

# Google Earth Studio

Google Earth Studio is a powerful software to create animated tours on scenes derived from the Google database of maps and aerial pictures. It mainly addresses web designers and video makers who wish to add some further effects and animations in Adobe After Effects. Since its release it is still published as a beta version. To use the software a registration and an online request for activation is required, which will normally be granted in less than a day. There is no installation process. The software runs on the Google Chrome browser, which must be the latest version. A high speed internet connection is required.

As no anaglyph conversion is available, you must be able to view two separate windows at the same time and at the same size. I recommend to open two browser windows side-by-side on a large monitor or TV-screen and to view them through a stereoscope.

(one of the very few buying sources: <https://nvp3d.com/en/shop>)

Using two beamers gives even better control on the stereo view, but has disadvantages in handling.

For initial training I recommend the following tutorials:

<https://www.youtube.com/watch?v=auQygdWqXqk> (Entry Level)

[🌐Easy MAP Animations with GOOGLE EARTH STUDIO🌐](#)

[Google Earth Studio - Creating Awesome GeoAnimations](#) (a little lengthy)

[Skillboard: Google Earth Studio Luftaufnahmen mit animierter Route](#) (German, part 1 is sufficient)

For stereoscopic animation it is important, that the reference (left) track is as simple and smooth as possible.

Therefore and for a hassle free start I recommend to use the Quick Start templates, which are accessible via the "Blank Project"-arrow. Not all of them are suitable for 3D:

- 1.) Zoom-To from above: unusable, because alterations to the track parameters cause unpredictable rotations in the scene.
- 2.) Point-to-Point: Only useable for 3D animation if the distance between the two points is short. As the camera target is moving, rapid movements of the whole scene may occur, which are difficult to synchronize. Steep or vertical viewing angles should be avoided as they cause the same problems as in 1.)
- 3.) Orbit: The easiest track to synchronize in 3D.
- 4.) Spiral: It combines a slant track with an accelerating rotation. Creating a parallel track is a bit more time consuming.
- 5.) Fly-To and Orbit: A slightly curved slant approach plus a level orbit. Allows great stereoscopic effects with a medium amount of work. My favourite.

## The Google Earth Studio Workspace:

@ General rule: All manipulations performed in a certain scene come into effect only, when a key frame is set. Moving the timeline cursor prior to setting a key frame will delete all

previous inputs. (This does not apply to modifications performed on the attribute parameter curves in the timeline section. They have an immediate effect which can be undone via CTRL+Z.)

@ Attributes:

- Camera target: mandatory for 3D animation. Should be set to ON with influence at 100%. Other values might cause erratic camera movements.
- Field of view: If narrow values are used, objects in the far distance will bleach out.
- Time of Day: Changes color only, but not the position of the shades. Allows beautiful animated spangled-sky-scenes.

@ Icon "Change viewport layout": a second window is opened which depicts the track of the camera and the camera target on a Google Maps base. Changes to all horizontal track parameters can be made here, but as inputs are coarse I recommend to use this window for information only. High internet data rate is demanded with two windows open.

@ Easing Function: It is used to smoothen the motion of the camera or any other selected attributes when passing over a key frame. A right click on one or more selected key frame parameters opens the easing menu.

@ Attribute parameters: clicking on one of the attributes opens/closes a value graph which shows the change of the attribute parameter values (e.g. latitude) over time. If a key frame was provided with an easing, the corresponding point on the curve shows two handles (splines) which allow to smoothen the curve. Stretching or shortening the handles (mouse) changes the effect of smoothening over time. As a general rule the end points of these handles should be on the same side of the curve to provide a smooth rate of parameter change. Selecting the "Speed Graph" Icon shows a curve which represents the rate of change of a parameter value (not the value itself).

Checking the parameter curves prior to the final rendering is important, to ensure a smooth and stutter free video motion.

@ Animation / advanced / enable Logarithmic Altitude

### **Moving the scenery:**

**By Mouse:** (LMK/RMK = left/right mouse key)

LMK + drag = linear movement (horizontal direction: scene rotates around a vertical axis in the middle of the screen in very far distance)

ALT + LMK = turn/tilt around cursor position (anchor circle, must be placed on an object on earth)

CTRL + LMK = turn/tilt camera

Mouse wheel = zoom in/out on cursor position

(Fine adjustment: RMK + up/down, zoom center is displayed as anchor circle)

SHIFT+ mouse wheel= height above ground

(Fine adjustment: SHIFT + RMK)

Click on camera target, then ALT + LMK = move camera target

### **By Keyboard:**

Arrow Keys ←, → = single linear step L, R (coarse)

Arrow Keys ↑, ↓ = step forward, backward

CTRL + Arrow Keys = turn/tilt camera

SHIFT + Arrow Keys = turn/tilt around image center

F = full screen mode ON/OFF (caution: parts of the scene will be cropped at top and bottom)

## Timeline control:

Zoom in/out: drag yellow handles on scrollbar at the bottom.

Double click on scrollbar: reset to full scale.

B / N = set start-/end-frame

CTRL + ←, → = Jump to start-/end-frame

J / K = Jump to previous/next key frame

Selecting part of a tour and adjusting timeline:

Place a key frame on the first and last frame of the new scene / mark and remove all other key frames outside the new time interval / mark the new scene and drag it to the beginning of the timeline.

Select File / Project Settings / Duration: set desired project length / Leave the tick box open / Done

## Workflow:

### Create the left tour:

@ If PC capabilities are available select 4k and 50/60fps. The results are much sharper and smoother. Maximum resolution is 4096\*2304px

@ for greater precision reduce the speed of the mouse cursor in Windows preferences.

@ Save the project under a new name + \_L

@ reduce high speed movement or high rates of change by extending the duration of respective parts of the tour (shift respective key frames on timeline).

@ keep vertical or slant movements to a minimum as synchronisation with the right tour is complex. Vertical misalignment causes strain to the eyes.

@ always set the camera target function to ON, 100%.

@ Check the tour for smooth reproduction:

- No key frames in immediate proximity to each other
- Auto-Ease for all Parameters: Mark all key frame parameters / RMK / Auto-Ease
- Check attribute parameter curves and smoothen them out where necessary.
- Check that numerical altitude values of camera position and camera target remain constant during level portions of flight.
- Save the project.

### Create the right tour:

@ open a second instance of Google Earth Studio (SHIFT+LMK in task bar).

@ Open the left project on both instances.

@ Drag timeline- and scene- workspace to the same size.

@ Save the right project as "name + \_R"

@ Activate Guides: View / Guides / Thirds

@ Set the timeline cursor to an existing key frame.

@ Optional: Identify a prominent point in the foreground of the scene and note the horizontal distance to any vertical guide line. \*)

@ place the mouse cursor at the bottom of the scene and drag the scene horizontally to the left. Observe that the displacement takes place mainly in the foreground. \*\*)

Do not exceed 1/30<sup>th</sup> of the screen width.

@ Check stereo view and correct alignment.

@ Check that altitude values for the camera position in the left and right track are identical. If necessary copy and paste the numerical value from the left to the right track. This action creates a camera position key frame.

@ Set a key frame.

@ Move the timeline cursor a little bit and set it back to the processed frame. This causes the camera target to be shifted back towards the center of the picture. Nevertheless the disparity to the left scene is retained as the background of the scene is shifted as well. See \*\*).

@ During video reproduction violating the stereo window is not as critical as with still photos.

In case of a significant violation of the stereo window perform following steps:

- Estimate the displacement of the point identified in \*) to its original position.
- Set a new camera target left of the existing one (place the cursor + RMK => "set camera target"). Avoid errors in height.
- The distance between the new and the old camera target should be roughly half of the a.m. displacement and depends on the distance of the camera target from the foreground.  
Some trial and error might be necessary. (CTRL+Z)
- As a result the scene is shifted again towards the background.

@ Check and compare the attribute parameter graphs on both tracks. They may show an overall displacement (except altitude values), but no sudden changes. Use the easing handles to smoothen the right track. In case of discrepancies the correct stereo image should be the governing factor.

@ Repeat the process for all existing key frames.

@ CAUTION: the undo/redo-cache in the browser is limited. If many corrections are performed, the program may crash completely and without warning. Save the actual state of your work from time to time and restart the Chrome browser!

@ On both tracks move the cursor on the time line to a frame in the middle between two existing key frames. Place a key frame on the left track and copy its parameters to the same frame on the right track.

@ Check that altitude values are corresponding.

@ Apply corrections as required. Always start with linear movements: forward-backward / left-right.

@ If a rotational error must be corrected perform the following steps:

- identify two corresponding points with the same height on the screen.
- place the cursor close to this point and hold ALT + LMK.
- correct the rotational error. Avoid tilting the scene. If necessary match the numerical height values manually.
- Check desired stereo view. If necessary correct the horizontal displacement.

@ If everything gets wrong and you are lost in space, copy and paste the key frame parameters from the left track and start the corrections from the beginning.

@ Except from setting key frames stick to the rule: NEVER TOUCH THE LEFT TRACK.

## Rendering

Rendering of picture sequences is done on the computer. 350 pics in 3840\*2160px resolution = 1,93 GB. During rendering the browser window must remain open. If a new tab is opened or another program with high CPU demand is started, the rendering is paused. Rendering on two instances of the Chrome browser is possible. The pics are stored in a "footage" folder in the specified directory.

Mp4 videos are rendered in the Google Cloud: 350 frames at 4k resolution = 72,4MB only (!) You can observe the rendering progress in Animation / Cloud renders. Moreover you will receive an E-Mail to your Gmail account as soon as the video is ready for download from the cloud renders menu.

Displaying the Google logo and additional information is part of the game and must not be suppressed.

### Adjustment of a picture sequence with StereoPhoto Maker:

- File / Multi Job / Multi Conversion: open L-Folder / mark all desired pics.
- Input File Type: Independent (L/R)
- Tick right image folder and specify location.
- Output File Type and Format: independent L/R
- Adjust: Tick Auto alignment and specify alignment setting. Use Internal Code and precision alignment. Mounting method "deviation (%)" of the image width" is recommended with deviation 2,5% -3,5% depending on the size of the projection screen (large screen = smaller value)  
Tick Auto Crop after adjustment
- Edit: Tick Resize / 1920x1080 or 3840x2160 / keep designated size / Absolute
- Output Folder: specify as desired.
- Convert All/Selected Files with Multi Job.

### Create left and right video stream with Windows Video Editor: (included in Windows 10/11 Fotos App)

Open Video Editor / New Video Project / create name / add / from this PC / select picture sequence / mark all / open / ...wait... / drag and drop into storyboard / mark all pictures (CTRL+A) / RMK / duration: set 0,03s for 30fps / finish, export video / select quality / export / select destination folder / export.

Have fun and success using this fascinating piece of software !

Thomas Unterholzner

P.S. For feedback, amendments, new ideas, recommendations etc. send me an email:

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