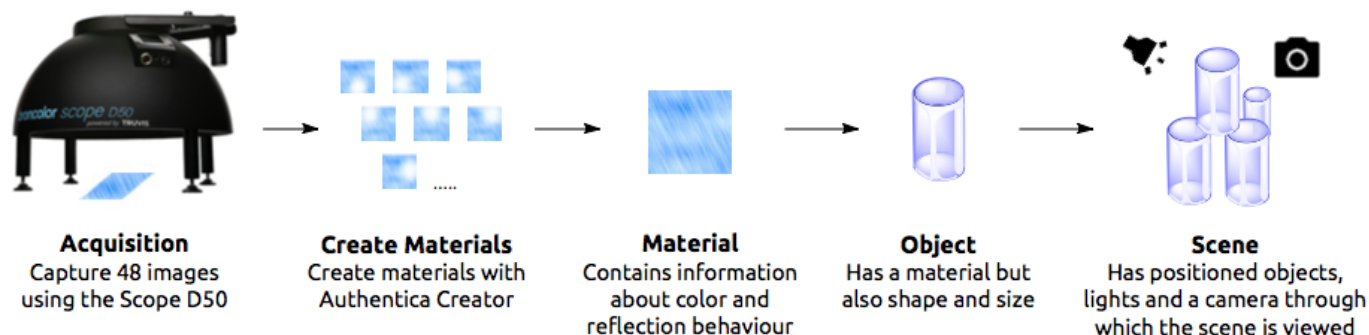


# Welcome to Authentica Creator 1.3



## Overview

The Authentica system, consisting of the [Truvis Authentica Creator](#) software and a compatible illumination device (e.g. the [Truvis Helios S53](#) or [broncolor Scope D50](#)), allows you to create scenes containing digital materials and objects. A material is a digital surface model which contains all the information of a given material like its surface structure, color and gloss. The material can be applied to an object which additionally has a geometry. Different objects can then be placed in a scene which also contains different light sources and a camera through which the scene is viewed.

If you prefer to learn by doing and want to get started right away check out the examples in the [Quickstart Guide](#).

More detailed information about how to use the Authentica Creator software is given in the [User Manual](#).

## Install Authentica Creator

Visit [www.truvis.ch/authentica/downloads](http://www.truvis.ch/authentica/downloads) to get the newest version of Authentica Creator. The instructions for installation and activation of the software are provided within the download package.

# Quickstart Examples

In order to give you a quick overview and hands-on experience of the features and capabilities of Authentica Creator we have prepared two quickstart examples:

- Example 1: [Coins](#)  
How to import a project folder, add a mask and manipulate a scene.
- Example 2: [Shell](#)  
How to generate a material, use the [Surface Enhance](#) feature and export images.

# Coins


In this example you will learn:

- How to import a project.
- How to use the different settings and add a mask to a material.
- How to manipulate a scene by placing objects and the camera.

## Set up the Authentica Main Data Folder

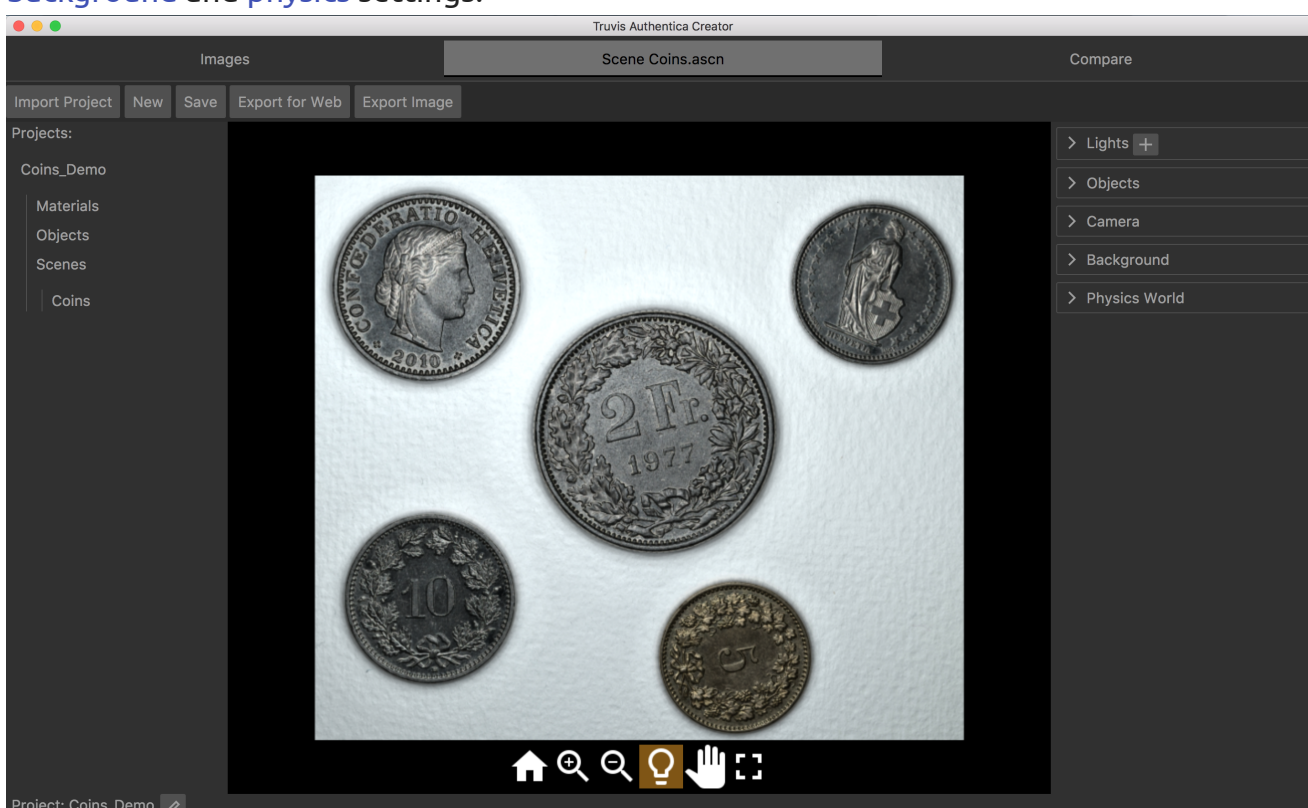
- Open Authentica Creator.
- If you open it the first time, accept the license agreement. If you want to use the demo version (valid for 30 days) click `Later`. If you have purchased a license enter the license key.
- In the next dialogue you can set the Authentica main data folder which will contain all projects you create.
- For this example we place the main data folder in ".../Users/YourUsername" and name it "Authentica".

## Download and Import Project




- Download the zip archive [Example\\_1.zip](#) and unpack it.
- The zip archive contains an Authentica project folder named "Coins\_Demo" and a folder named "Masks".
- To import this project, go to the **Scene tab**, click `Import Project` and choose the "Coins\_Demo" project folder.
- You can [create a new project](#) and [set the active project](#) by clicking on the  icon in the lower left corner of Authentica Creator.

## Overview of the Scene tab

- On the left hand side of Authentica Creator you can see the [project folder structure](#). A project folder always contains 3 subfolders named "Materials", "Objects" and "Scenes".
- Since we have only one object in the scene which contains only one material, each of the folders contain only one entry named "Coins".
- Click on the scene "Coins" in the project folder viewer and open it.
- On the right side you find setting panels for the scene like the [lights](#), [objects](#), [camera](#), [background](#) and [physics](#) settings.



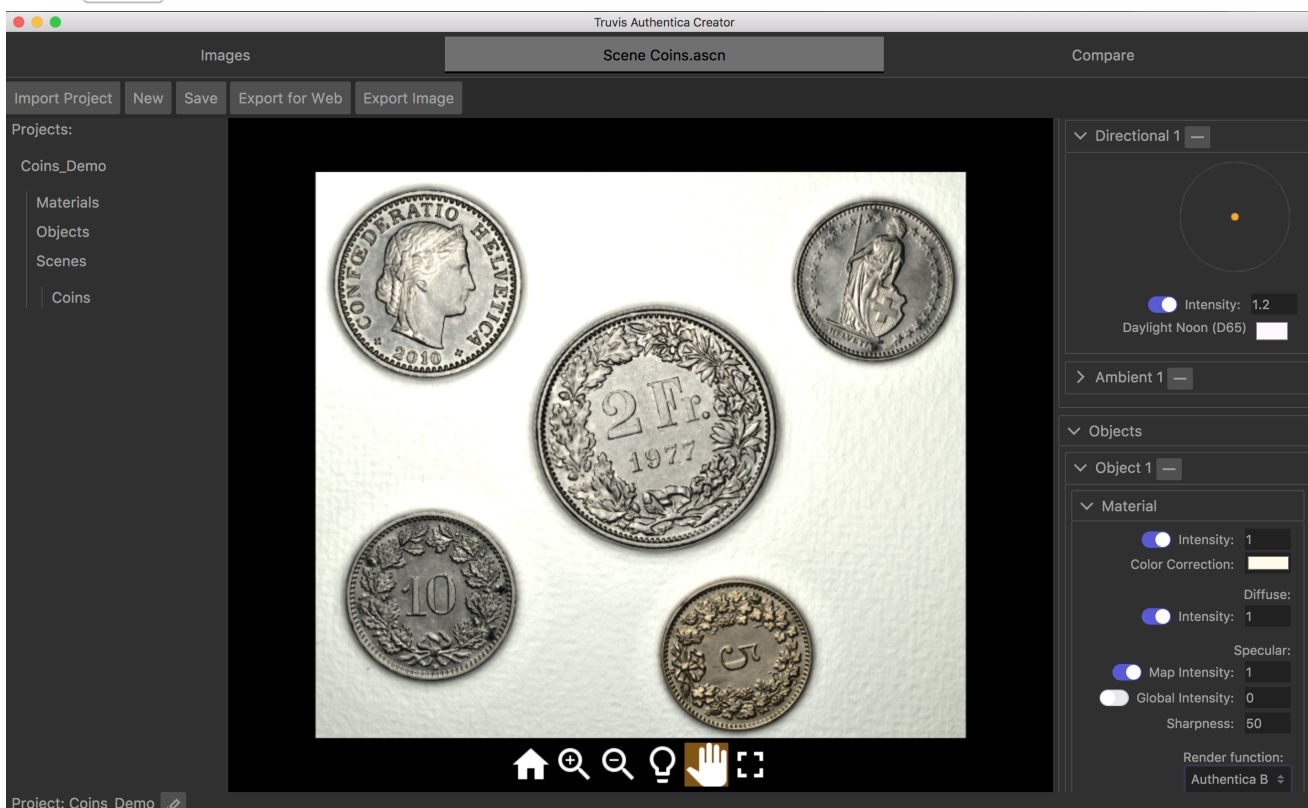
## Light and Material Settings

- To see the effect of a moving light source, expand the [light settings](#) panel, click in the circle next to the directional light "Directional 1" and drag the yellow dot (indicating the light position) around. Alternatively, click the  button in the viewer area and change the light direction by dragging in the viewer area.
- Remove the pure white directional light and replace it with a standard light source. Click  next to "Directional 1" to remove it. To add a new directional light click the  button at



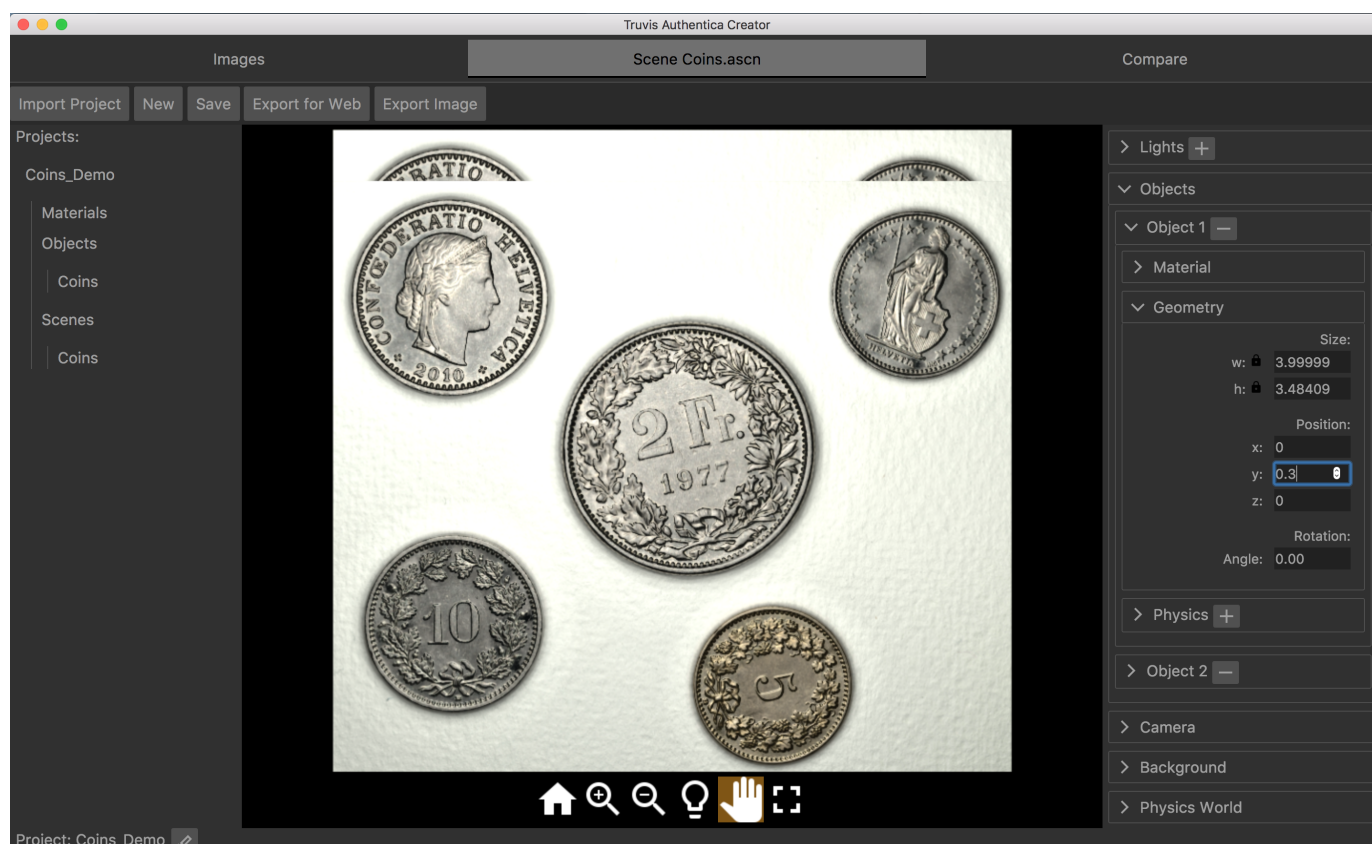
the top of the **light settings** panel and choose **Directional Daylight Noon D65** in the following dialogue. Increase the Intensity to 1.2 by entering the number directly or scrolling in the corresponding field.

- You can also use light sources with customized light color. Click on the color field of the light source to access different color setting options.
- Other light sources are removed, added and edited in the same way.
- Go to the **material settings** panel within the object settings panel. The intensity, color and reflection properties of the material can be adjusted here.
- For this example we leave the intensity at 1 but correct the color of the material using the HSB sliders and setting the values to H: 50°, S: 10%, B: 100%. Like this the color of the coins is closer to their real color.
- For this example we use Authentica B as the render function.
- For more information on the different reflection settings see [this section](#) of the user manual.
- Click **Save** to save the scene.



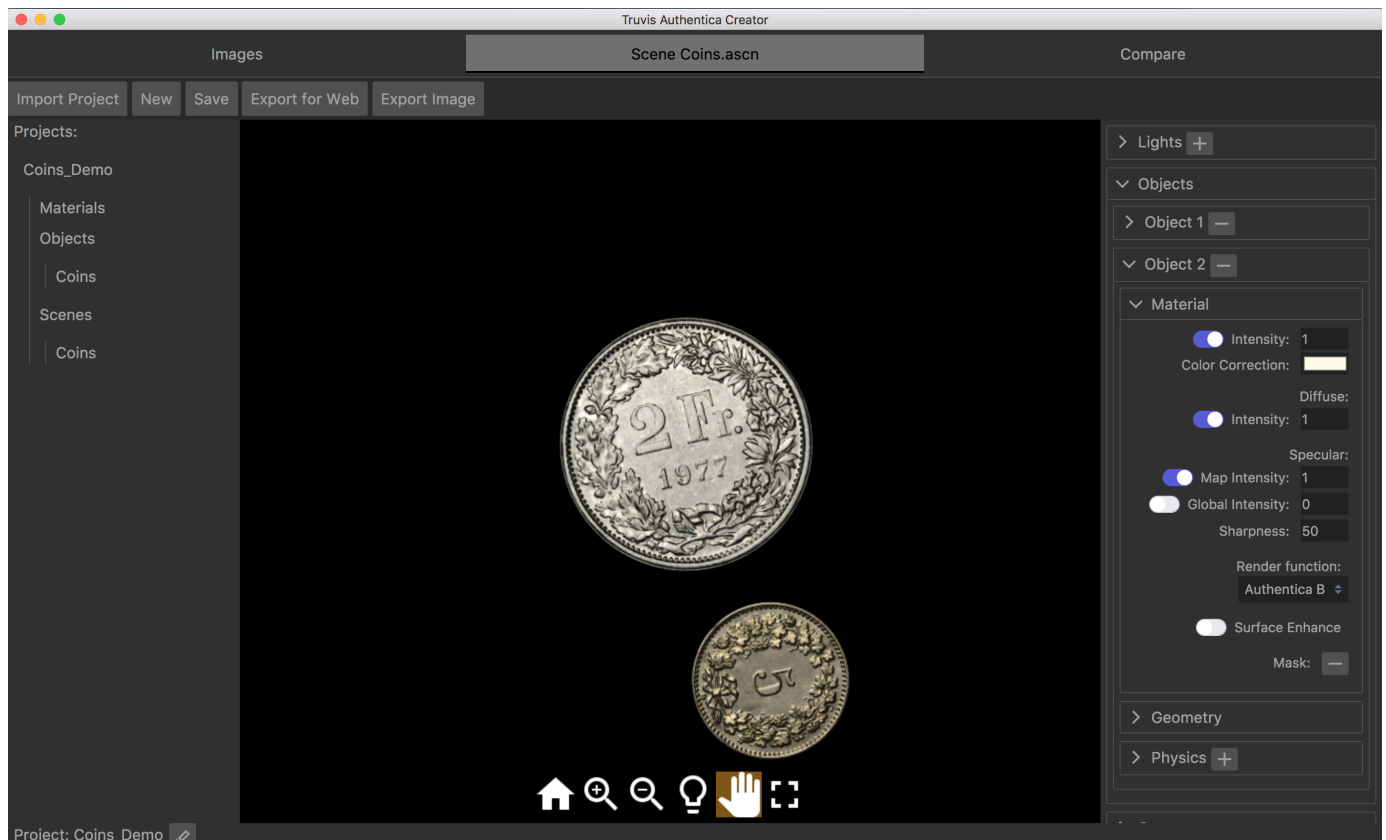
## Add Objects to a Scene and Apply Masks

- Lets assume we would like to create a scene which contains only the 2 franc and the 5 cent coin nicely aligned on a white background.
- For this we first have to add a second object to our scene. Click on the entry "Coins" in the "Objects" subfolder and click **Add** in the following dialogue.
- You won't see any difference in the scene since we just added the same object at the same position again. If you look at the **object settings** panel you will notice there are now two objects.
- Apply the same **material settings** of "Object 1" to "Object 2".
- To convince yourself that there are now two objects in the scene, change the position of one of the objects in the **geometry settings**. Also notice, that the object "Object 2" which was added to the scene later is placed in front of the object "Object 1" which was already in the scene.



- Now we would like to cut everything from "Object 1" except the 2 franc coin. For this we have to **add a mask**. Just click the **+** button at the bottom of the **material settings** of this object and choose the file ".../Example\_1/Masks/mask\_2franc.tif".

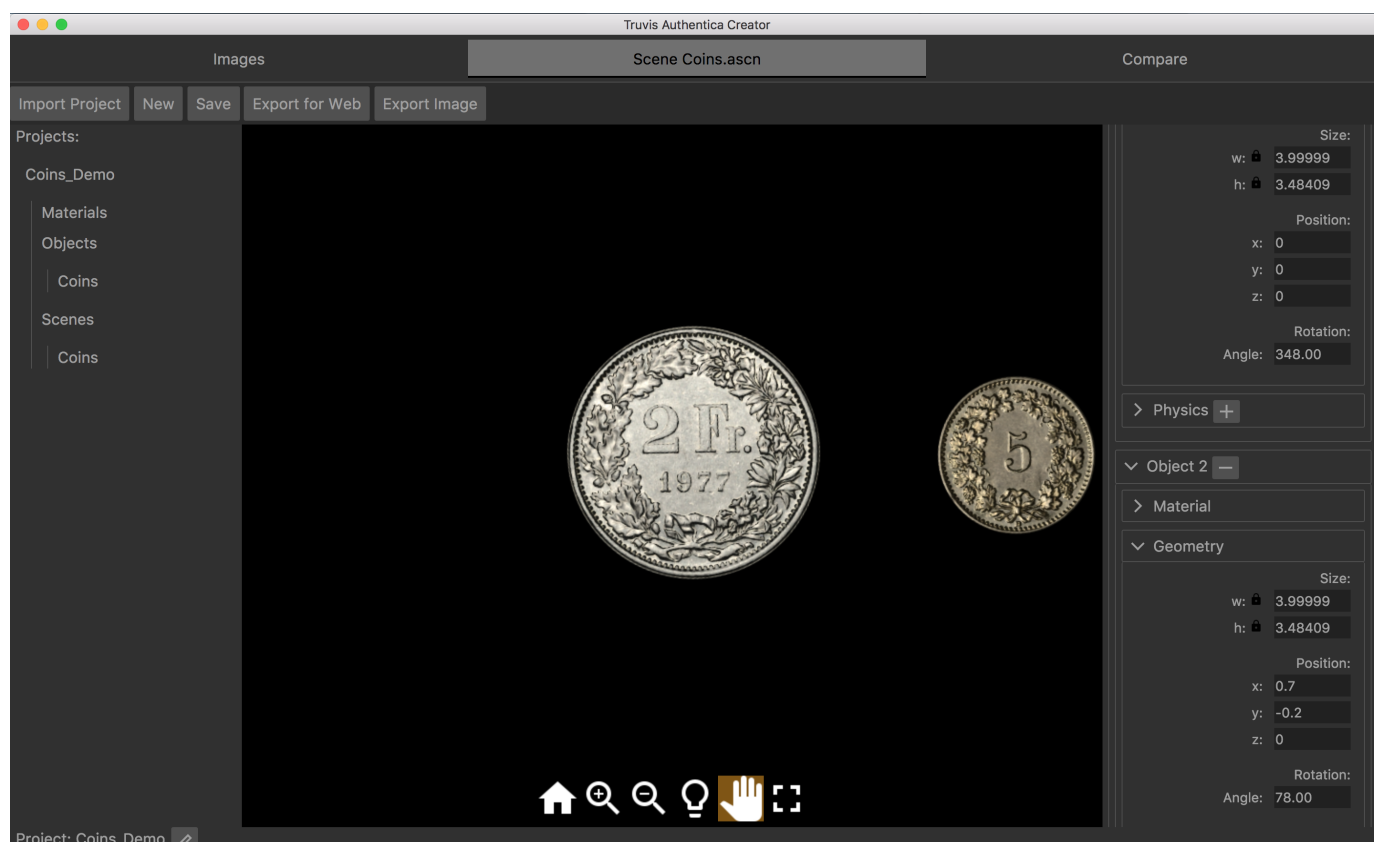
- The same procedure is repeated for the "Object 2" using the file ".../Example\_1/Masks/mask\_5cent.tif" as a mask. You should now have a scene that looks like this:



- For more details on how to generate a mask see [this section](#) in the User Manual.

## Arrange Objects in a Scene

- For the 2 franc coin choose a rotation of 348 in the [geometry settings](#) of "Object 1".
- For the 5 cent coin choose a rotation of 78, set the x-value to 0.7 and the y-value to -0.2 in the [geometry settings](#) of "Object 2".
- The 5 cent coin should now be placed upright just next to the 2 franc coin.



## Change the Initial Camera Setup and Background Color

- As a last step we would now like the two coins to be nicely centered in the [viewer area](#). Of course we could achieve this by simply changing their position in the [geometry settings](#) of each object. But the easier way to do this would be to change the initial position of the camera through which the scene is viewed.
- To change the initial position of the camera go to the [camera settings](#) and choose the appropriate position. For this example a x-value of 0.95 and a zoom of 1.2 places the coins well sized and nicely centered in the [viewer area](#).
- Click the 🏠 icon in the viewer area to see the changes of the initial camera position.
- To change the background color click expand the [background settings](#) panel and click on the color field to set the background color to white.



# Shell



In this example you will learn:

- How to set up the Authentica main data folder.
- How to generate a material, object and scene from 48 TIFF images.
- How to add a mask and use the **Surface Enhance** feature.
- How to export images.

## Set up the Authentica Main Data Folder

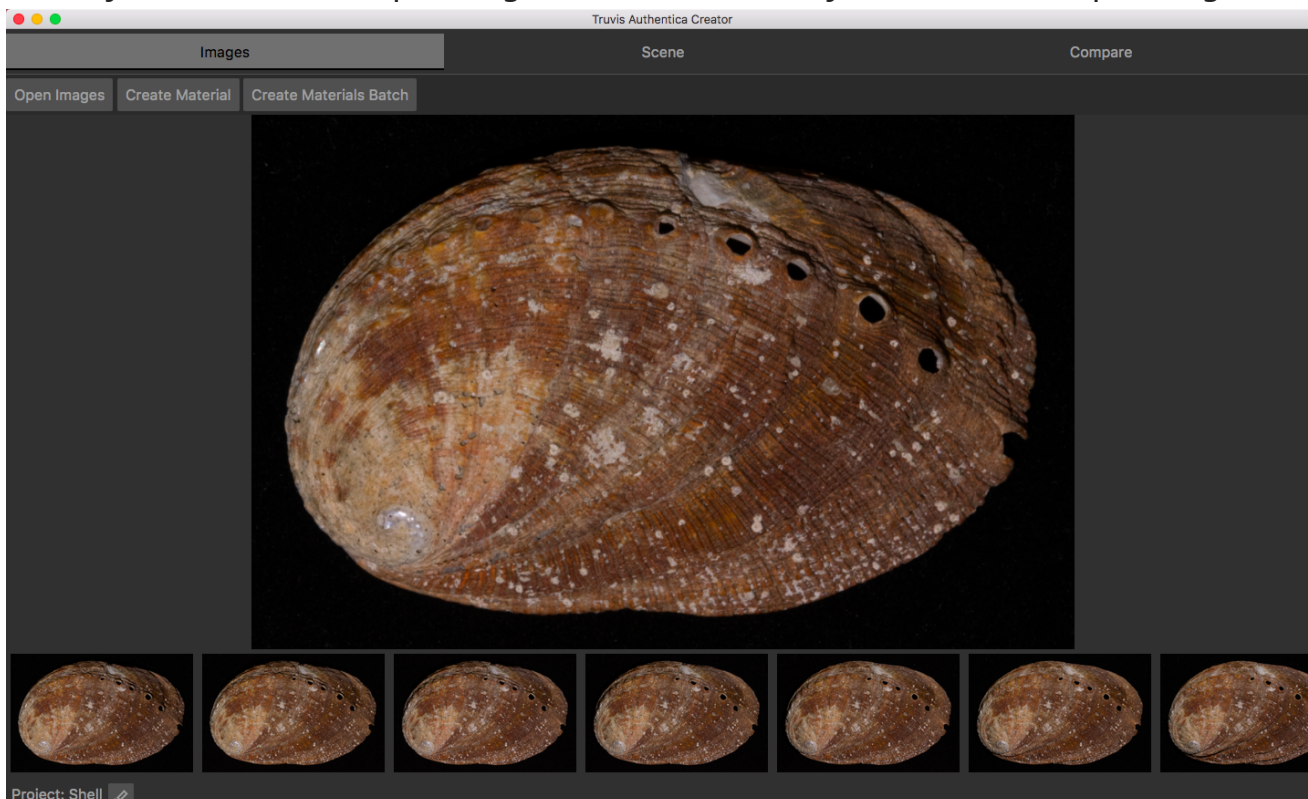
- Open Authentica Creator.
- If you open it the first time, accept the license agreement. If you want to use the demo version (valid for 30 days) click **Later**. If you have purchased a license enter the license key.
- In the next dialogue you can set the Authentica main data folder which will contain all projects you create.
- For this example we place the main data folder in ".../Users/YourUsername" and name it "Authentica".

## Generate a Material, Object and Scene

- Download the zip archive [Example\\_2.zip](#) and unpack it.
- You can **create a new project** and **set the active project** by clicking on the  icon in the lower left corner of Authentica Creator.
- Click the  icon and choose "Shell" as a project name and create a new project folder named "Shell" within the Authentica main data folder.
- Go to the **Images** tab and click **Open Images**. Direct Authentica Creator to the folder ".../Example\_2/Shell\_TIFF" which contains 48 TIFF images captured with the **broncolor Scope D50**.



- Now you should see a preview of all the input images. This step is not mandatory but allows you to review the input images and make sure they are suitable as input images.

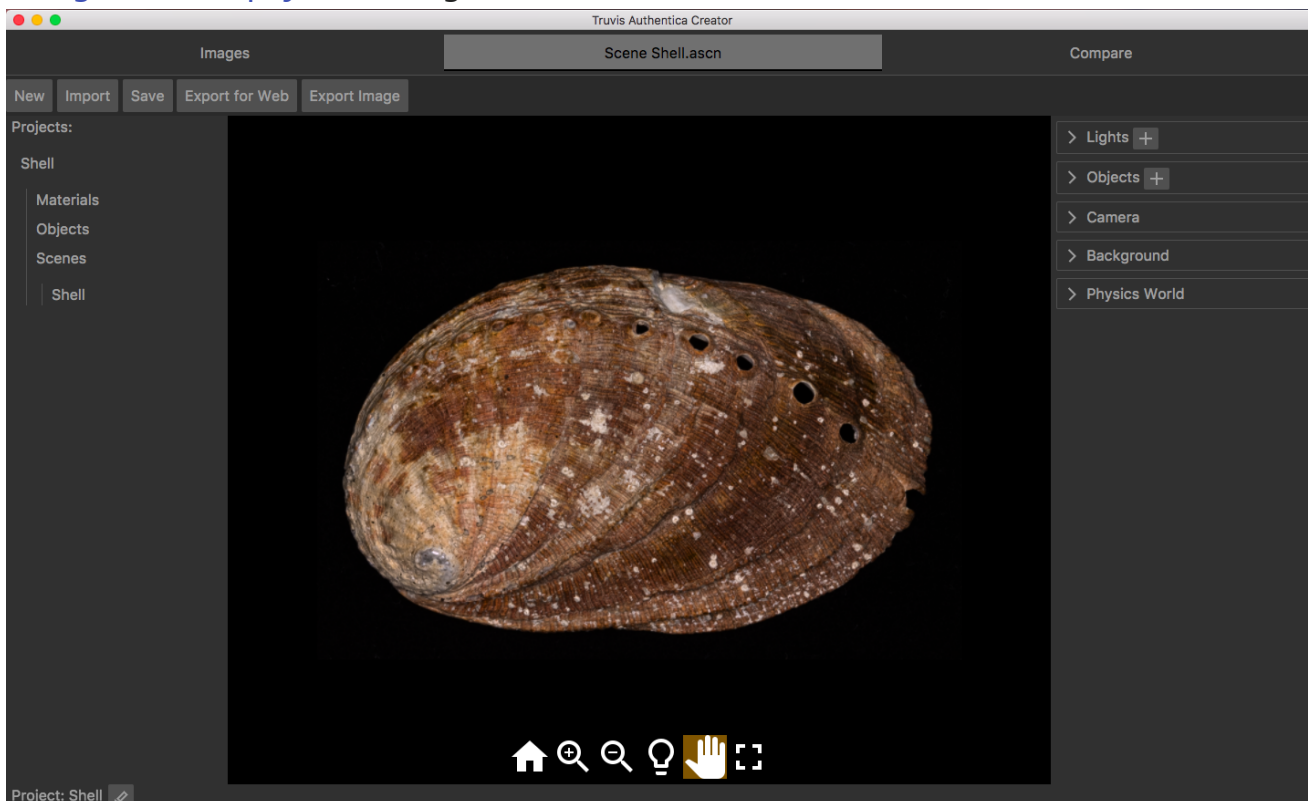


- Click . In the pop-up dialog choose "Shell" as a name for the object, and select "Scope D50" as a device. Then click .
- After 2-3 minutes Authentica Creator should be finished with the calculations and the generated scene is shown in the [Scene tab](#).


## Overview of the Scene tab

- On the left hand side of Authentica Creator you can see the [project folder structure](#). A project folder always contains 3 subfolders named "Materials", "Objects" and "Scenes".
- Since we have only one object in the scene which contains only one material, each of the folders contain only one entry named "Shell".

- On the right side you find setting panels for the scene like the [lights](#), [objects](#), [camera](#), [background](#) and [physics](#) settings.

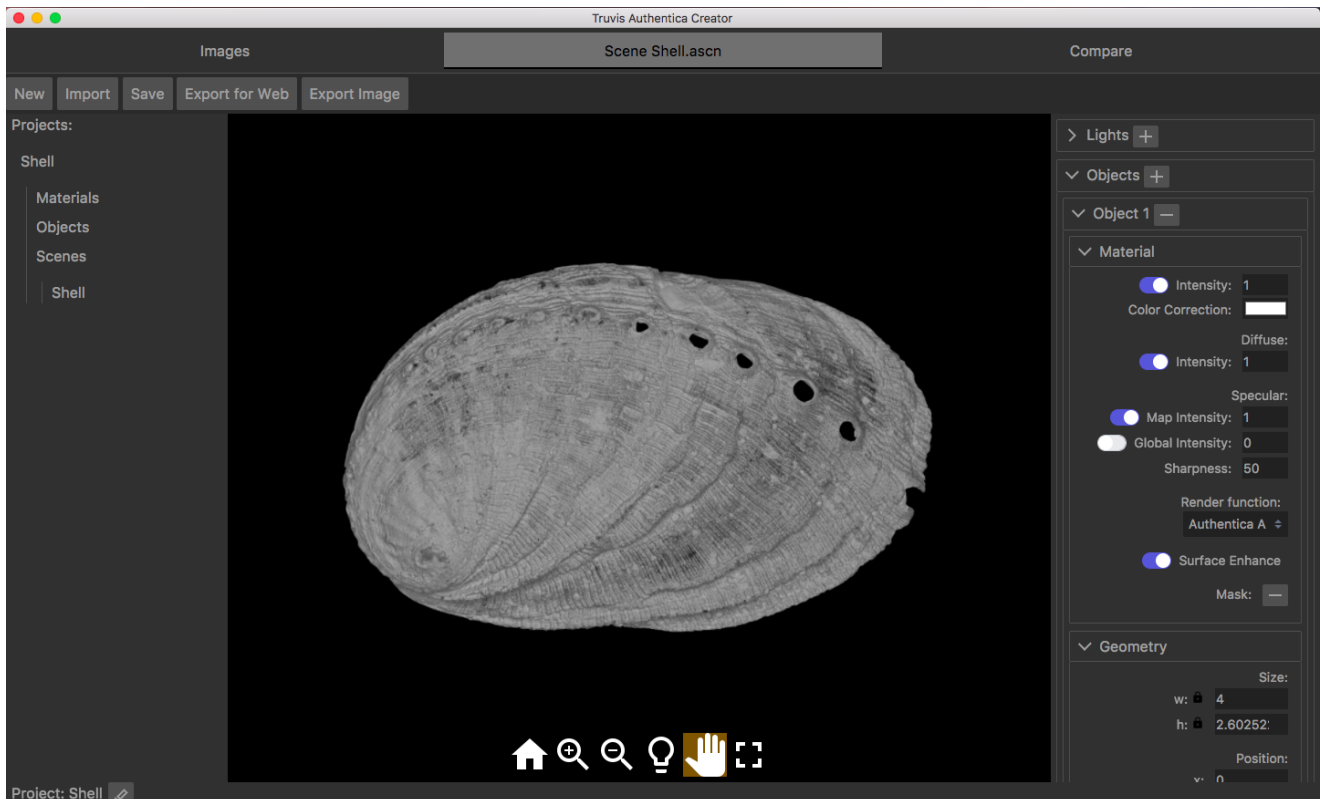


## Add a Mask and Surface Enhance Feature

- To see the effect of a moving light source, expand the [light settings](#) panel, click in the circle next to the directional light "Directional 1" and drag the yellow dot (indicating the light position) around. Alternatively, click the  button in the viewer area and change the light direction by dragging in the viewer area.
- Expand the [material settings](#) of "Object 1" and switch the [Surface Enhance](#) feature on. In some cases the settings proposed by Authentica Creator still need to be fine-tuned to obtain optimal results. For this example we set the specular [Global Intensity](#) to 0.
- If you move the directional light source you can see the surface structure in detail. But you also notice that the background, which was invisible before, suddenly appears as a structured surface as well. To mask the background a mask has to be added to this material.



- Expand the **material settings** of "Object 1". To **add a mask**, click the  button at the bottom of the **material settings** and choose the file ".../Example\_2/Masks/mask\_shell.tif".



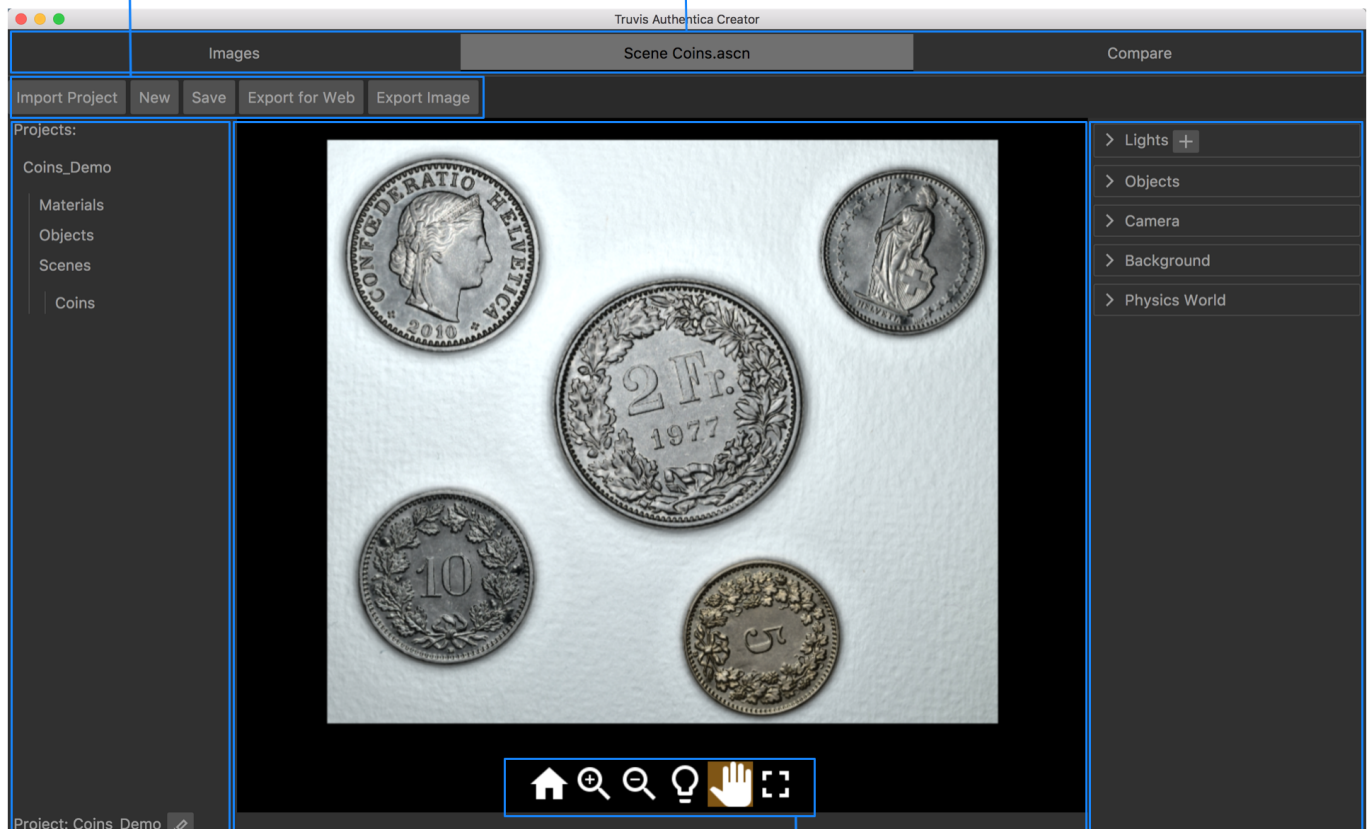
## Export Image

- Lets assume we have found some interesting surface feature, when the shell is illuminated from just the right direction and would like to share our findings.
- Click  and save any section of the scene as an image.

# Overview Authentica Creator 1.3

## Menu Buttons

## Tabs



Folder Viewer

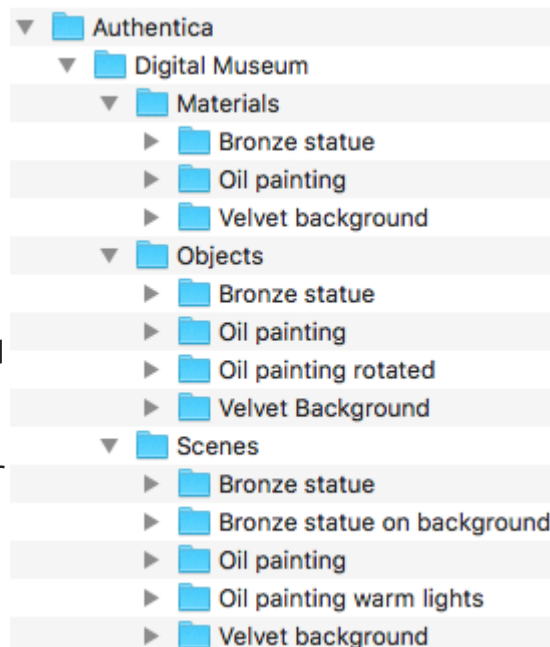
Viewer Area

Viewer Buttons

Setting Panels

## Folder Structure

- For each Authentica project a project folder will be created and saved in the main data folder.
- The default name of the main data folder is "authentica" and the default location ".../Users/YourUsername".
- Each project folder contains three subfolders named "Materials", "Objects" and "Scenes".
- Whenever a material is generated, also a rectangular object (which contains the material) as well as a scene (which contains the object) are created automatically in the current projects subfolders.
- The Authentica folder structure is shown in the **Scene** tabs [project folder viewer](#).
- Authentica data can only be exchanged if it is in a project folder. If you want to share a material, object or scene with someone, transfer the corresponding project folder and the recipient can import it via the `Import Project` function in the **Scene Tab**.




#### Warning

Don't move the Authentica main data folder and any folders and/or files within the Authentica main data folder and project folders. If you want to delete a material, object or scene you can do so by putting the corresponding folder into the trash bin. But keep in mind, that if a material or object which is used in a scene is deleted, Authentica Creator is not able to show this scene anymore.

#### Problems with Umlaut on Windows

On Windows operating systems no umlaut or other special characters can be used in any names for files or folders.

## Create new Project and Set Active Project

- You can create a new project and set the active project by clicking on the  icon in the lower left corner of Authentica Creator.

# How to capture and prepare images for Authentica Creator

## Device Set-up

Please refer to the manual of your illumination device for guidance on how to set-up and operate your device for capturing a set of input images.

Manuals of officially supported devices:

- Truvis Helios S53: [How-To Set-up & Capture, PDF Manual](#).
- broncolor Scope D50: [How-To Set-up & Capture](#), [How-To Video](#).

If you are using the Highlight-RTI method, or a custom device not listed above, please read the instructions provided in [Custom Calibrations](#), to learn how to generate and use a custom calibration file.

## Object Set-up

- Place the object you want to photograph on a uniform and non-reflective surface.

## Camera Settings & Image Format

- **White Balance:** Make sure to set the white balance according to the color of your illuminant. Please refer to the manufacturer or manual of your illumination device for more information.
- **Image Format:** TIFF. The input images must be in TIFF format for processing with Authentica Creator. Depending on your use case and preference, it might still be advisable to shoot in RAW format, and later convert the images to TIFF.
- **Bit depth:** you may use a color depth of 16 or 8 Bit for the TIFF images.
- **Color space:** sRGB. Input images must be in sRGB color space.

### **Switch off Orientation Sensor**

If your camera has an orientation sensor switch it off. If it is not switched off, some images might be rotated which will cause issues while processing. You may later change the orientation of your object directly in the Authentica Creator software.

## Image Manipulations

- It is advised to apply corrections for chromatic aberration and lens profile of your camera system to all images.
- You may also adjust parameters such as brightness and color temperature of your images. Apart from correcting the white balance (see above), which may be done on a per light source/image basis, all other image manipulations should be identical for all the images.
- You may crop a rectangular selection which contains the object. Smaller input images will be faster to process. Make sure to apply the exact same crop area to all images.

### **Warning**

Make sure you only crop rectangular sections and don't rotate images. You will have the possibility to cut non rectangular sections and apply rotation in Authentica Creator once the digital material is created.

## Acquisition

- Try to make sure there are no other light sources lighting the object during the image acquisition. With only a small amount of ambient light you should still obtain reasonable results.
- Make sure there is no camera movement between different shots in the captured image sequence.

## Prepare Images for Authentica Creator

- Place all TIFF images in an otherwise empty folder on your computer.
- Follow the instructions to [generate a digital material](#).

# The Images Tab

How to review TIFF input images and generate materials.



## Review Input Images

- To review the 48 TIFF input images click on `Open Images`.
- In the following dialogue, select the folder containing the TIFF images you have [prepared](#).
- The images can now be reviewed.
- This process creates a new folder named "jpg" within the TIFF images folder.
- It is not mandatory to review the TIFF input images before generating a material. You can also click `Create Material` and direct Authentica Creator to a folder containing 48 TIFF input images without opening the images first.

## Generate a Digital Material

- Click on .
- In the following dialogue, select the folder containing the 48 TIFF images you have [prepared](#).
- Specify a name for the material.
- Select the device used for acquiring the input images. Either select one of the officially supported devices from the dropdown list, or select 'Custom Calibration' for loading a custom calibration file. For more information on using custom calibrations, see [Custom Calibrations](#).
- Click on .
- Authentica Creator will now generate the material. This can take a few minutes depending on the input images size. During this time Authentica Creator does not react to further commands.
- Once the material is generated, it will be shown in the [Scene tab](#).
- Whenever a material is generated, also an object and a scene with the same name are created and saved in the corresponding project folder subdirectories.

### Advanced Settings ▼

Authentica Creator offers you the possibility to use different settings for the generation of the digital materials. To access these settings you first have to choose Tools -> Show Advanced Controls from the menu bar and then follow the steps described above. You will be presented with two options:

- ULI (Use less images): Is switched off by default. This option can improve the results in cases where the object's surface is highly reflective or does not strictly follow the assumption of being non-transparent. Using this option will result in a longer processing time.
- Sampling: Is switched on by default. Switching off the sampling can improve gloss detection in some cases but will also result in a longer processing time.

## Batch Processing

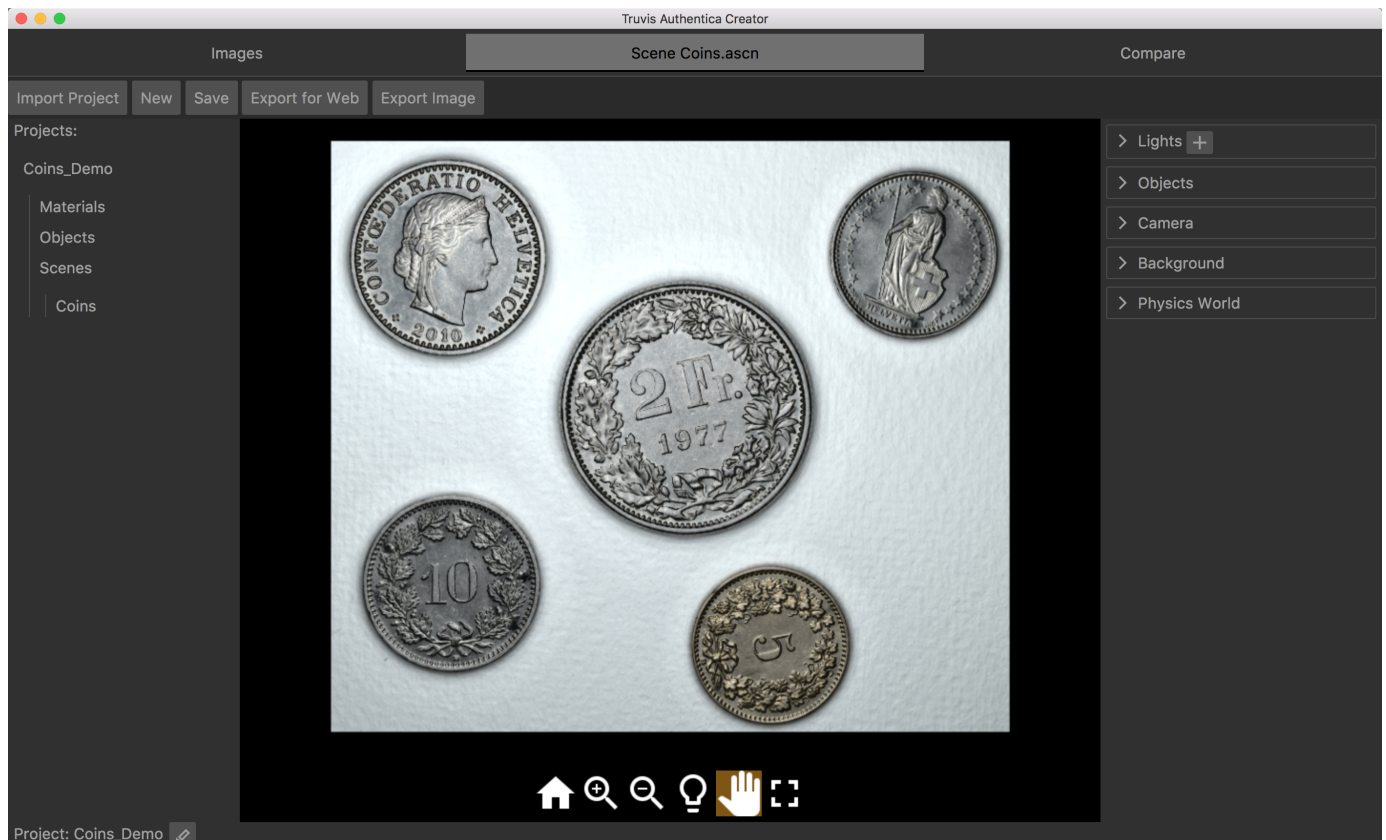
- To generate multiple materials in one go, click on .

- In the following dialogue, select a folder containing multiple folders each containing 48 TIFF input images.
- The names of the materials generated in this way will be the same as the names of the input folders.
- A log file named "ACreatorBatchLog.txt" will be generated in the project folder. It contains details on the batch you processed and can be helpful for troubleshooting.



# The Scene Tab

How to create and design a scene.



## Project Folder Viewer

- On the left side a tree view of all existing project folders is shown.
- Click on a folder to expand or collapse it.

## The Scene Tab Menu Buttons

Button	Function
<code>Import Project</code>	Import a project folder.
<code>New</code>	Create a new scene.
<code>Save</code>	Save the current scene.
<code>Export for Web</code>	Export a folder containing all the files needed for easy <a href="#">integration into a webpage</a> .
<code>Export Image</code>	Export the current scene as image.

### Import a Project

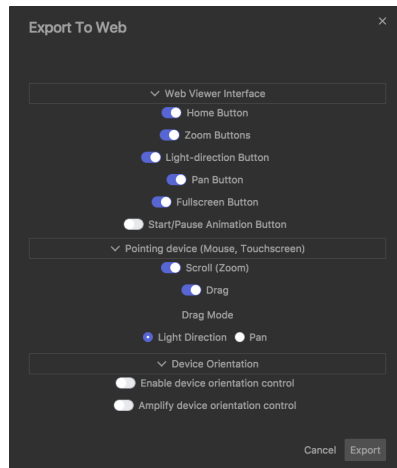
To import a project folder, go to the **Scene tab**, click `Import Project` and choose the corresponding project folder. If you want to keep the project folder in its original place choose `copy project to Authentica data folder` otherwise choose `move project to Authentica data folder`.

### Export for Web Options

If a scene is exported for presentation in a web environment a variety of options is available where the configuration and behavior of the web viewer can be specified.

- In the `Web Viewer Interface` settings panel you can specify which [viewer buttons](#) should be included.
- In the `Pointing Device` settings panel the functionality of the pointing device can be specified.
  - If `Scroll (Zoom)` is activated, zooming in and out by scrolling in the viewer area is enabled.
  - The `Drag Mode` settings allows you to specify if dragging in the viewer area moves the light source ( `Light Direction` ) or the content ( `Pan` ).

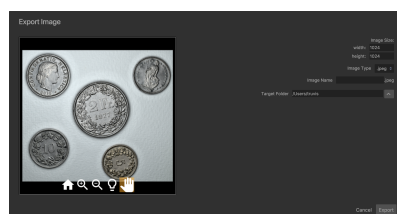
- Control of the light direction by the viewing devices orientation sensor can be activated in the **Device Orientation** settings panel. If the device is held parallel to the ground the light direction is perpendicular to the scene shown in the web viewer. By tilting the device, the illumination angle changes recreating a realistic visual impression. The changes in device orientation can be amplified if the **Amplify Device Orientation Control** option is activated.



## Export Image Options








If you want to export a scene or part of a scene as an image you can specify the section, format and size of the exported image here. Make sure you have set the lighting as needed beforehand since it can not be changed here anymore.

- In the window on the left hand side you can choose the section of the scene you want to export using the **viewer buttons**.
- In the **Image Size** settings you can specify the size of the exported image.
- In the **Image Type** settings you can choose from different file formats like PNG, JPEG and TIFF.
- Additionally you can enter a name for the exported image and specify in which folder it should be saved.



## Viewer Area and Viewer Buttons

- The current scene is shown in the viewer area.

Button	Function
	Reset to initial camera settings.
	Zoom in.
	Zoom out.
	Change position of the directional light.
	Move camera.
	Run/Pause physics.
	Fullscreen view.

### Setting Panels and Fields

On the right side of the Authentica Creator window all settings are organized in panels which can be expanded and collapsed for a better overview. For all setting fields it is possible to either type a value directly into the field, use the up/down keys of the keyboard or scroll up/down to increase/decrease the value for the setting. To set colors, simply click on the color field. A window will appear which gives you all standard color setting options.

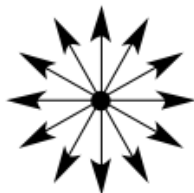
## Light Settings

- In order to find the [material settings](#) which give the most realistic representation, the light settings should be chosen as close as possible to the lighting under which you are viewing the real material. Only like this the real material can be used as a reference since the materials appearance is also dependent on the lighting.

- To add a light source click , to remove it click . If you add a light source a pop-up menu appears where you can specify if a directional, point, spot or an ambient light source should be added and choose between several standard light sources or a custom light source.



Directional Light




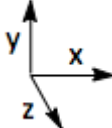
Point Light



Spot Light



Ambient Light


- Directional lights are light sources which emit parallel beams of light from a well defined direction. To change the direction click into the circle and position the light. The light direction can also be changed from within the viewer area. If the  viewer button is activated, the light direction can be changed by dragging in the viewer area.
- Point lights are light sources which radially emit light beams. In contrast to the directional lights they can be placed closer or further away from the material surface resulting in different effects. The position of the point light is set by choosing x, y and z values. 
- Spot lights are similar to point lights but only emit light within a specified solid angle which can be specified by entering a number between 0 and 180 in the field next to `Angle:`. You can also specify how sharp the light should drop off at the border of this angle by entering a number between 0 and 1 in the field next to `Penumbra:`. The direction from which the spot light illuminates the scene is set by moving around the yellow dot in the circle. The position of the spot light is again set by choosing x, y and z values.
- Ambient lights are light sources which illuminate the scene evenly from all directions.
- For all types of light sources the intensity and color can be set.

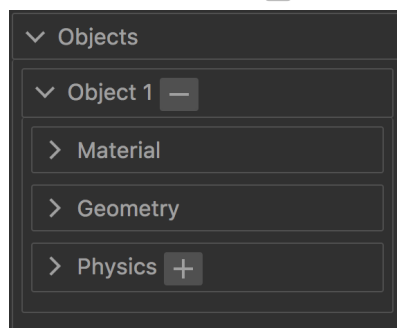


### Interactive Lighting in a Web Environment

Note that only the first directional light (Directional 1) can be moved from within the viewer area. So all except this directional light are static when the scene is shown in a web environment.

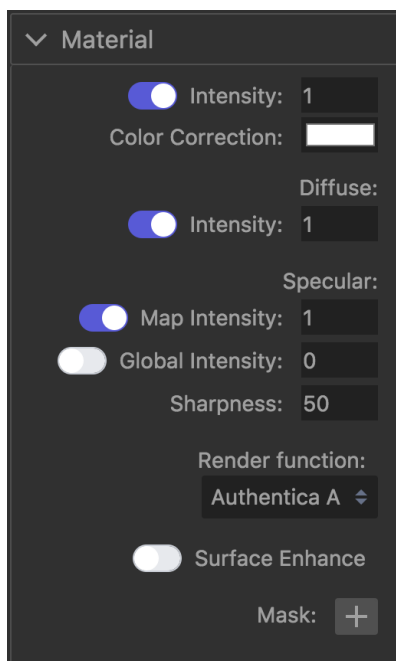
## Object Settings

- To add an object click on the object in the project folder viewer and choose **Add** in the following dialogue.
- To remove an object from the current scene click .



## Material Settings

- Once you set the [light settings](#) to the lighting conditions under which you are looking at the real material, modify the material settings until the digital material looks and behaves like the real material. The [Compare tab](#) can be helpful in this process since it allows to view two objects with different material settings under identical lighting conditions.
- [Intensity](#): Set the intensity of the material color.
- [Color Correction](#): If the materials color does not exactly meet the color of the real material a color correction can be applied here. For applications which require high color fidelity see also the section on [color management](#).
- [Diffuse](#):
  - [Intensity](#): Set the intensity of the materials diffuse reflection.
- [Specular](#):
  - [Map Intensity](#): Set the intensity of the spatially resolved specular reflection.
  - [Global Intensity](#): Set the intensity of the specular reflection for the whole material.
  - [Sharpness](#): Set the sharpness of the specular reflection.
- [Render Function](#): Choose between different render functions: Authentica A uses the standard RTI rendering method where the specular reflection is normalized with respect to the diffuse reflection whereas Authentica B uses more of a standard Phong illumination model approach where the specular and diffuse reflection are treated completely independent of each other.
- [Surface Enhance](#) Apply settings which enhance the surface structure. In some cases the settings proposed by Authentica Creator still need to be fine-tuned to obtain optimal results.
- [Mask](#): A mask can be added to the material to exclude the background which has been used during the acquisition. Click + / - to add/remove a mask to this material. Whenever a mask is added the current light and material settings will be saved automatically.



### **i** Reflection Explained

The materials reflection behavior is described by a diffuse and specular part.

The intensity of the diffuse reflection depends on the angle of the incoming light but is independent of the viewing angle.

The intensity of the specular reflection, colloquially called gloss, depends on the illumination and viewing angle. The material generated by Authentica Creator contains a map which spatially resolves the specular reflection properties of each pixel ( *Map Intensity* ). This allows to realistically render materials which have more and less glossy regions.

Additionally, a global specular reflection can be added to the material which increases the gloss evenly for the whole material ( *Global Intensity* ).

### **i** How to Create a Mask

- Open one of the TIFF input images in Photoshop or any other image processing program.
- Select the area of the image which contains the material and fill it with white.
- Invert the selection and fill with black.
- Set the image mode to grey scale.
- Save as TIFF image.

### **i** Advanced Settings



To access these settings you first have to choose Tools -> Show Advanced Controls from the menu bar. You will be presented with three additional options within the Material Settings:

- Diffuse:


Ease Out Extrapolate the diffuse reflections behavior for very small illumination angles.

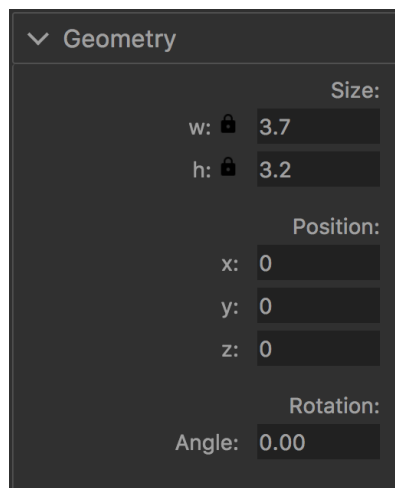
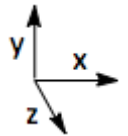
Flat Normals Use flat surface normals for the Ease Out extrapolation.

- Specular:



Flat Normals Use flat surface normals for the rendering of the specular reflection.

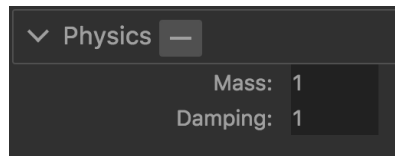
## Geometry Settings

- Set the size of the object by choosing either the width `w:` or height `h:`.
- To change the width and height independently click the  icon first.
- The position of each object is set by choosing `x`, `y` and `z` values.
- If two objects have the same `z` value, the one which has been added later will be placed in front of the object already in the scene.
- Objects can also be rotated about the `z`-axis. Positive angles rotate the object counter-clockwise, negative angles clockwise. The center of the rotation is always the center of the material and not the object.



## Physics Settings

- Click  /  to add/remove a physics animation to/from this object.
- Click the pause/play button in the viewer area to pause/run the physics animation.
- Set the mass and damping of this object for the physics animation. The values for the mass and damping have no physical unit.




### Warning

The physics animation only works properly if the object hasn't been rotated.


## Camera Settings

- **Current:**

Set the current position and zoom of the camera through which the scene is viewed.

Alternatively, the current position of the camera can also be changed by clicking on the  icon and dragging in the viewer area.

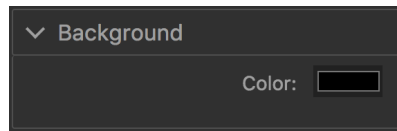
- **Initial:**

Set the initial position and zoom of the camera through which the scene is viewed. Click the  icon in the viewer area to see changes in the initial camera setup.



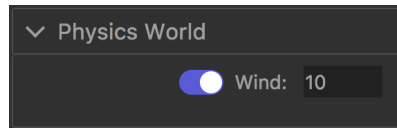
## Background Settings

- Set the background color of the current scene.



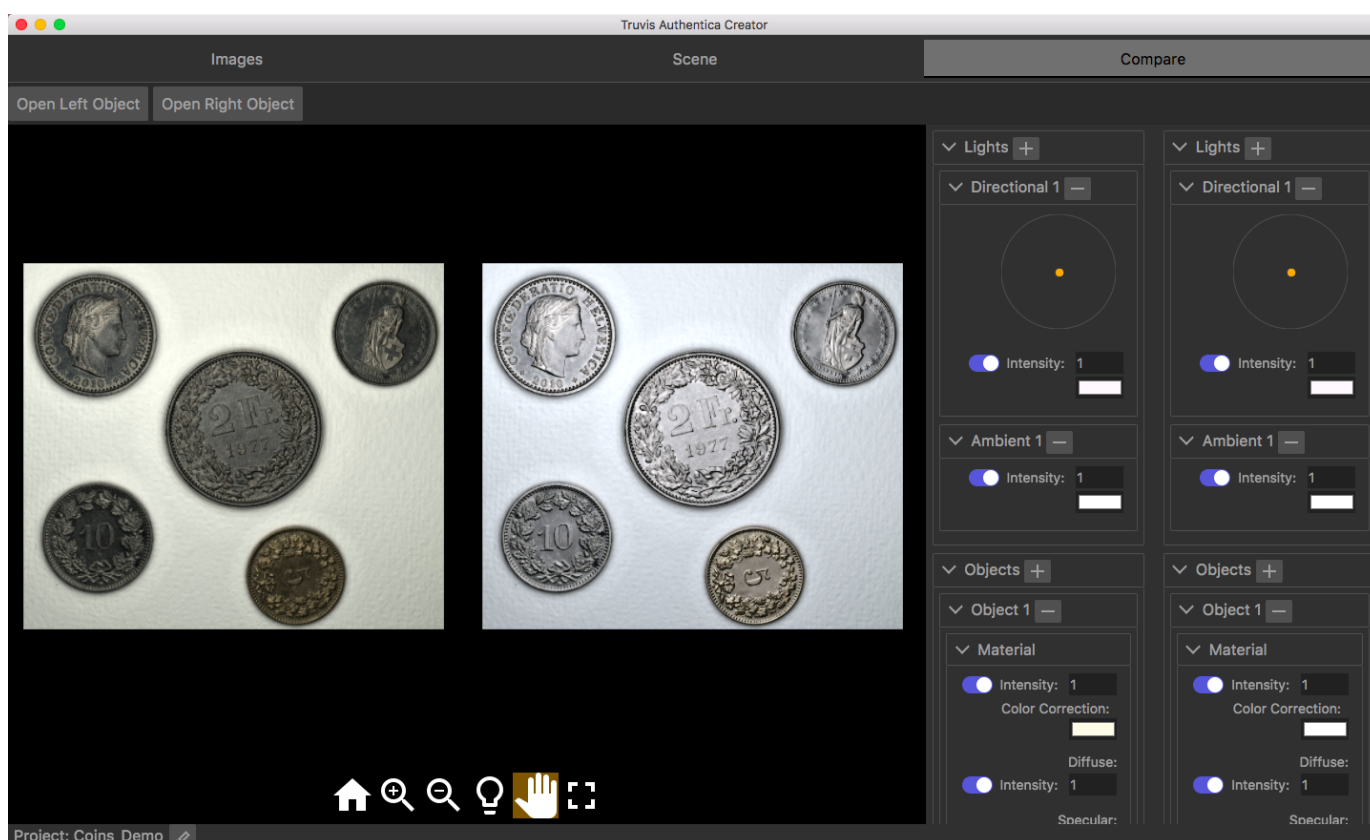
## Physics World Settings

- These are the settings for the physics animation which are applied to all objects in the current scene.
- **Wind:** Set the Intensity of this physics animation.
- In this version of Authentica Creator only one physics animation is available which simulates a cloth flapping in the wind.



# The Compare Tab

In the comparison viewer two objects can be viewed side by side. The lighting situation for both objects is synchronized.



## Open Objects

- Click the `Open Left Object` and `Open Right Object` button to load two objects into the viewer.
- You can now change the lighting situation for both objects simultaneously and compare the objects under identical lighting conditions.
- The object settings can still be changed for each object independently. This can also be helpful to find optimal [material settings](#).

# Advanced Color Management

If highly accurate color reproduction is a top priority for your application, you might consider applying color profiles before generating materials in Authentica Creator.

## Create a Color Profile

- Acquire a RAW image of a color checker with the modelling light mode of your illumination device (e.g. for the Truvis Helios S53: repeatedly press the 'MOD/SEQ'-button until it has a blue color. All LEDs should be active now.).
- Open the RAW image in a RAW converter of your choice and convert save it as a TIFF image.
- Save the settings you used for this conversion as they are needed again [later on](#).
- Use a program which can generate color profiles like [basIColor](#) to generate a ICC color profile. Alternatively you can also generate a ICC color profile [online](#).
- Place the ICC file in ".../System/Library/ColorSync/Profiles/".

## Apply a Color Profile

- Convert the 48 acquired RAW images of the object to TIFF images using exactly the same settings as used for the conversion of the color checker image.
- Open the 48 TIFF images in Photoshop or any other image processing program and assign the color profile to these images. In Photoshop you find this option under Edit -> Assign Profile.
- After you have assigned the profile you have to convert the profile of the 48 images to sRGB. In Photoshop you find this option under Edit -> Convert to Profile.
- Save the 48 images. They are now ready to be processed in ACreator.
- There is also a way to use this procedure on a batch of images. See this [page](#) and/or [this one](#).

# Import 3<sup>rd</sup> party PTMs

Authentica Creator also supports the import of PTMs generated with 3<sup>rd</sup> party tools such as RTIBuilder. Currently we support PTMs of type LRGB in the binary .ptm format.

For information on how to import Authentica Scenes, Objects or Materials generated with Authentica Creator on other devices, see [Import a Project](#).

## Import a .ptm file

- To import a .ptm file choose Tools -> Import PTM from the menu bar.
- In the resulting pop-up, click 'Choose File', locate the .ptm file you wish to import, and then click 'Open.'
- Under 'Name', specify the name that should be used for the imported file.
- Click 'Import'

The .ptm file will be imported as a Authentica Material, Object and Scene into your current active project. You can now use these files in the same way as other files generated with Authentica Creator.

# Custom Calibrations

Authentica Creator comes with a list of already included calibrations for officially supported illumination devices. Currently these consist of the Truvis Helios S53 and the Broncolor Scope D50.

For generating Authentica Materials from image sequences which were captured with other devices or with manual positioning of the light sources (e.g. Highlight RTI Method) Authentica Creator supports the use of a custom calibration file. Such a calibration file describes the number and direction of the light sources. We currently support two different formats: the LP (.lp) file format, and the JSON (.json) file format. These formats are described in more detail further below.

## How to use a custom calibration file

- Follow the instructions on how to [generate a digital material](#). In the pop-up dialog select 'Custom Calibration' as 'Device'.
- Click 'Choose File' and locate the .json or .lp file you want to use.
- All other steps and settings for creating a digital material are described in detail under the general instructions at [Generate a digital material](#).

## How to generate a custom calibration file

There are two main ways to generate a custom calibration file. Either through the 'Highlight RTI Method' by placing a reflective sphere in the image or by calculating the directions of the light sources directly from the known geometry of a illumination setup.

For generating a .lp file from images of a reflective sphere, tools such as RTIBuilder can be used. See [RTIBuilder by CHI](#) and [Guide to Highlight Image Processing by CHI](#)

When dealing with a illumination setup with known light positions, please refer to the description of the supported calibration file formats below.

## The LP (.lp) calibration file format

The LP file format is used in different tools for generating RTI data, among others also the RTIBuilder software. It is a simple white space separated text file. The first row has only one column consisting of a number N which indicates the number of images in the image sequence. The following N rows consist of 4 columns each. Each row is associated with a image in the corresponding image sequence.

The first column holds the path to the corresponding image from the image sequence which was used to generate the calibration file.

### Warning

Note: The first column holding the image path is ignored in Authentica Creator. Authentica Creator assumes the rows in the file to be sorted alpha-numerically by the file names of the individual images. This is consistent with the standard behaviour that results from generating a .lp file with RTIBuilder. Authentica Creator will read the images in the image folder provided through the graphical user interface also in alpha-numerical order and in this way associate each of them with the corresponding row in the .lp file. This allows to reuse a calibration for multiple image sequences, assuming the geometry of the illumination setup does not change. Images of the reflective sphere need only be captured once for calibration, and not subsequently on all images of the objects of interest.

The following 3 columns hold the x-, y- and z-components of the (normalized) vector describing the direction of the corresponding light source.

The filename's extension needs to be '.lp'.

For illumination setups with fixed geometries we recommend capturing an image sequence of a reflective sphere once, placing the sphere in the center of the image, and then generating an LP file with RTIBuilder.

Example file exampleCalibration.lp:

```
4
/Users/Thomas/rtiSequences/sequence42/image_01.tif 0.7071067812 0.0 0.7071067812
/Users/Thomas/rtiSequences/sequence42/image_02.tif 0.0 0.7071067812 0.7071067812
/Users/Thomas/rtiSequences/sequence42/image_03.tif -0.7071067812 0.0 0.7071067812
/Users/Thomas/rtiSequences/sequence42/image_02.tif 0.0 -0.7071067812 0.7071067812
```



This example file has 4 light sources positioned above the x- and y- coordinate axes at a constant height resulting in 45° angle with the x/y plane.

## The JSON (.json) calibration file format

The Authentica JSON file format for describing the light directions is a simple text file in JSON notation. It holds a single JSON array, with a number of items equal to the number images in the sequence. Each entry holds the x-, y- and z-components of the (normalized) vector describing the direction of the corresponding light source.

Authentica Creator will read the images in the image folder in alpha-numerical order and in this way associate each of them with the corresponding item in the array.

The filename's extension needs to be '.json' or '.JSON'.

Example file exampleCalibration.json:

```
[
  {
    "x": 0.7071067812,
    "y": 0.0,
    "z": 0.7071067812
  },
  {
    "x": 0.0,
    "y": 0.7071067812,
    "z": 0.7071067812
  },
  {
    "x": -0.7071067812,
    "y": 0.0,
    "z": 0.7071067812
  },
  {
    "x": 0.0,
    "y": -0.7071067812,
    "z": 0.7071067812
  },
]
```

This example file has 4 light sources positioned above the x- and y- coordinate axes at a constant height resulting in 45° angle of the light direction with the x/y plane.

# FAQ

## **Problems with Umlaut on Windows**

On Windows operating systems no umlaut or other special characters can be used in any names for files or folders.