WebView3D User Guide (Public beta version 0.9.4b)

General overview

WebView3D allows you to create simple yet effective 3D WebGL applications which are specifically optimized to work on the Web and are mobile friendly.
The main idea is to prepare a 3D scene file with all the necessary geometries and materials in it and to set up buttons to switch them. You can also configure special model highlights for your model to show additional information for certain configurations.

The WebView3D administration panel allows you to easily upload your scene files and configure the appropriate controls and data to be shown in the final client application interface.
As an editor you can create buttons to switch geometries and materials in your scene and configure highlights. Highlights are interactive model meshes which will highlight upon a cursor hover action and show additional information upon clicking on them. Please see the

according sections of this manual to learn the detailed information about these functionalities.

Models preparation

WebView3D is a WebGL 3D model viewer and configurator. It can operate with different kinds of 3D files, however WebView3D beta version is limited to use only GLB file format, which is a standard for WebGL applications.

The model for WebView3D can be prepared in several ways. We've covered the most convenient and usable of them - export from Blender and 3DS Max editors - in the according user guide which you can find here: [WebView3D models preparation manual](#).

Generally what we want to achieve is a file with a .GLB extension which will contain the exported scene along with all the materials, lights etc.

Each model consists of nodes which represent geometrical objects, lights, materials, different auxiliary objects, etc.

You can preview your GLB files in the sandbox:
https://sandbox.babylonjs.com/

There you can see the model object hierarchy with all the nodes which will look something like this:
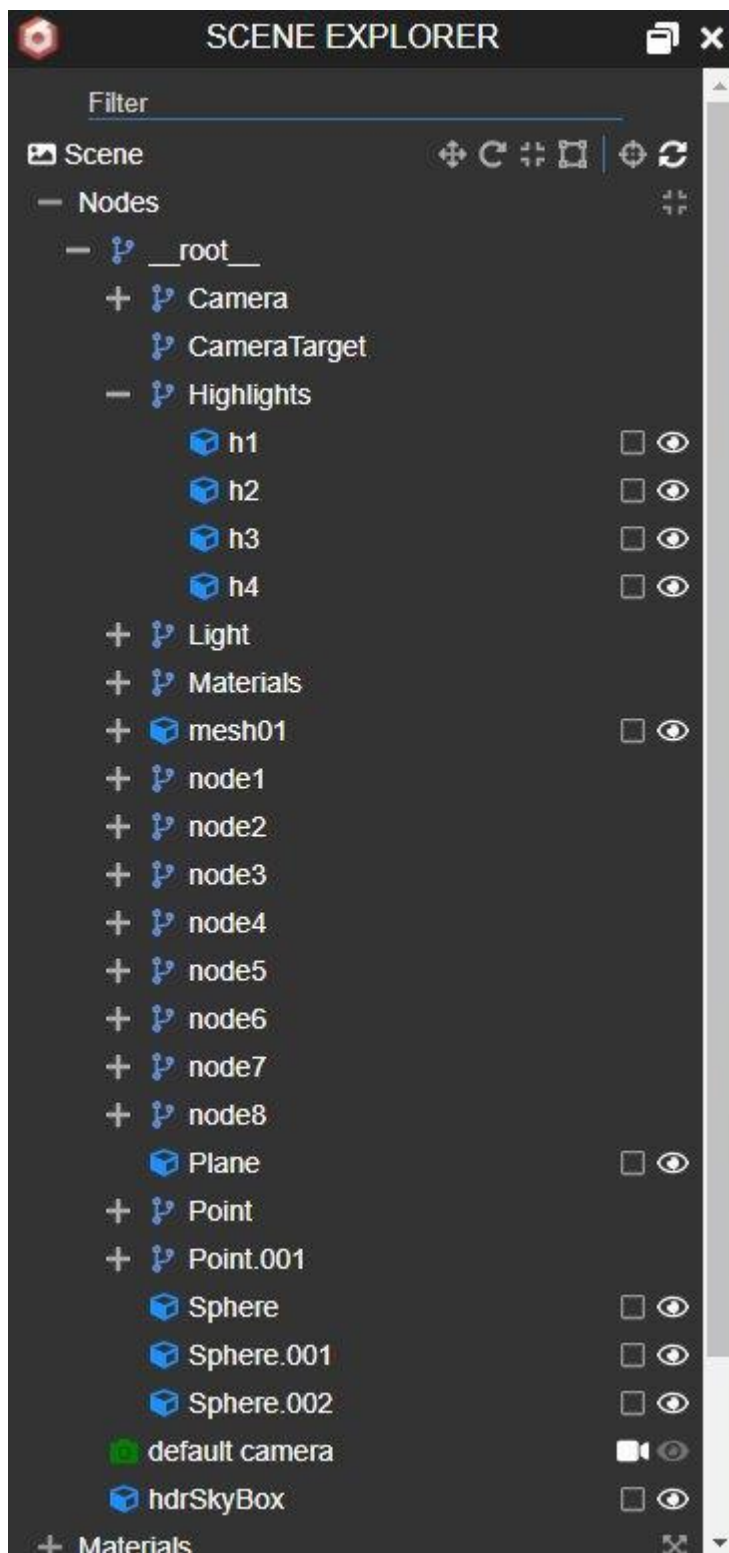
You can copy the necessary nodes names from there to paste them into the WebView3D admin panel for buttons, highlights and other functionalities. And you can also observe general model quality.

If the model looks good in the sandbox - it will look good in WebView3D as well.

When you have achieved sufficient quality of your models it's time to load them into the application and set them up for web demonstration.

Please log into the application and continue to the Models import chapter to get your models loaded.

Models import

Follow the steps below to add your model into WebView3D admin panel:
1. Switch to the Scenes section clicking the Scenes button in the menu on the left.
2. Click on the "Add" button either in the Scenes list heading or in the panel on the right. An Add Scene window will open.
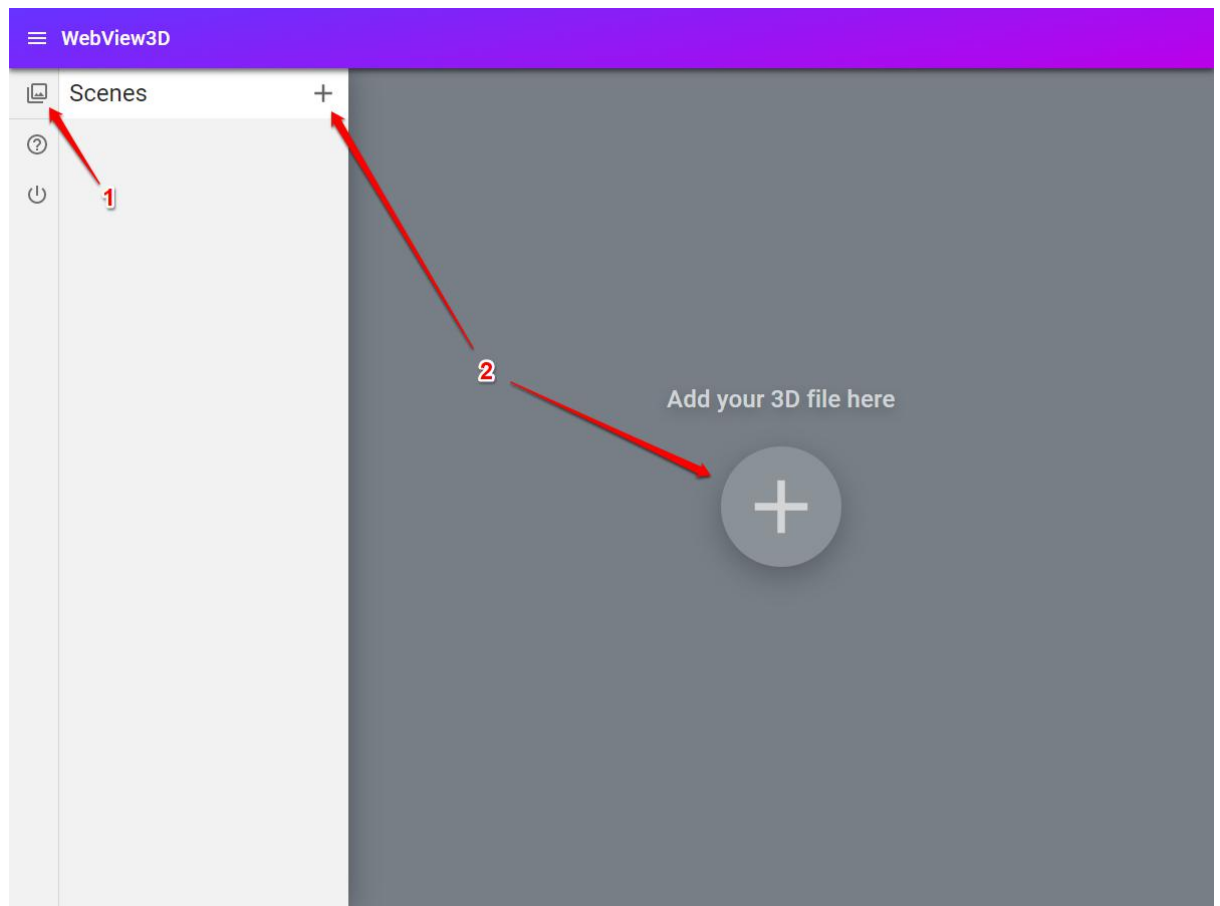
3. Click on the "CHOOSE" button and choose a scene file from your computer.

4. Enter a name for your scene in the Scene name input field, choose the scene file from your computer by clicking the "CHOOSE" button and click "ADD".
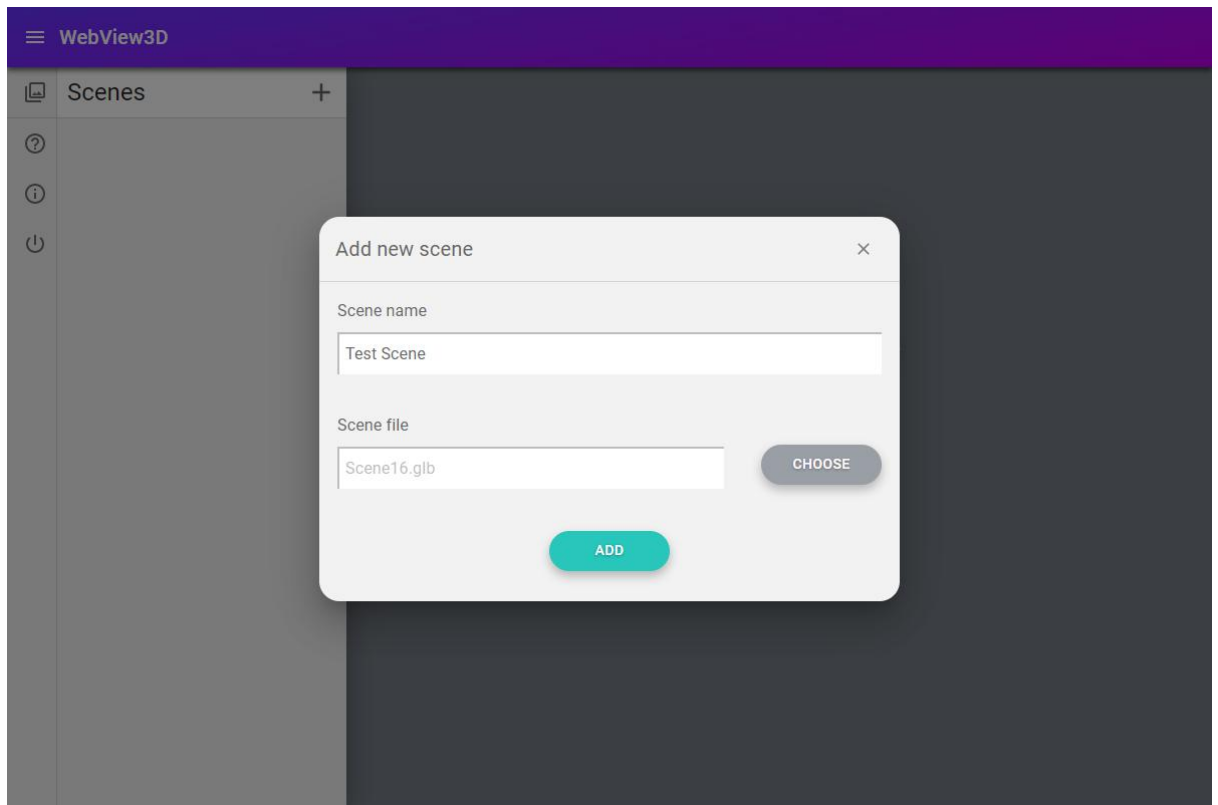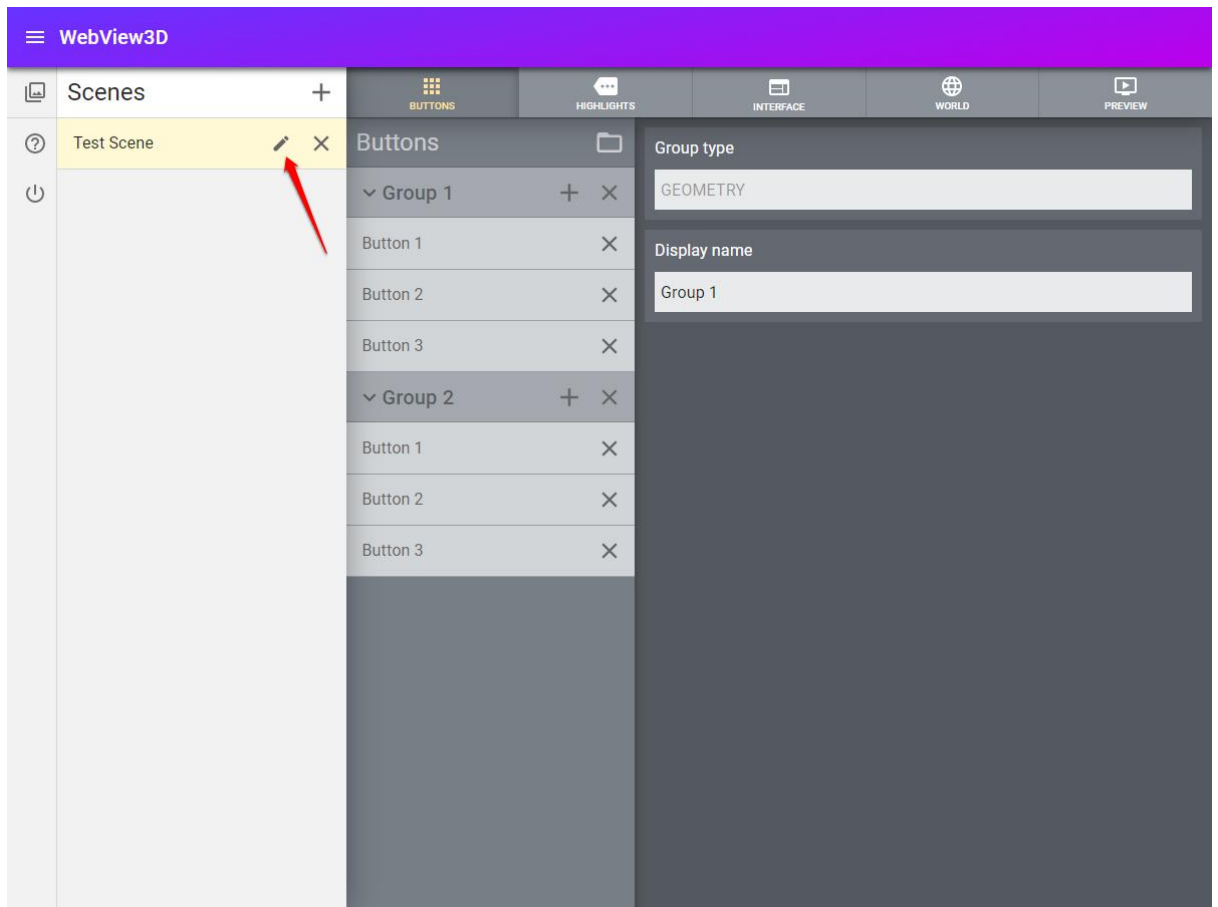

5. The scene is added to your Scenes list. To check if your model was uploaded correctly you can go to the Preview tab and see how your model looks. You can now add configuration buttons to your model.

Updating models

Follow the steps below to update your 3D scene:

1. Click the "Edit" button in the appropriate row in the Scenes list. The Edit scene window will open.

2. In the window opened enter a new name for the scene and/or click the "CHOOSE" button to choose another file to upload.
3. Click the "SAVE" button to save your changes and update the scene.

Types of configuration buttons

All configuration buttons for your scene models are created in groups, i.e. you have first to create a button group and then buttons themselves inside a group.
There are two types of groups and configuration buttons that you can create for your models in WebView3D: Geometry and Materials.

Geometry buttons work as follows: when a user clicks a Geometry button in a group, the application will show all nodes that are specified for this button and hide all nodes that are specified for other buttons in this group. If a certain node is already shown with another button from another group - then it won't be hidden. Also if a node is set as an Always Visible node in scene Settings, then it won't be hidden either. And vice versa, if a node is set as an Always Hidden node, then it won't be shown under any circumstances.

Materials buttons work as follows: when a user clicks on such a button - it will set the material of a reference mesh onto all the meshes of the nodes that are specified for this button.

At the application start - the first button of each group is clicked automatically.

Adding configuration buttons

When you select a scene in the Scene list - a scene setup panel will open with Buttons tab opened. You can create two types of buttons for your scene: Geometry and Materials. Follow the steps below to set up configuration buttons for your scene models.

1. Click on the "Group" button either in the Buttons list heading or in the panel on the right. An Add Group window will open.
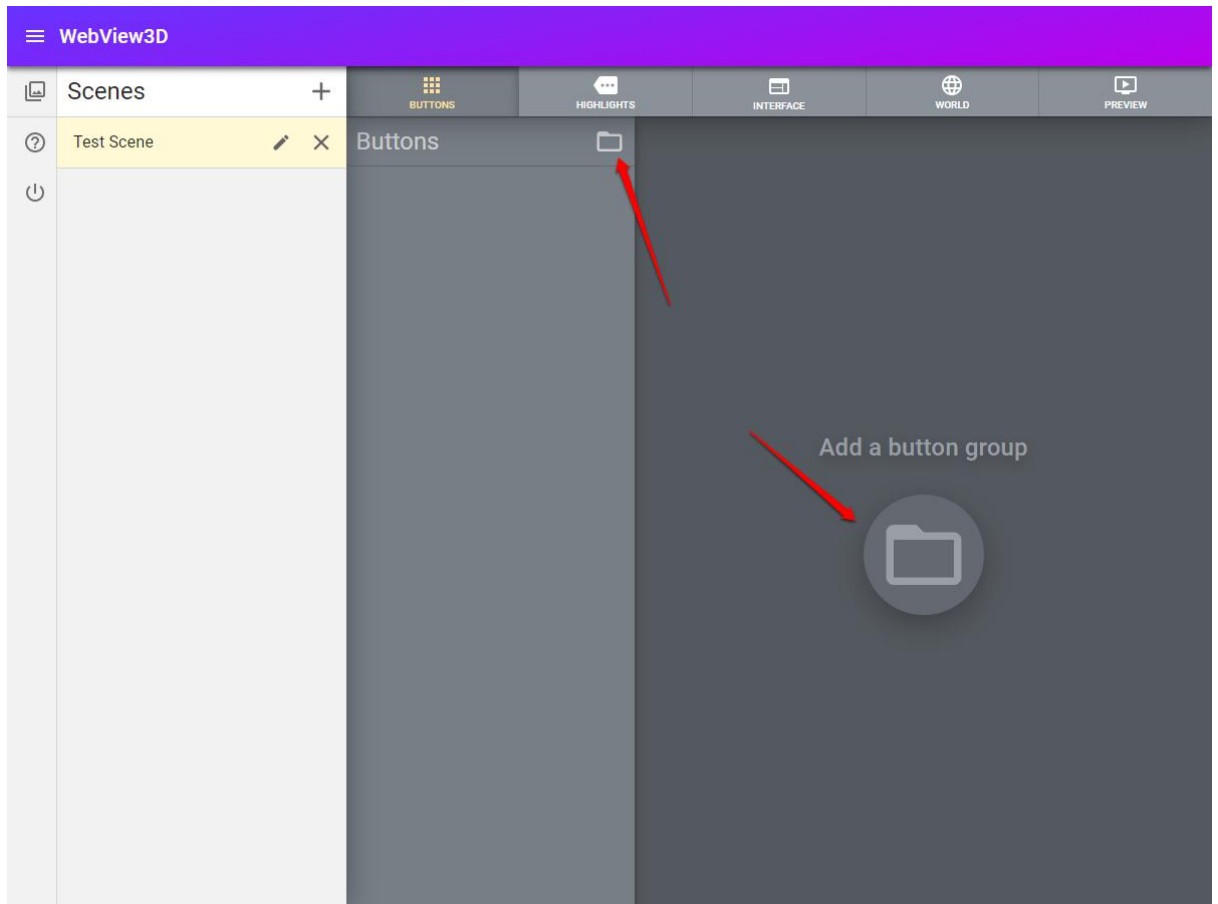
2. In the opened window choose a group type to create. It can be either Geometry buttons group or Materials buttons group.
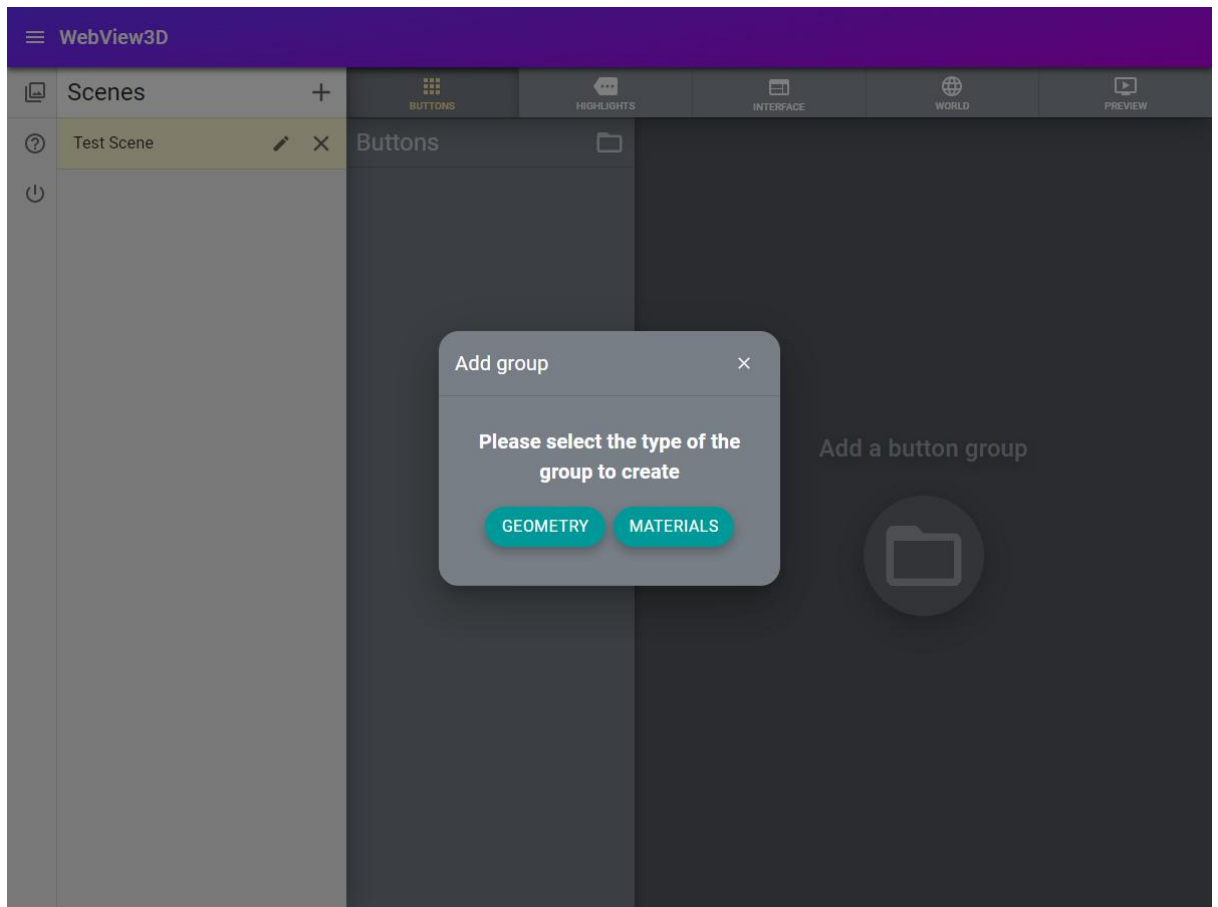
3. Choose any option and click the corresponding button. A new group row will appear in the list. The group's type and name will be displayed in the panel on the right of the list.

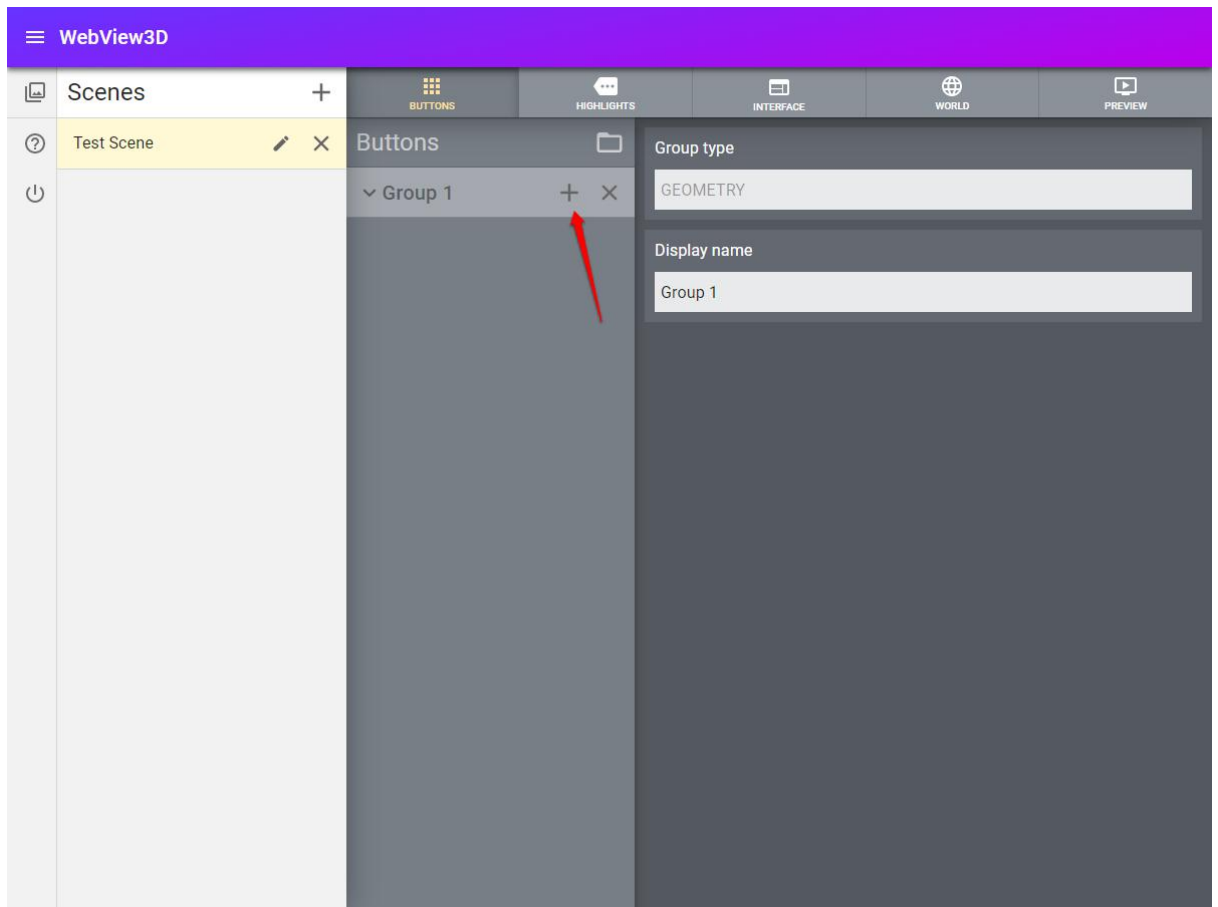4. Click the "Add" button in the group's row. A new button row will appear under the group row. The button's settings will be displayed in the panel on the right of the list.


Setting up Geometry configuration buttons

Every Geometry button that you create has its own settings. To see them just click the button row in the Buttons list. The button's settings will be displayed in the panel on the right of the list.

There are several settings for Geometry buttons:

1. Display name
2. Button image
3. Button nodes
4. Button highlights

Let's describe each of them in detail.
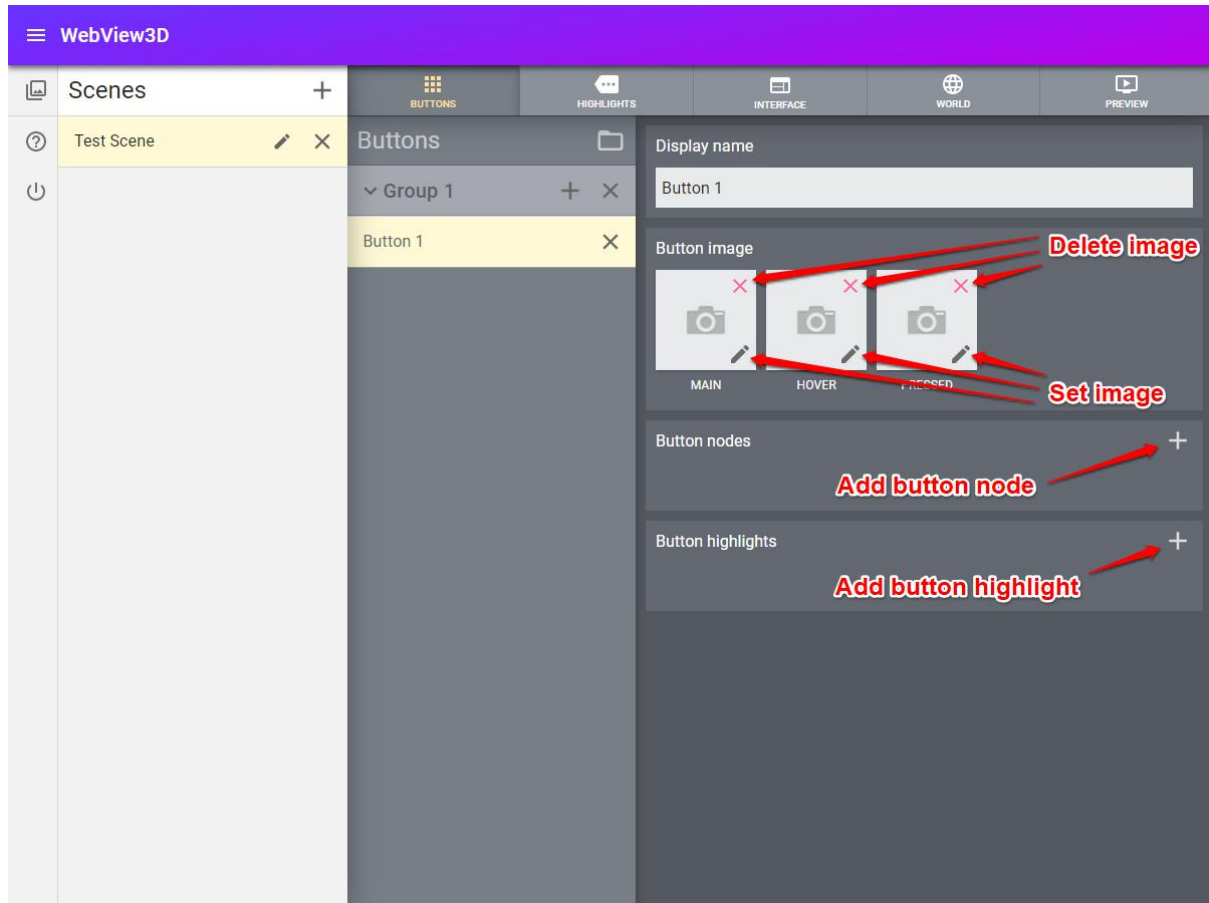
Display name
This is the text that will be shown in the button when it's displayed in the final application interface.

Button image
Each button can be assigned a set of images to be displayed correctly. The Main image is the image which will be shown generally for the button. The Hover image will be shown when a user's cursor will hover over the button. Finally the Pressed image will be shown when a user clicks the button. The images should be in JPG or PNG formats. To set an image for a button just click an appropriate "Edit" button in the image frame and choose an image from your drive. To delete an image click an appropriate "Delete" button.

Button nodes
Here you specify the nodes of your model that this button will show when it is clicked (and hidden when another button in the group is clicked). To add a node click on the "Add" button in the upper right corner of the setting block. A new input field will appear. Enter the name of the node that you want to show with this button. Repeat this for every node you want to show with this button.

Button highlights
Here you specify the highlights that will be activated when the button is clicked. To add a highlight click on the "Add" button in the upper right corner of the setting block. A new input field will appear. Enter the name of the highlight node that you want to show with this button. Repeat this for every highlight you want to show with this button.

Setting up Materials configuration buttons

Every Materials button that you create has its own settings. To see them just click the button row in the Buttons list. The button's settings will be displayed in the panel on the right of the list.

There are several settings for Materials buttons:

1. Display name
2. Button image
3. Material block

Let's describe each of them in detail.
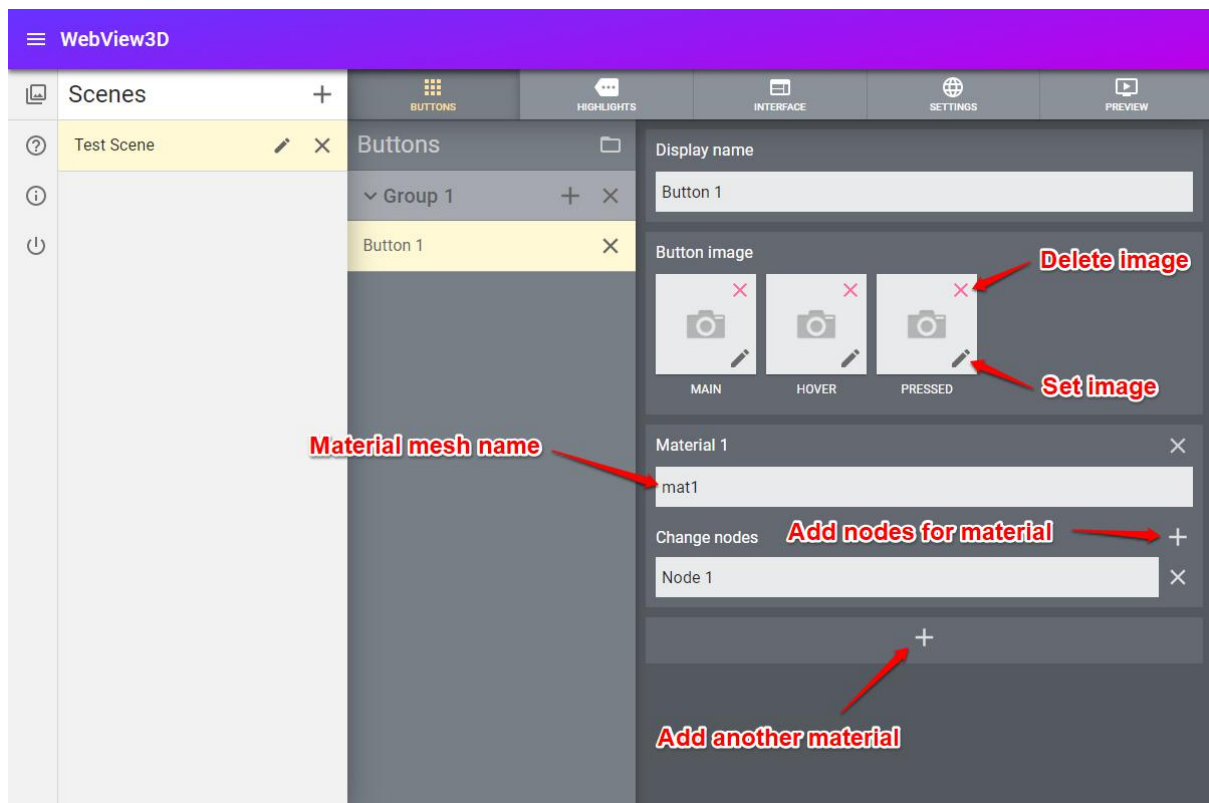
Display name
This is the text that will be shown in the button when it's displayed in the final application interface.

Button image
Each button needs a set of images to be displayed correctly. The Main image is the image which will be shown generally for the button. The Hover image will be shown when a user's cursor will hover over the button. Finally the Pressed image will be shown when a user clicks the button. The images should be in JPG or PNG format. To set an image for a button just click an appropriate "Edit" button in the image frame and choose an image from your drive. To delete an image click an appropriate "Delete" button.

Material block
Here you specify the mesh in your scene that has the material you want to set onto other meshes in your scene. Just enter the name of the mesh in the upper input field of this block.

Under the material mesh field you can add nodes on which you want to set this material. You can do so with the Add (+) button. This will add another field to the block where you can type in the name of the node you want to change material on.

You can create several Material blocks and change several materials simultaneously. To add another Material block click the big Add (+) button under the last Material block.

Configuring highlights

Click the Highlights tab in the scene tabs panel to switch to the Highlights view. To add a highlight simply click the "Add" button in the Highlights list heading or in the panel on the right of the list. A new highlight will appear in the list.
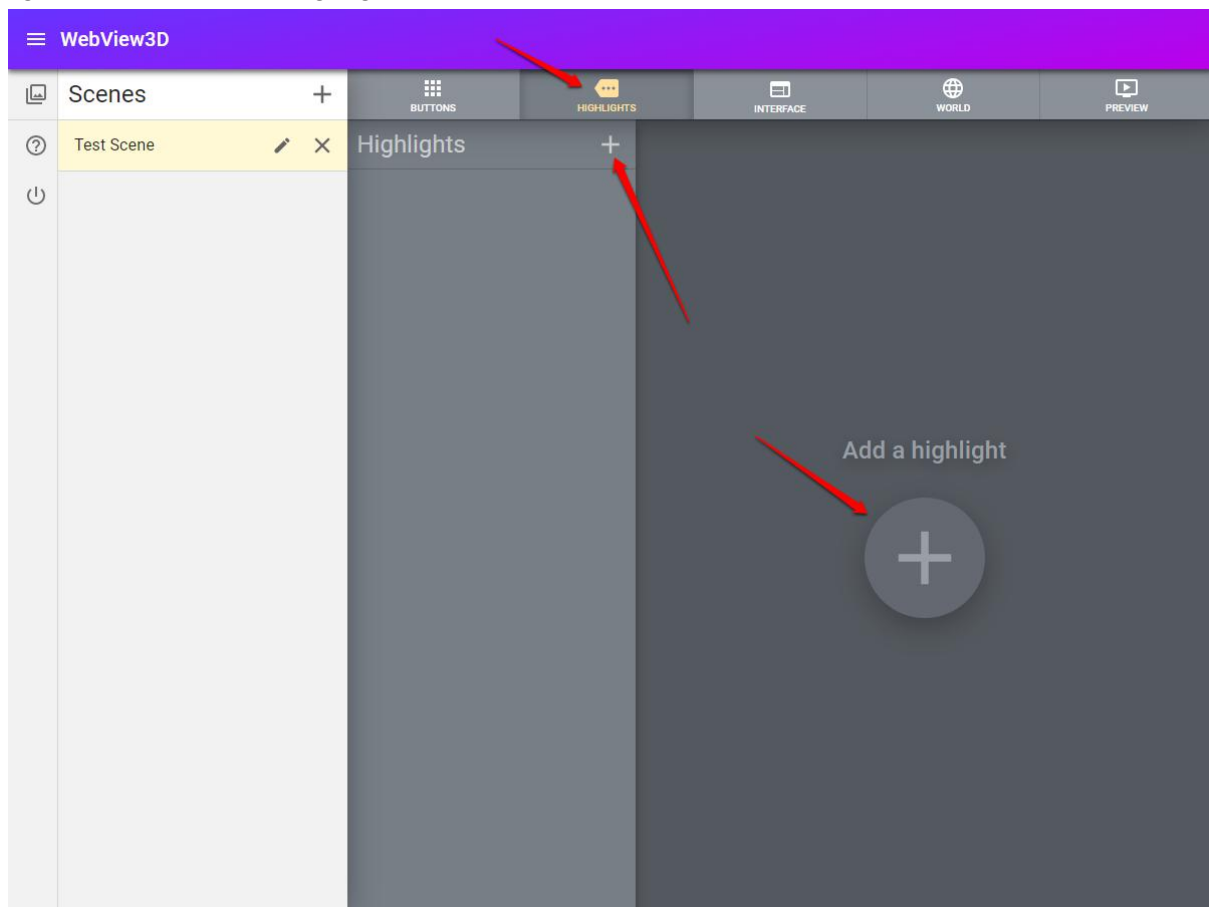
There are several settings for a highlight:
1. Display name
2. Highlight image
3. Highlight node

Let's describe each of them in detail.
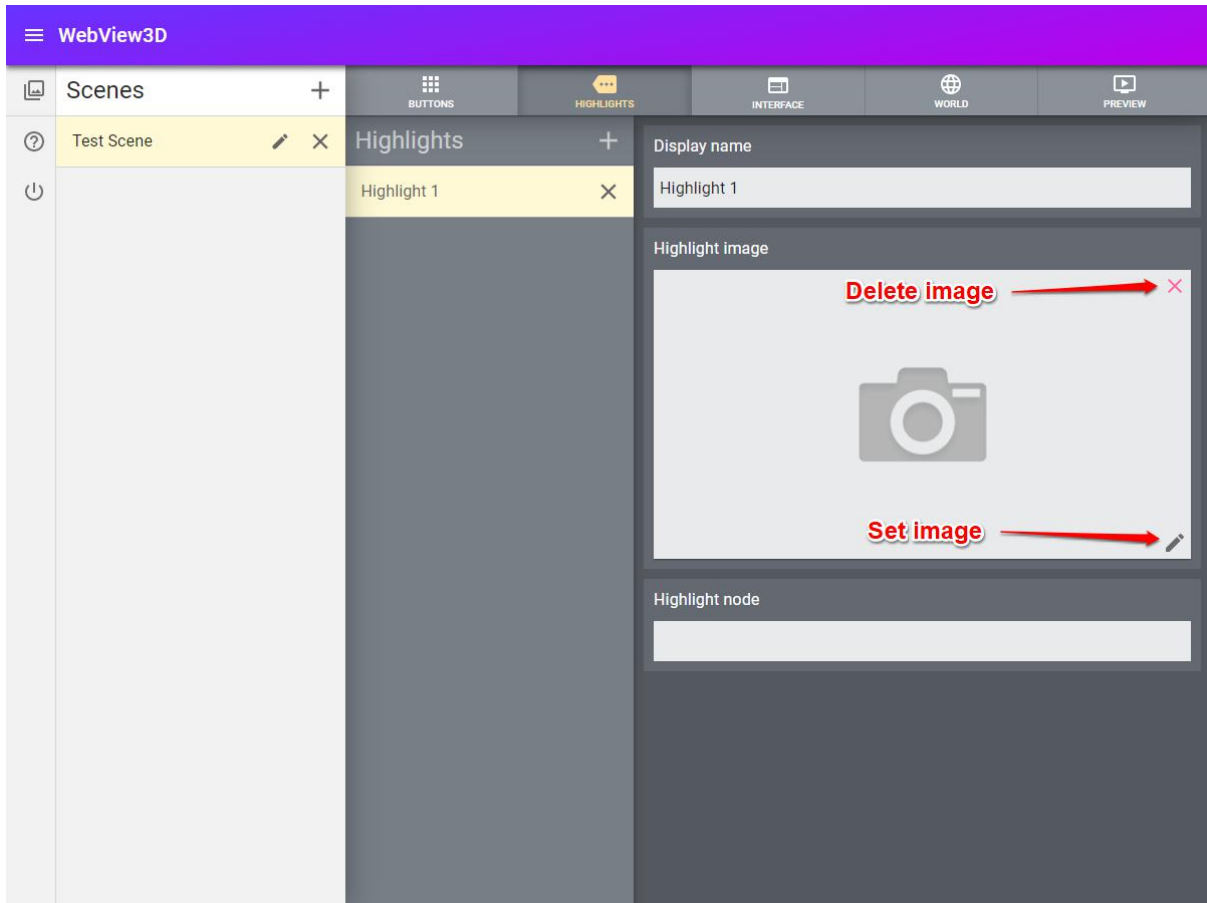
Display name
It is just a name for a highlight that will be shown in the list.

Highlight image
Here you set the picture that will be shown upon a click on the highlight. To add or change the image click on the "Edit" button in the lower right corner of the image field. To delete the image click the "Delete" button in the upper right corner of the image field. The image can be in JPG or PNG formats.

Highlight node
Here you specify the node of your model which will be shown (highlighted) upon a cursor hover action for desktops and a tap for mobiles. Enter the name of the node you want to set as a highlight into the input field.

Interface settings

Click the Interface tab in the scene tabs panel to view and edit your application interface design settings.
The settings are grouped into several sections.
To edit these settings just change the according parameters of your choice and click the "SAVE" button at the bottom of the Interface settings panel.
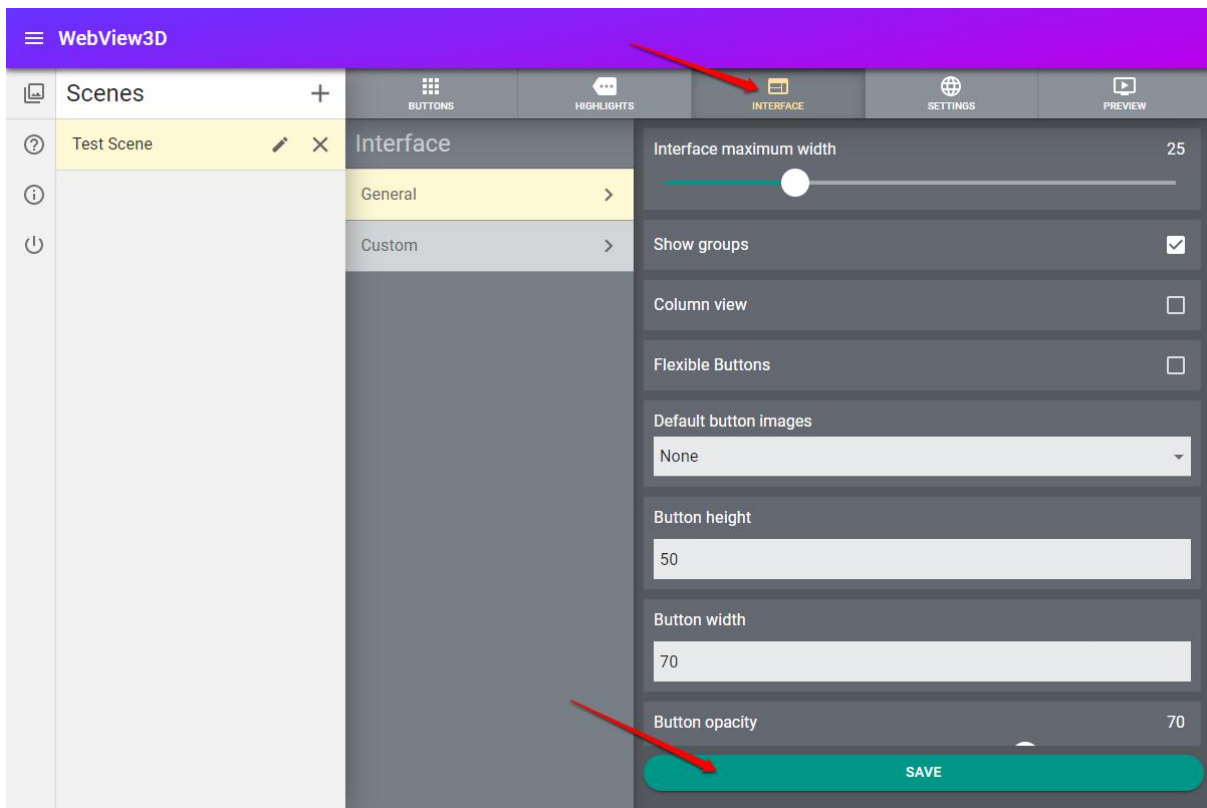
Here is the full list of these settings along with their descriptions:

General

- **Interface maximum width** - defines the interface panel maximum width in percentage in relation to the full frame width of the client application
- **Show groups** - defines if button groups will be visible in the interface
- **Column view** - defines if buttons will be placed horizontally or vertically
- **Flexible buttons** - defines if buttons will have flexible width depending on the interface width
- **Default button images** - defines which set of default button images will be used for the buttons. This will be overridden by custom button images if there are any for any buttons. Otherwise if there are no custom images uploaded for the buttons and this parameter is set to None, then a simple parametric button rendering mechanism will be used for the buttons
- **Button height** - defines the maximum height of a button in pixels
- **Button width** - defines the maximum width of a button in pixels
- **Button opacity** - defines the button opacity for active buttons
- **Dimmed button opacity** - defines the button opacity for inactive buttons
- **Button color** - defines the background color of buttons
- **Border color** - defines the border color of buttons
- **Button font colo**r - defines the font color of active buttons
- **Dimmed button font color** - defines the font color of inactive buttons
- **Button border width** - defines the width of button borders
- **Button border radius** - defines the radius for buttons rounded corners
- **Button font size** - defines the font size for buttons
- **Show credits** - defines if the promo label will be displayed in the client application

Custom

Here you can add and edit custom experimental settings fields providing them in a general JSON format.
At the moment the following settings are available:

- **devMode** - defines if a special developer mode will be enabled which will output some helpful developer information into the browser console
- **drawBoundingBoxes** - defines if bounding boxes of shadow casting objects will be rendered. You can use it to see which objects are set to cast shadows in your scene and figure out if any unnecessary objects are casting them. In most cases you would want your overall bounding perimeter of shadow casting objects to be as small as possible
- **nodesFadeTime** - defines fading time between objects and materials switch upon a button click
- **pictureFadeTime** - defines fading time of highlight pictures

Additional scene settings

Each time you create a new scene - a set of default scene and application settings is created for it. Click the Settings tab in the scene tabs panel to view and edit these settings.
The settings are grouped into several sections.
To edit these additional scene settings just change the according parameters of your choice and click the "SAVE" button at the bottom of the settings panel.
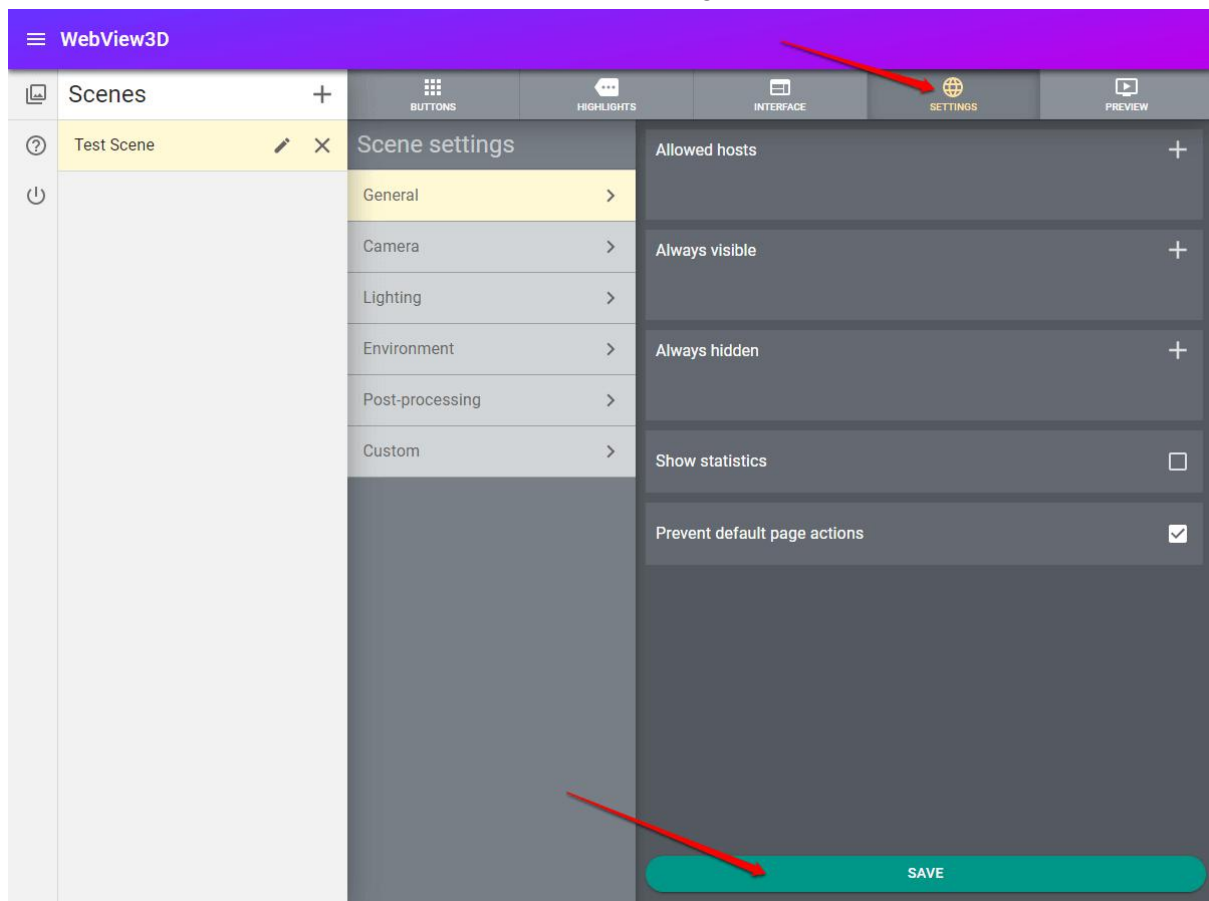
Here is the full list of these settings along with their descriptions:

General

- **Allowed hosts** - defines hosts that the client application is allowed to run on. Upon start the application checks the host it is started from. If the host is not equal to any of the hostnames provided in this multi-input - the application won't start and will output an error into the browser console. If this parameter is empty - the application will run on any host. Several values can be added with the "Add" (+) button
  Example: https://example.com
- **Always visible** - defines nodes in the scene which will always be visible. Several values can be added with the "Add" (+) button
- **Always hidden** - defines nodes in the scene which will always be hidden. Several values can be added with the "Add" (+) button
- **Show statistics** - defines in the FPS (frames per second) counter will be displayed in the client application
- **Prevent default page actions** - defines if default web page actions will be prevented over the application frame (for example scrolling), so that the application frame reacts only to actions defined for the client application (i.e. mouse wheel zooming instead of scrolling, pinch zooming the app instead of the whole page on mobiles etc.)

Camera

- **Camera position** - defines the camera position in the scene, each number representing the position along the corresponding axis
- **Camera target** - defines the point in the scene which the camera will be targeted to
- **Field of view** - defines the viewing angle of the camera in degrees
- **Rotation limit angle** - defines the angle of vertical camera movement limit
- **Allow panning** - defines if camera panning in the scene is allowed. If checked, then dragging with the right mouse button (sliding with two fingers on mobiles) will result in camera panning across the scene
- **Zoom buttons** - defines if zoom buttons will be shown in the client application
- **Pinch zoom** - defines if zooming with a pinch gesture on mobiles is allowed. On certain web pages allowing this can result in an unwanted behaviour as the web pages usually have their own reactions for pinch gesture in different browsers
- **Minimal zoom** - defines the level of zoom closest to the object
- **Maximal zoom** - defines the level of zoom farthest from the object
- **Zoom buttons precision** - defines zoom amount that the camera will go upon one click of a zoom button
- **Mouse wheel zoom precision** - defines mouse wheel zooming precision. Bigger values will result in smaller amounts of zoom on each wheel rotation
- **Pinch zoom precision** - defines zooming precision of the zoom pinch gesture. Smaller values will give a more precise result. Note that for this to work you have to enable **Pinch zoom** setting.

Lighting

- **Enable shadows** - defines if shadows will be rendered in the scene. Note that this is still an experimental feature and visible artifacts can be introduced in some cases. You have also to prepare the scene accordingly (i.e. add correct types of lights into the scene), which is thoroughly described in the [WebView3D models preparation manual](#).

- **Lights with shadows** - defines the light sources in the scene which will be used for shadow rendering. Note that in the current beta version only directional lights are supported. You also have to use exactly the light source node name, and not any of its parent nodes. Several values can be added with the "Add" (+) button
- **Objects without shadows** - defines objects in the scene that will be excluded from shadow casting, i.e. they won't have shadows. This is used mainly to exclude big environment objects (ground, neighbourhood buildings, trees etc.) because including them will result in huge overall shadows quality reduction. In other words, you should aim to include as few objects as possible into shadow rendering to achieve the best shadows quality. Several values can be added with the "Add" (+) button
- **Shadow quality** - defines Shadow Map resolution which affects overall shadow quality correspondingly. Note that higher shadow map resolution will require more hardware resources to render the scene, so weaker user devices can have performance issues, which you can examine with the help of **General > Show statistics** setting which will show you application performance in the client application.

Environment

- **Enable background color** - defines if the camera clear color will be applied in the scene
- **Background color** - the color of the clear color to be applied to the scene if **Enable background color** is checked
- **Background opacity** - defines the clear color opacity if **Enable background color** is checked, where 0 is fully transparent and 100 is fully opaque
- **Default HDRI map** - defines which default HDRI Map for lighting and reflections enhancement will be used in the scene
- **HDRI map rotation** - defines an angle in degrees to rotate the HDRI map around the vertical axis
- **Show HDRI map** - defines if the chosen HDRI map will be rendered in the client application
- **Highlight outline** - defines if an outline instead of solid color will be used for objects highlighting
- **Highlight color** - defines the color of highlights in the client application

Post-processing

- **Enable post processing** - defines if post-processing will be enabled for the client application
- **Anti-aliasing samples** - defines the quality of multi-sampling anti-aliasing processing. The value of 0 turns the anti-aliasing completely off
- **Enable bloom** - defines if the bloom effect will be applied to the scene
- **Bloom threshold** - defines the threshold for the bloom effect. Higher values make the effect to be caused earlier, i.e. with less amount of light
- **Bloom weight** - defines the strength of the bloom effect
- **Bloom kernel** - defines the thickness of the bloom halo
- **Enable color processing** - defines if the color processing module of the post-processing stack will be enabled
- **Global hue** - defines the global Hue value. The hue value is a standard HSB hue in the range [0,360], where 0=red, 120=green and 240=blue

- **Global density** - defines the global Density value. The density value is in range [-100,+100], where 0 means the color filter has no effect and +100 means the color filter has maximum effect. Values less than zero provide a filter of opposite hue
- **Global Exposure** - defines the global Exposure value. This is an adjustment value in the range [-100,+100], where the default value of 0 makes no adjustment, positive values increase exposure and negative values decrease exposure
- **Global Saturation** - defines the global Saturation value. This is an adjustment value in the range [-100,+100], where the default value of 0 makes no adjustment, positive values increase saturation and negative values decrease saturation
- **Highlights Hue** - defines the highlights Hue value. The hue value is a standard HSB hue in the range [0,360], where 0=red, 120=green and 240=blue
- **Highlights Density** - defines the highlights Density value. The density value is in range [-100,+100], where 0 means the color filter has no effect and +100 means the color filter has maximum effect. Values less than zero provide a filter of opposite hue
- **Highlights Exposure** - defines the highlights Exposure value. This is an adjustment value in the range [-100,+100], where the default value of 0 makes no adjustment, positive values increase exposure and negative values decrease exposure
- **Highlights Saturation** - defines the highlights Saturation value. This is an adjustment value in the range [-100,+100], where the default value of 0 makes no adjustment, positive values increase saturation and negative values decrease saturation
- **Midtones Hue** - defines the midtones Hue value. The hue value is a standard HSB hue in the range [0,360], where 0=red, 120=green and 240=blue
- **Midtones Density** - defines the midtones Density value. The density value is in range [-100,+100], where 0 means the color filter has no effect and +100 means the color filter has maximum effect. Values less than zero provide a filter of opposite hue
- **Midtones Exposure** - defines the midtones Exposure value. This is an adjustment value in the range [-100,+100], where the default value of 0 makes no adjustment, positive values increase exposure and negative values decrease exposure
- **Midtones Saturation** - defines the midtones Saturation value. This is an adjustment value in the range [-100,+100], where the default value of 0 makes no adjustment, positive values increase saturation and negative values decrease saturation
- **Shadows Hue** - defines the shadows Hue value. The hue value is a standard HSB hue in the range [0,360], where 0=red, 120=green and 240=blue
- **Shadows Density** - defines the shadows Density value. The density value is in range [-100,+100], where 0 means the color filter has no effect and +100 means the color filter has maximum effect. Values less than zero provide a filter of opposite hue
- **Shadows Exposure** - defines the shadows Exposure value. This is an adjustment value in the range [-100,+100], where the default value of 0 makes no adjustment, positive values increase exposure and negative values decrease exposure
- **Shadows Saturation** - defines the shadows Saturation value. This is an adjustment value in the range [-100,+100], where the default value of 0 makes no adjustment, positive values increase saturation and negative values decrease saturation

Custom

Here you can add and edit custom experimental settings fields providing them in a general JSON format.

Previewing the application

To preview your client application please click on the Preview tab in the Scenes section of the admin panel. In this tab you will see a preview of the application with all the buttons, highlights and settings that you've created so far.
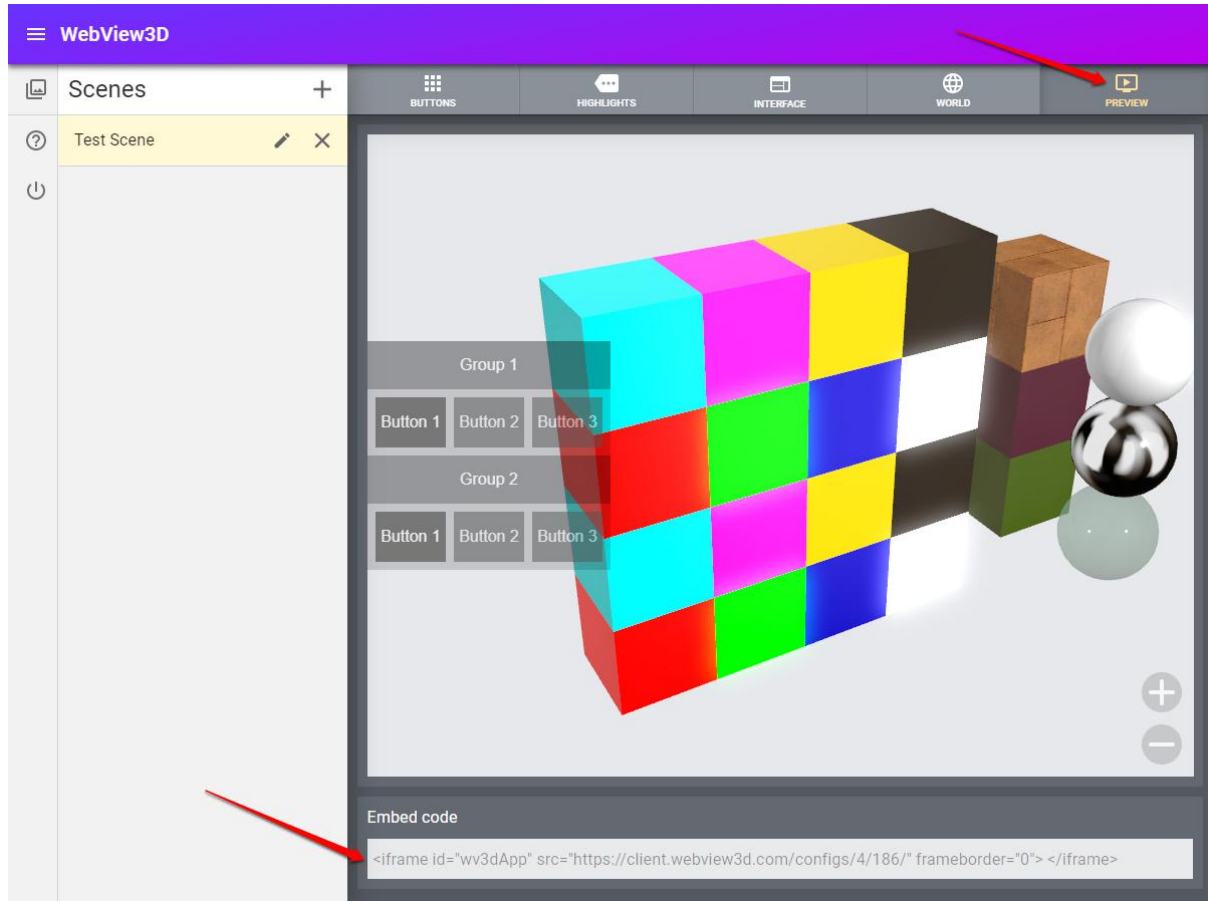
Basically this is how it will look on your webpage when you insert it there.
Below the application frame you will see an Embed code block with a code snippet. This is exactly the snippet you need to put into your webpage code to integrate the WebView3D client application into your page. You can copy and paste it into any div element on your page and the app will be displayed there.

In cases when the application can't find model nodes that you've entered on Buttons, Highlights or Settings tabs (like Always visible, Lights with shadows settings etc.), it will show you an error message with information about this. Please check then if you have all the nodes names spelled correctly and the nodes are really present in the model.

WebView3D beta version known issues

WebView3D is now launched in beta version. This means that there are still some limitations and there can still be some bugs and issues in its functionality.
Here is the list of issues that are recognized by the current moment and possible workarounds for them:

1. **Preview frame refresh**
   Sometimes the preview frame can not be updated after a setting change. In this case you need to clear your browser cache in order to see the updated application version.
2. **Shadowing**
   Shadowing algorithm is still an experimental feature, so it can introduce visible artifacts with certain models and configurations. In general you should aim to include as few objects as possible into shadow rendering to achieve the best shadows quality. Avoid including objects that are placed at large distances between them into shadow casting as this most likely will introduce shadowing artifacts. The best option is to have a compact shadow casting object or a group of objects in the middle of the scene and to switch off shadowing from the objects around it if there are any. See the example below:
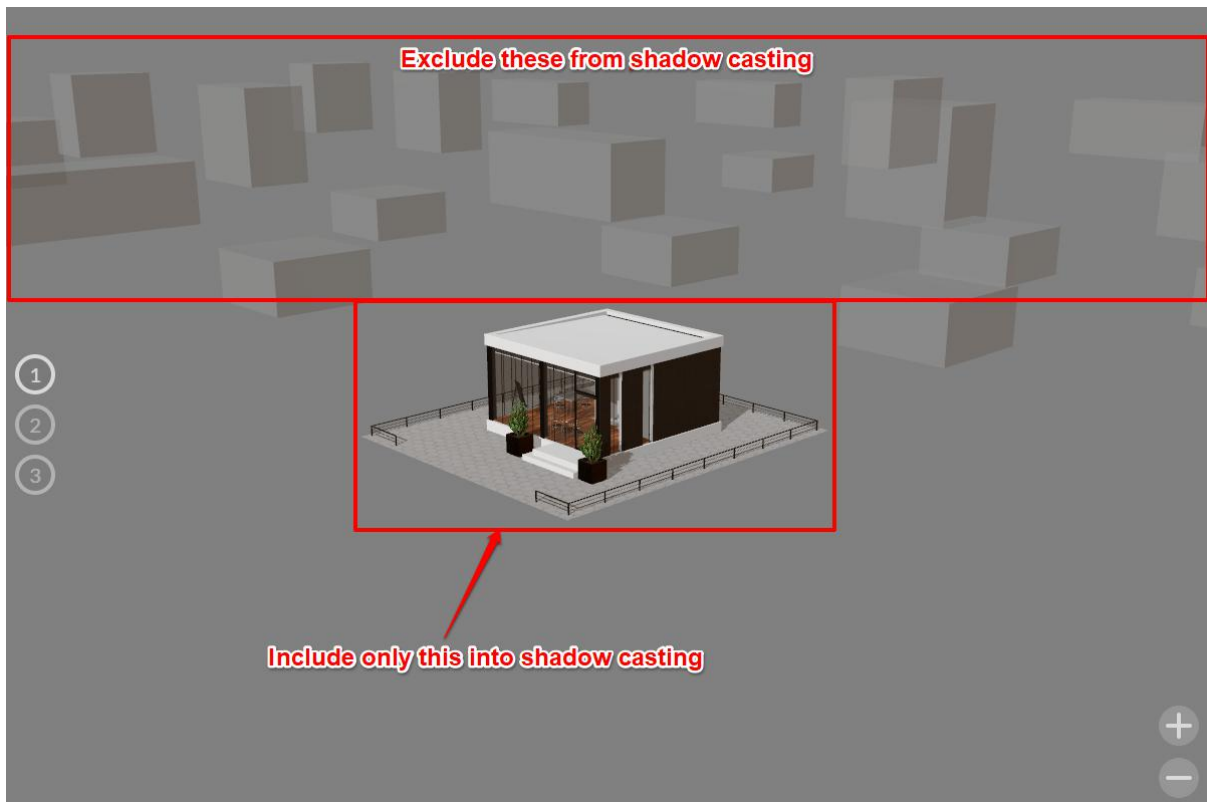
3. **Buttons pictures naming**
   Due to the current beta architecture of the service the custom buttons pictures files that you upload in the admin panel will be overwritten if they have exactly the same name. This is not the case if you have the same picture set for all the buttons and you want your buttons look the same. But if you want your buttons to look different and you have different pictures for each button then you should name the pictures files differently. I.e. for example, for a yellow button you name the files:
   - button-yellow-main.png
   - button-yellow-hover.png
   - button-yellow-clicked.png
   For a red button then you name them accordingly:
   - button-red-main.png
   - button-red-hover.png
   - button-red-clicked.png