component, from any selected objects or entities, using image contouring methods.





2. Installation

- ➤ SketchUp Versions: SU2016 and above (Make and Pro).

 IMPORTANT: Generation of 2D components is available only for SU2018+.
- > Platforms: Windows and Mac OSX
- ➤ IMPORTANT: FredoPortrait requires the Shared Library LibFredo6. It is a good practice to always upgrade to the latest version of LibFredo6.

FredoPortrait is hosted at the **Sketchucation** site.

There are now several ways to install a plugin.

- SCF ExtensionStore, recommended method
- SketchUp Extension Warehouse (EWH)
- SU Extension Manager to manually install a .rbz file

Instructions for installation of FredoPortrait and LibFredo6 can be consulted at:

https://sketchucation.com/plugin/2202-FredoPortrait

All installations must end up with the following **footprint** in the SketchUp Plugins directory:

- one script file Fredo6 FredoPortrait.rb
- **one subfolder Fredo6_FredoPortrait**. This subfolder contains the library files, the icons, cursor files, language files, ...

Name		Туре
	SU Plugins root directory	Plugins Root Folder
	Fredo6_FredoPortrait	Folder
4	Fredo6_FredoPortrait.rb	Ruby file
	Fredo6_!LibFredo6	Folder
4	Fredo6_!LibFredo6.rb	Ruby file

CAUTION: NEVER rename or move files from their folders.

Note: you can select an alternative plugin directory (see **AdditionalPluginFolders** at http://sketchucation.com/forums/viewtopic.php?f=323&t=39073#p345150).

3. Menus, Toolbar and Configuration

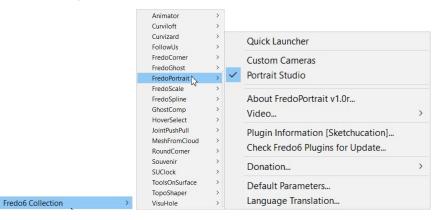
Toolbar

Toolbar name is **FredoPortrait** by default. In version 1.1, there are 3 icons¹.



Main menu

By default, in *Tools > Fredo6 Collection > FredoPortrait*. All functions are available in this menu, whether shown or not in the toolbar.



Contextual menu

Whenever the selection includes a group or a component, the contextual menu shows an entry for FredoPortrait:



Quick Launcher



This is a small floating window which displays all FredoPortrait tools in a list. It can be invoked from the menu or the toolbar icon:

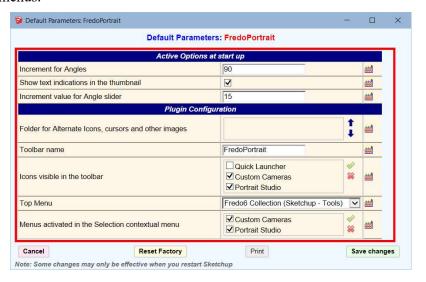


Optionally you can **pin** the Quick Launcher window on your viewport for subsequent use. If unpinned, the window closes after you launch a command.

Warm thanks to **JClements** for designing the icons!

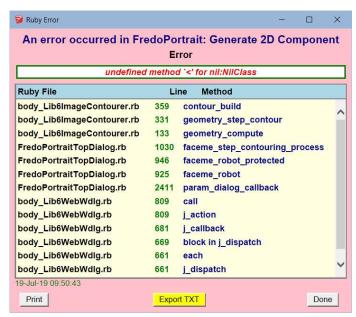
Configuration of contextual menu and toolbar

All icons are shown right after installation, as well as all contextual menu entries. However, you can configure which icons and menu entries are visible from the **Default Parameters** dialog box. You can also change the name of the toolbar and the location of the menus.



Error Handling

In some circumstances, FredoPortrait may be unable to perform the operation, either because the objects are too complex to handle or simply because there are still bugs in the extension. If this happens, you may get an error message shown as the dialog box below:



Although this is purely technical information related to the Ruby extension, it can be useful for the author to trace the cause of errors. You can export this log as a txt file (or simply copy / paste it) and post it on Sketchucation.

4. Custom Cameras



A Custom Camera is just the specification of the orientation, zoom level and projection type for a view camera. FredoPortrait allows to **save the camera specification** under a name in:

- The current model
- At Sketchup Level (so, across models and SketchUp versions)

The Custom camera tool allows you to create, set and manage cameras from **the single** Custom Camera Manager modal dialog box, which can be invoked from the toolbar icon from the menu, from the contextual menu and from the quick launcher.



Create mode
When opening the dialog box



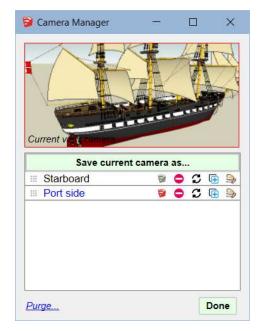
Load modeWhen selecting a camera



Save Changes mode
After you made changes

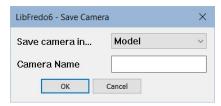
1) Creating a Custom Camera

Open the Custom camera manager. No camera is selected in the list.



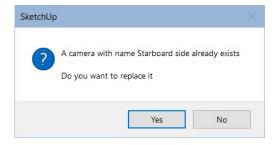
To create the camera from the current model view, you just need to click on the button 'Save Current Camera as...'.

You will be prompted for the **name** and the **scope** for storage.



The scope can be the Model or SketchUp for further retrieval in other models or across SketchUp versions, including future ones.

You must provide a name for the new camera which is not already used by other cameras. Otherwise, you will have to confirm that you wish to overwrite this existing camera with the new specification.



Note that custom cameras stored at Model level will **persist in any copy of the model skp file** (via "SaveAs..." or "SaveCopyAs..." or manual copy).

After creating the camera, the dialog box will close.

2) Updating an existing Custom Camera

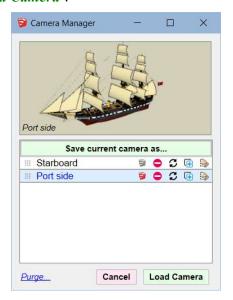
If you wish to update an existing custom camera with the current view camera, locate the camera in the list and click on its update icon \mathfrak{Z} .



After updating the camera, the dialog box will close.

3) Loading a Custom Camera

Open the Custom camera manager and **select a camera in the list**, which is sorted by date of creation (latest on top). The thumbnail will show the camera view. Then Just click on the button 'Load Camera'.



To thumbnail displays a preview of the selected camera. It can also be used to show a preview of the camera, depending on where you mouse over in the dialog box:

- Mouseover the button 'Save Current Camera as...', will show the active model view of the viewport
- Mouseover the small icon

 in front of the camera name or over the name of the camera will show the view for this camera

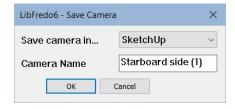
After loading the camera, the dialog box will close. Note that **FredoPortrait only modifies the camera of the main view**, without changing the style and other display parameters (section, layers, etc...).

4) Duplicating an existing Custom Camera

To duplicate an existing custom camera, locate the camera in the list and click on its copy icon .



You will be prompted for a name and scope:



The dialog box stays open, showing the new duplicated camera.

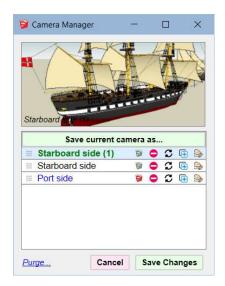


5) Changing the scope of a Custom Camera

To change the scope of an existing custom camera, locate the camera in the list and click on the small SketchUp icon (for SketchUp scope) or (for Model scope), which will toggle the scope between SketchUp and Model.

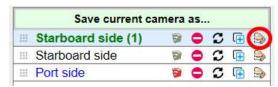


The scope will be changed when you **validate the changes** with the button "Save Changes" at the bottom of the dialog box



6) Changing the name of a Custom Camera

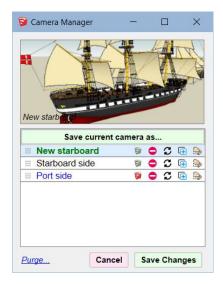
To change the name of an existing custom camera, locate the camera in the list and click on the small SketchUp icon \Longrightarrow .



You will be prompted for a new name:



The name will be changed when you validate the changes with the button "Save Changes" at the bottom of the dialog box



7) Deleting a Custom Camera

To delete an existing custom camera, locate the camera in the list and click on the small SketchUp icon .



The icon will switch to the undelete state \bigcirc and the name of the camera will appear in red strikethrough.



You can still change your mind and **undelete** the camera by clicking again on the toggle icon.

The final deletion of the camera(s) will only take place when you validate the changes with the button "Save Changes" at the bottom of the dialog box.

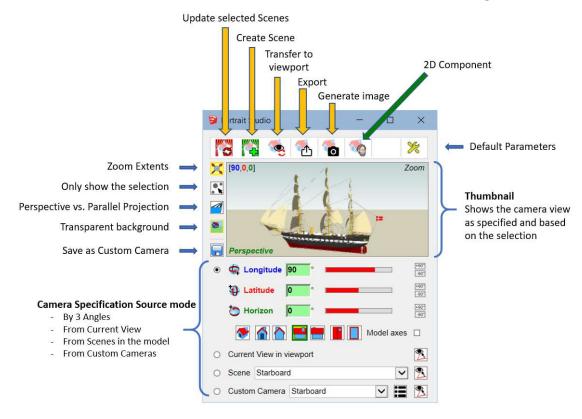
5. Portrait Studio



This tool allows to accurately specify a camera (orientation, projection type and zoom extent level by reference to the selection) and use it to:

- Transfer the specified camera to the viewport
- Create a new scene with the specified camera
- <u>Update one or several scenes</u> with the specified camera
- <u>Generate an image file</u> of the model with the specified camera, possibly on just the selected objects. Formats supported are PNG, JPG, BMP, TIFF and PDF
- Export or render the selection based on all available options in SketchUp.

All functions of this tool can be accessed from the **Portrait Studio dialog box**:



1) Principles

Thumbnail: it reflects the camera you are specifying, <u>independently</u> of the viewport. This is the view that you will transfer to the viewport, to scenes, or use for generating image files or export / render.

Selection: The dialog box is not modal. So, you can freely select any object in the model at any level, via mouse clicks or the outliner. The selection can be any entity or set of entities in the model. The effect of selecting / unselecting objects will be reflected in the Thumbnail.

Zoom Extents modifier: When you have a selection, you can apply a *Zoom Extents* with the toggle button \times / \times . If there is no explicit selection, the whole model is taken as the selection.

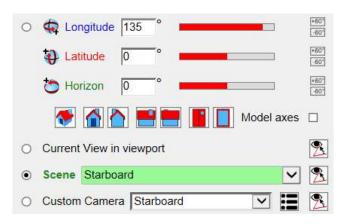
Perspective vs. Parallel projection modifier: you can change the projection type with the toggle button // . This is independent from the current projection type in the viewport.

Only Show Selection: For convenience, this toggle button / allows to display only the selection in the thumbnail or to show all objects in the thumbnail. Note however that when the camera is transferred to the model, all objects will be visible.

Saving as a Custom Camera: At any time, you can save the camera specification as a Custom Camera. This can be done by clicking on the *Save* button on the left of the thumbnail (and additionally via the custom Camera manager in the Camera row):



Camera Source Mode: You have 4 methods to specify the source of the camera specification: **Angles**, **Current View**, **Scenes** and **Custom Cameras**. You switch from one source mode to another via the <u>radio buttons</u> or by clicking on the labels next to the radio buttons. The change is reflected in the thumbnail and the labels corresponding to the mode selected are highlighted in green.



2) Specifying a camera by 3 Angles

The camera orientation is based on 3 angles, which can pretty much configure any type of viewpoints. These angles specify a rotation of the camera around the main axes X, Y, Z of the selected objects or model applied <u>in order</u>:

- 1) Longitude: rotation around the Z (blue) axis along the Equator toward East
- 2) Latitude: rotation around the X (red) axis on a Meridian toward North
- 3) **Horizon**: rotation around the **Y** (red) axis anticlockwise. As its name suggests, this will incline the horizon, and thus is rarely used.

By convention, the value of [0, 0, 0] is the **Front Face**, that is the Y green axis being the direction of the camera, from your eye toward the horizon.

<u>Orthographic views</u>: For convenience, FredoPortrait provides buttons to set the camera to the standard orthographic views: Isometric, Front, Back, Right, Left, Top, Bottom:



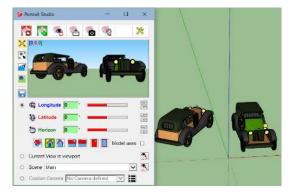
<u>Reference Axes</u>: By default, the reference axes [Z, X, Y] are taken from the active context and selected objects, with the following rules:

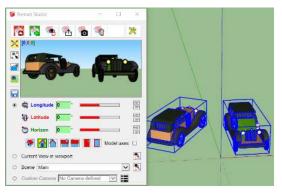
- If a single group or component instance is selected, then the reference axes are the <u>local axes</u> of this selected object.
- If there is no selection and the active context is within a group or a component instance, then the reference axes are the <u>local axes</u> of this parent object.
- Otherwise FredoPortrait uses the <u>absolute axes of the model</u>.

You can force the Model axes in any situation by checking the corresponding box:

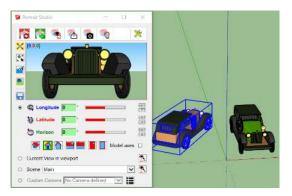
Model axes □

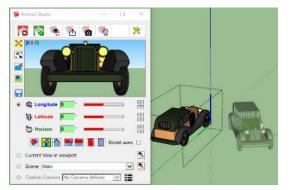
For instance, with the following model, with a **Front** camera [0, 0, 0]:



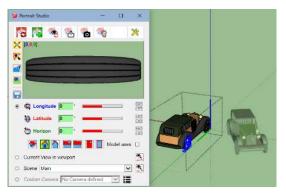


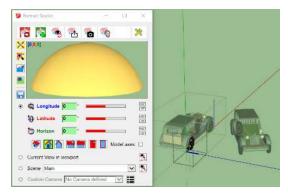
MODEL axes: NO selection or more than one object selected at top level of the model



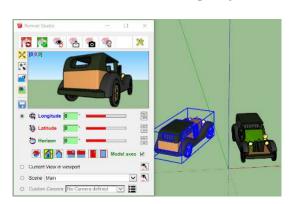


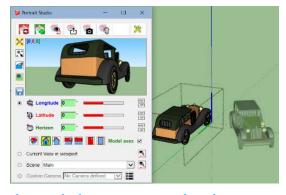
LOCAL axes: single object selected or inside the active context of an object





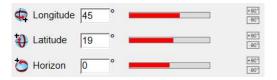
LOCAL Axes: when a <u>single</u> object is selected whatever is the nesting of the active context





MODEL axes forced: even if single object selected or inside the active context of an object

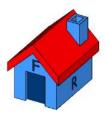
You can set the angle values via the input fields, the sliders or via the increment buttons at the end of each row.



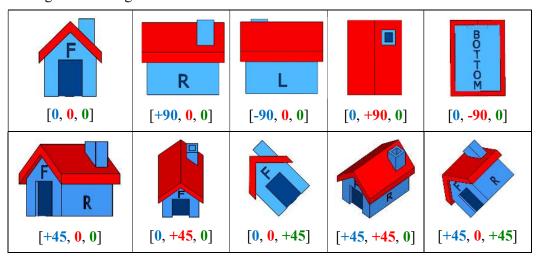
<u>Note</u>: You can configure the angle value for the incremental buttons (default is 90°) and the increment for the sliders (default is 15°), in the Default Parameters of FredoPortrait.

Increment for Angles	90
Show text indications in the thumbnail	✓
Increment value for Angle slider	15

Here are a few examples of camera orientation based on [Longitude, Latitude, Horizon], based on the following model, viewed in parallel projection:



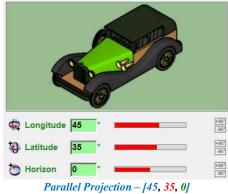
All angles are in degrees.



Note that the angle values for the **Isometric view** are different when the camera is in <u>perspective</u> or in <u>parallel projection</u>.







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3) Specifying a camera from the Viewport, Scenes, Custom cameras

When the source for the camera orientation is from the **Current View**, from **Scenes**, or from **Custom Cameras**, you can customize the camera with two options:

- 1) **Zoom Extents** by reference to the selection
- 2) **Projection Type**, perspective or parallel projection

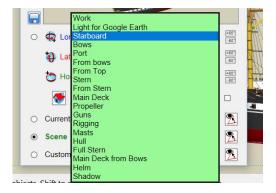
This provides a simple way to transfer the camera from one scene to another one, or to create new scenes with the specified camera.

Remember however that <u>FredoPortrait only deals with camera</u>, not styles, layer visibility, shadows, etc...

Current View in viewport: check the corresponding radio button or click on the text "Current View in viewport":



Scene Selection: use the combo box to select the *scene*:



Custom Cameras: use the combo box to select the *custom cameras*:



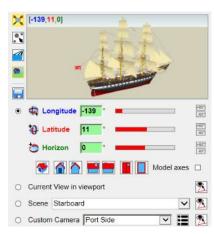
You can also use the **Custom Camera selector** to select the custom camera with pre-visualization:



Transfer to Angle mode: whatever is the source, you can convert the camera to its specification by 3 angles, which you can then modify. Use the button at the right of each row. Its tooltip indicates the Longitude, Latitude and Horizon angle values.



Once you click on the Transfer button, the camera specification is switched to 3 angles mode:

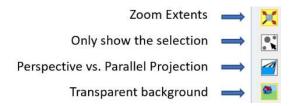


4) Camera Modifiers

In addition to the camera orientation, you can modify 4 other parameters:

- 1) **Projection Type**, perspective or parallel projection
- 2) **Zoom Extents** by reference to the selection
- 3) Filter on view, just the selection or the whole model
- 4) Background transparency, applicable for exporting and image generation only

These modifiers are located on the left of the thumbnail. They are all **toggle buttons**:





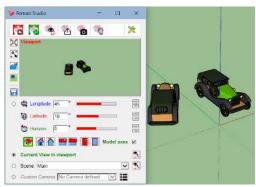
Projection Type: you can modify the camera to be in Perspective or in Parallel **Projection**, independently of the current setting in the viewport.

Note: when you select a scene or a custom camera mode via the combo-box, the projection type is set to what it is for the scene or custom camera. Same when you switch to Current view in viewport. You can however modify the setting subsequently.

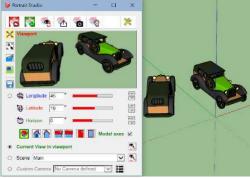




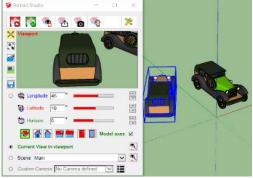
Zoom Extents on selection: You can force a Zoom Extent on the selection, which can be either explicit (entities selected in the model) or implicit (no selection, but whole model or current context).



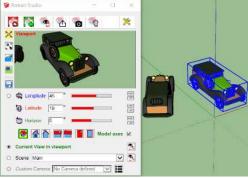
NO Zoom extents



Zoom Extents on the whole model



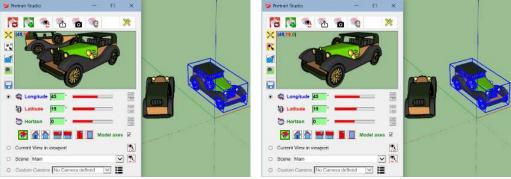
Zoom extents on selection



Zoom extents on selection



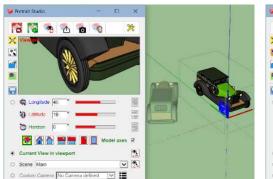
Only show selection: You can restrict the display to show only what is explicitly selected in the model. This option is <u>effective for the Image Generation and for the Export functions</u>. It is independent from the Zoom Level option.



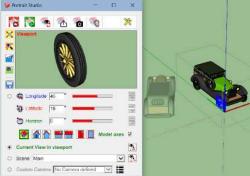
Show all model

Show Selection ONLY

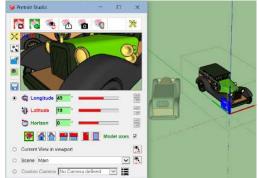
This is indeed useful to generate an image of an embedded object or set of entities or to export a subset of the model.







Show individual object(s)



Show all objects

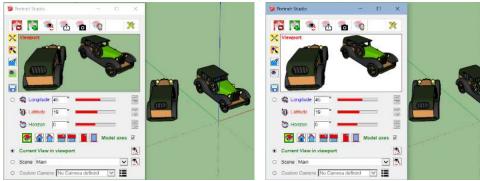


Show individual selected faces and objects

<u>Note</u>: The display filtering does not apply to Scenes and viewport. It can however be helpful to setting the camera accurately with zoom extents.



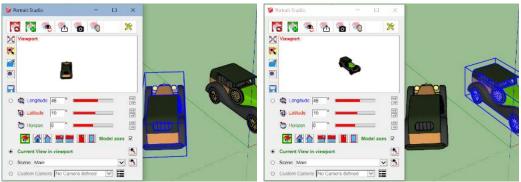
Transparent Background: You can include or exclude the background and sky from the display. This option is <u>effective for the Image Generation and for the Export functions</u>. When background is off, FredoPortrait displays it in **white**.



Background OFF

Background ON

Transparency is real with PNG images, allowing you to create masks, for instance in Photoshop, when used in conjunction with the *Show Selection Only* option..



Mask for Object 1

Mask for Object 2

5) Update Scene, Create Scene, Transfer to Viewport

Once you have specified the camera with the optional modifiers, you can

- 1) Transfer it to the viewport,
- 2) Apply this camera to the current scene or to several scenes,
- 3) Create a scene with the camera.

These actions are performed by clicking on the buttons on the top of the dialog box:









Transfer to viewport: This **transfers the specified camera to the viewport**. Just click on the corresponding button. Alternatively, you can click on the Thumbnail.

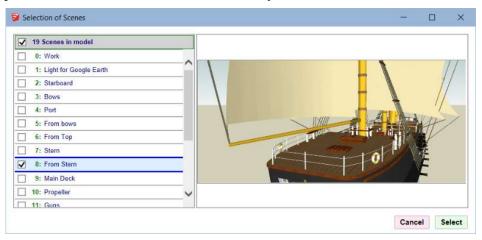


Create a Scene: This command creates a scene with the specified camera. Only the camera is used by FredoPortrait. All other options (style, shadow, section planes, ...) are those that are set by default when creating a scene natively in SketchUp with the "Add Scene" menu or Plus button. You will be prompted for a name:





Update Scenes: This command allows you to **update one or several scenes with the specified camera**. Note that FredoPortrait will only update the camera and will leave **all other options unchanged** (e.g. style, shadow, section planes, ...). When clicking on the button, you will be prompted with the list of scenes in the model, with the current one pre-selected. You can select other scenes if you wish.



6) Generate Image

Once you have specified the camera with the optional modifiers, you can generate an image with various formats:

1) In Raster mode: PNG, JPG, TIF, BMP

2) In Vector mode: PDF



When you click on the corresponding button on the top of the dialog box, you get additional options for the image generation.



This dialog box stays opened until you close it explicitly by the button "Done". So, you can use it to generate several images with different modifiers.

Image Width: The generated image respects the proportion of the viewport. The image width is expressed in pixel. Double-clicking on the slider will take the viewport width.



Note: You can choose an image width larger than the viewport width. However, there are limits in Sketchup depending on your graphic card, usually around 9000 x 9000.

File Mode: There are 3 modes to specify the name and location of the image file:



a) **Auto**: the image file is generated in the **subfolder FredoPortrait** of the directory of the skp model file. This subfolder is created if it does not exist already. The name of the image file is based on the model name and the current time, so "<modelname> - <date>". for instance

Frigate Jylland in Ebeltoft - SU2018 - 42 - 2019-06-18 - 23h24m53.411.png

b) Selected Folder: you can select an alternative folder by clicking on the button The image filename is based on the "<modelname> - <date>" naming convention

c) Ask Filename: every time you generate an image, you will be prompted for the file name and location.

For convenience, you can open the directory where the image file will be or has been generated by clicking on the button .

Format: You can generate images in the available formats, possibly several at the same time:



<u>Note</u>: BMP format is not available for Mac OSX platforms. For PDF, you will see a temporary change of the viewport during the generation. Only the PNG format supports true background transparency.

Open Image File: You have the option to open the image file when generated by checking the corresponding box:



<u>Note</u>: Depending on the complexity of the model, the resolution factor and the format, the image generation can take several seconds or more.

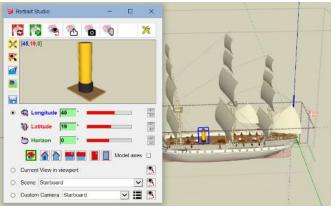
7) Export / Render

FredoPortrait provides a generic mechanism to export or render the model based on the camera specification and visual selection-based filtering. This allows to:

- 1) **Render the image** with your favourite rendering software. For instance, render one or several objects instead of the whole model.
- 2) Export the selection in 2D-Graphic and 3D-formats, using the native Sketchup exporters, dedicated plugins or third-party exporters (e.g. Collada DAE, Autocad DWG and DXF, Max 3DS, STL for 3D printing, OBJ, etc...).

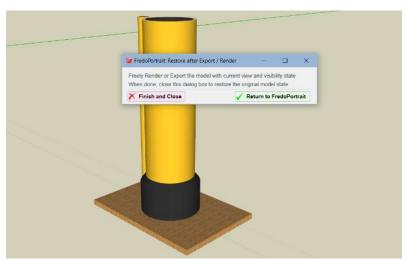


When you click on the *Export / Render* button on the top of the dialog box, FredoPortrait will instantiate the viewport with the specified camera and the visibility chosen based on the selection.



Specified camera and object visibility

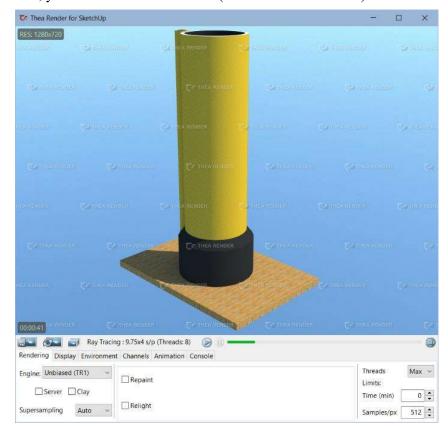
From there you can perform any relevant export or render operation.



Temporary setup of the viewport with specified camera and object visibility

A special dialog box will be displayed allowing you to **restore the original viewport camera and object visibility** and either return to the Portrait Studio dialog box or exit.





For instance, you can render the selection (here with Thea Render).

If you export the 3D model, you can apply it to the selection only instead of the whole model, which is an option not always supported by all exporters.

8) Generate 2D Components from 3D objects

Once you have specified the camera with the optional modifiers, you can generate a **2D Component** from the view as a <u>true Sketchup Component</u>, visible in the Component Browser²; the 2D component is composed of faces textured with the image. It can optionally be generated as a FaceMe component.

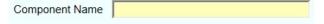


When you click on the corresponding button on the top of the main dialog box, you get additional options for the image generation.



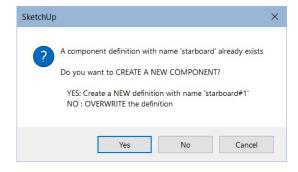
This dialog box stays opened until you close it explicitly or return to the main dialog box by clicking the button "Done". So, you can use it to generate several 2D components with different modifiers or parameters.

Component Name: you must enter a valid name for the Component. It is also the base name to create the material applied to the faces of the component.



<u>Note</u>: For convenience, the field includes an autocomplete dropdown, based on the last ten names used previously for the model.

IMPORTANT: Overwriting an existing 2D component: If the name given to the 2D Component already exists, then you will be prompted with the following message box, giving you the choice between creating a NEW component or OVERWRITING the existing one.



² You can convert it to a Group later on if you wish.

Insertion Point: This the origin of the component, also the point of insertion when you drag the component from the Component browser. You have an options for the center, corners and middle points.



Component orientation: The 2D component can be of type "Always face camera", or aligned with the 3 axes, indicated by their normal.

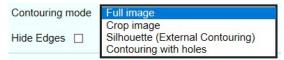
Always Face Camera ☑ or X Y Z	Always face camera, vertical planes
Always Face Camera or X Y Z	Vertical plane perpendicular to the X axis
Always Face Camera □ or X Y Z	Vertical Plane perpendicular to the Y axis
Always Face Camera or X Y Z	Horizontal plane

Image Width: The generated image respects the proportion of the viewport. The image width is expressed in pixel. Double-clicking on the slider will take the viewport width.



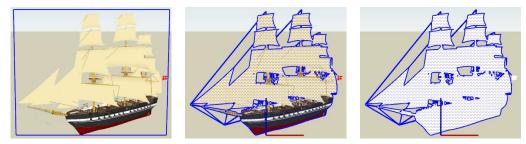
Note: You can choose an image width larger than the viewport width. However, there are limits in Sketchup depending on your graphic card, usually around 9000 x 9000.

Contouring Mode: There are 4 modes to specify how to generate faces from the image.

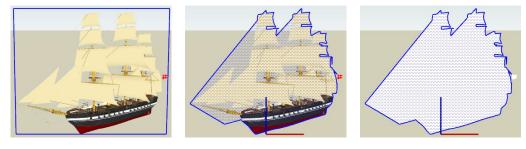


The following table shows the corresponding results with the selected component, the selected faces and edges inside the component, textured and in monochrome.

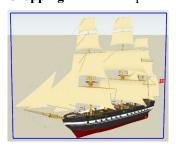
Contouring with holes: contouring of all areas of the image which are not transparent, external and internal. This allows to get <u>correct shadows</u> from the 2D component.

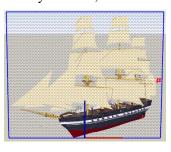


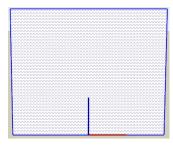
Silhouette (external contouring): simple contouring of the image, ignoring transparent pixels which are inside the image. The 2D component will project shadows as a block.



Cropping: the 2D component has only one face, which is a rectangle adjusted to the image







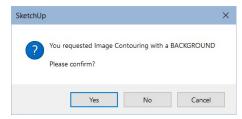
Full image: the 2D component has only one face, which is a rectangle around the original image. This is equivalent to import the specified view as an image component.







Note: If you choose the contouring or cropping modes, the image must be generated without background so that all selected objects can be isolated by transparency of the background. So, you should turn off the modifier ... If the background is on () and you select a contouring or cropping mode, a message box will ask you confirmation (since you will only generate a rectangle around the original image).



Hide Edges: this option creates all edges of the 2D component as 'hidden'.

Hide Edges

Place component after creation: the 2D component is created as a Sketchup component definition and therefore appears in the Component Browser. This option allows to switch to the native Placement of components after generation, that is, the mode where you drag a component from the Component Browser.

Place component after creation

<u>Note</u>: the placement will take place in the current context, which may or may not be what you wish. This is why this feature is optional.

6. Default Parameters



You can invoke the Default Parameters dialog box via the menu or via the button in Portrait Studio.

In version 1.1, there are 3 parameters, with the following default values:

Active Options at start up		
Increment for Angles	90	
Show text indications in the thumbnail	✓	
Increment value for Angle slider	15	

1) Increment for Angles

This is the value in degrees used for the small increment / decrement buttons for the Longitude, Latitude and Horizon inclination. Default is 90 degrees. If you change this value, there is no need to restart SketchUp or even to close and reopen Portrait Studio.



2) Text in Thumbnail

By default, FredoPortrait displays an indication of the modifiers state over the thumbnail, in addition to the source of the specified camera.



You have the option to only display the source of the camera



3) Increment for Angle sliders

The sliders have an increment of 15 degree by default, which you can change.