



Moving hotspots for 360° video -trial- information

Welcome and congratulations!

You just downloaded the first, as far as i know, publicly released moving hotspot player and editor. This is a free trial version with two 'timelines' and a watermark. There are no other restrictions. I would advise to read this whole paper to understand the idea and then have a try, put in your own video, hotspots, code and be creative!

Before you start!

Open the index '**Player**' folder with 'firefox or 'chrome'.

There you see an example. Three things are hapening. There are some villa's for sale, there is a small conversation in the cockpit. And some 'funny' shadow on the rocks during the conversation.

Startup

I would recommend the following steps to get started.

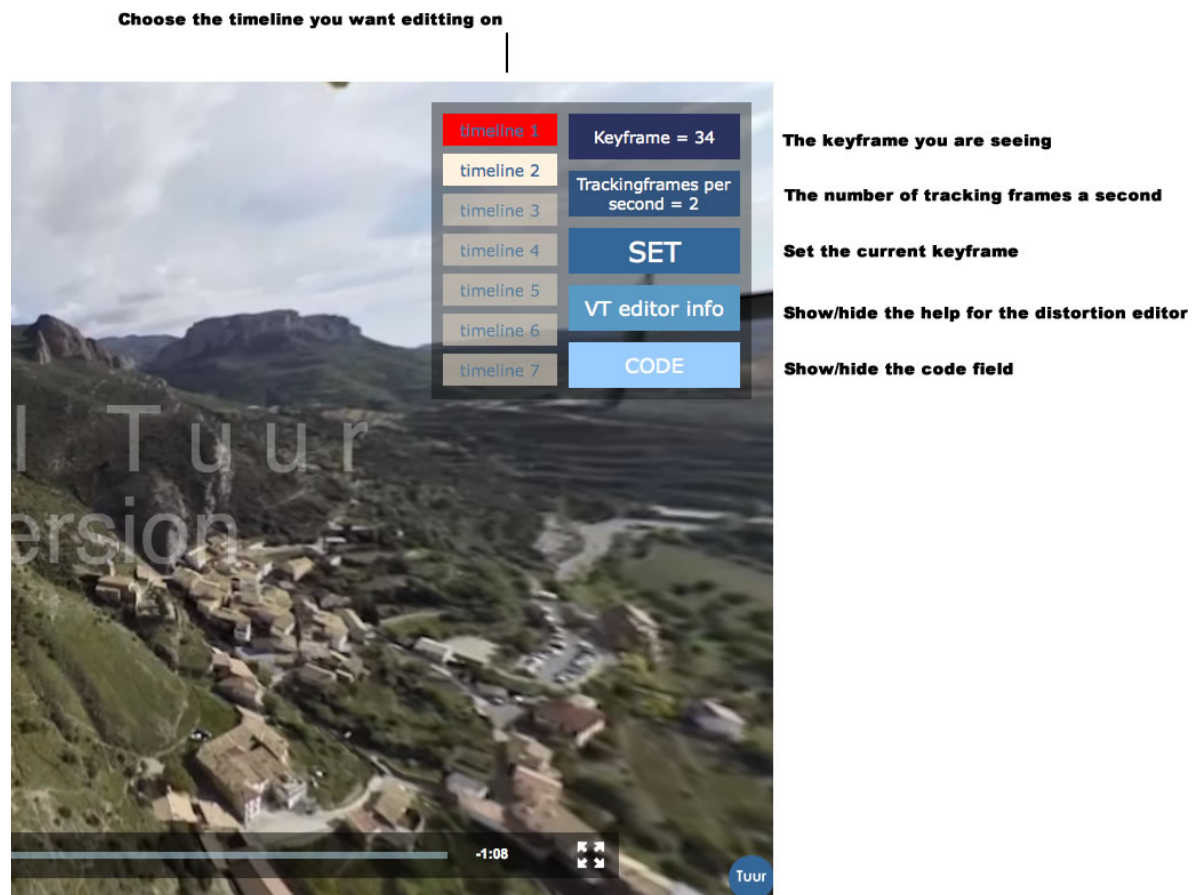
- Copy the video in the video folder of the Player to the video folder of the editor!
- Look into the '**Editor**' folder and open the index local with Firefox or Chrome.
- Make sure the button 'timeline 1' is red, for this first time.
- Drag the hotspot to a certain point you like to follow or 'track'.
- Press space bar. You see the video move a bit. And the '**SET**' button will lit green for a moment.
- Drag again and spacebar again, drag again and spacebar again etc etc.
- When done:
 - Press the '**code**' button,
 - Look at the number of the first '**tpoint**' and remember that,
 - Sellect all, (cntrl+A or cmd+A) and then copy (cntrl+C or cmd+C),
 - When you have all selected you see the last 'keyframe code line, remember that last '**tpoint**' number aswell.

Let's say for now that you have done trackingkeyframe/tpoint 10 to 20.

- Open 'timeline1.xml', select '**tpoint**' 10 to 20 , past and save.

Congratulations! You have set your first moving hotspot for 360 video.

Open the 'settings.xml' and set _Edit to 'false',save that and refresh the brouwser page. You should now see the result.



Tips and tricks

I will try to give some guidelines a screenshot with comments for comfortable use, some tricks and tech info, and some things that could go wrong when you forget something to set right.

Ok, you just did the first hotspot. But you could do two, ten or 50 of them in the same run.

Think with me:

We just did the first test and we are gonna delete it. So we want a clean but filled, and right numbered timeline.xml. We could do 'undo typing' (cnt+Z or cmd+Z), but when you restart the computer... So you go here: http://www.virtualltuur.com/360keyframe_generator and you fill in the form.

The video is 1 minute 25 seconds.. let's say **100** seconds.

We like to track with **2** keyframes a second.

We want 'empty' keyframes for **timeline** number **1** because that one we did populate with some tracking information for positioning, distortion and scaling, and we want to start from scratch. I'm sure you will appreciate this link in the future. (But you can also simply make your own. And if you want i send you a copy of an small index and a php page...

Send .. select all – copy – go to timeline1.xml – select all – paste.

Now we start from scratch and we make some big steps, which will optimize your workflow a lot.

Go to settings.xml and set in de 'vtmh_vars' action:

- the _Edit var to true.

Refresh the browser and go.

- drag the hotspot to the shadow of the helicopter on the rocks.
- place your mouse just above the control bar and keep the 'S' key on your keyboard for some time.. you scale down. When you want to scale up you just move your mouse above the horizontal middle line of your browser screen and press the 'S' again.. The closer you come to the horizontal middle line, the slower the 'distortion' will go. So if you want to make the hotspot just a little bit bigger: place your mouse just above the middle line and press 'S'.
 - s for scaling
 - y for Y rotation
 - x for X rotation
 - z for Z rotation
 - r for RESET, all distortion set to 0
- press spacebar

Do this for a frame of 10 – 20 and then click on the 'CODE' button. Remember de first and last tpoint, select all, copy, and past on the right place in your **timeline1.xml**.

Go back to the browser. DON'T REFRESH!!!

Now we will set the same hotspot graphic on the same timeline, but on a different moment.

- drag the video with the grip to another point in time in the video
- open the 'code field', 'clean' and close it again. by clicking on the code button. (which does nothing else then showing or hiding the textfield)
- Set your hotspot as you like. Press space... and again and again ...etc
- When finished, don't forget to **set** the last frame with the spacebar!
- Remember the numbers - copy the code and paste it in the right place in the **timeline1.xml**

May be do this procedure one more time... And lets call them, in movie terms, 'Scenes.

- Then click on the '**timeline 2**' (tracking hotspot 1 = timeline 1) - Clean the code field - and place your hotspot, spacebar, place hotspot, space etc etc .. but for this example we gonna place the hotspot during, aproximatly, the same time in video as we did in/with 'timeline 1'. Just have fun to get used to the procedure.
- Do this also 2 or three times, preferably on aproximatly the same times in video as you did with the first hotspot/timeline...
Don't forget between each 'Scene' to copy your code to the right timeline xml. In this case **timeline2.xml** now.

Done

we have 4-6 moving hotspots, maximum 2 at the same time in this free trial.

- Make sure you saved the timeline.xml's
- Set in the 'vtmh_vars' action the _Edit to false (settings.xml) and save.
- Refresh the browser and watch the result.

Very simple and probably the most boring example. But.. we did it.

I will explain you first why i set it up like this and then i will give you code examples etc . I'm sure you will see what the possibilities are and that it's more simple then it seems.

I made this tool to do just the job and give you freedom as much as possible. We are gonna talk about movie terms like scripts and scenes and scenario. You will soon realize that with only these two timelines you can do already very very much. And i think in most cases you don't even need more. I tried to take a lot of mouse clicks out and made the setting of the frames accurate and quick.

Let's change some things in the code:

Ofcourse you want your own hotspot graphics etc etc

this is the krpano <scene> in the scenes.xml of the editor:

```
<scene name="scene_1" title="ret" onstart="TimeLines();" >
  <view hlookat="220" vlookat="10" fov="90" fovmin="10" fovmax="120" limitview="on" />
  <image>
    <sphere url="plugin:vtmh_video1" />
  </image>

  <hotspot name="trackinghtsp_1" url="../skin/villa_1.png" style="vtmh_trackinghtspstyle" zorder="5" />
  <hotspot name="trackinghtsp_2" url="../skin/villa_1.png" style="vtmh_trackinghtspstyle" zorder="5"
  alpha="0.4" />

  <hotspot name="editspot" url="../skin/villa_1.png" style="vtmh_trackinghtspstyle" zorder="5"
    ondown="vtmh_draghotspot();" onup="set(ath, get(infinite_ath));" />
</scene>
```

- Change on the two places where the red is **villa_1** to **hello** in the scenes.xml.
- Save.
- Look again.

One of the hello hotspots is now a textballon.

That is because <hotspot name="trackinghtsp_2" url="../skin/ **hello**.png"

In the <hotspot name="editspot" we also changed it to VT. That will give us in editor mode the hotspot that we will edit.

So **it's better to first make sure you set the url of the editspot to the graphic you want to use for your tracking hotspot and then start 'setting keyframes'!!!** The **editspot** is the hotspot you see in edit mode.

I would suggest you do the following:

- Make 2 hotspot graphics.
- If you like, put your own video in the video folder and make sure the path and url are right. You find the video player of the editor in the settings.xml.

```
<plugin name="vtmh_video1"
  url="../plugins/videooplayer.swf"
  videourl="../video/guardia_civil.mp4"
  keep="true"
  ...
```

- Set the first hotspot 'movie scene' with the editor. Save the keyframe data to xml.
- Change the url of the **editspot** to the graphic of your needs. Save and refresh.
You only have to click on the 'hotspot 2' button if you need a second hotspot at the same time!

Finish your small project and copy 'timeline1.xml and timeline2.xml in the '**Player / code**' folder, where all the xml's are. (If you want to keep the example just copy that whole folder, maybe call it 'example' and then change things.)

Open the index in the **Player** folder to see the result in the 'project'.
In this folder i put the '**default krpano video interface example**', with some **small modifications**. (The 'Edit tool' is not available in the player folder!)

- These should be also 'included' in the tour.xml, or you should put the code or some code in your own files:

```
<include url="engine.xml" />
<include url="settings.xml" />
<include url="scenes.xml" />
<include url="timeline1.xml" />
<include url="timeline2.xml" />
```
- Call `vtmh_vars()`; in the 'startup' action.
- Call `TimeLines()`; in the onstart of your scene
- Make shure the hotspot graphic files are in place and that in the krpano scene the tracking hotspots are there.

```
<hotspot name="trackinghtsp_1" url="../skin/VT.png" style="vtmh_trackinghtspstyle" zorder="5" />
<hotspot name="trackinghtsp_2" url="../skin/hello.png" style="vtmh_trackinghtspstyle" zorder="5" />
```

That's it.

Now we can go build a story or get some nice effects.

I would advise to do this fully in the 'editor tool'!

For a story we need a scenario and a script.

The scenario we do with quotation in the timeline xml's and in the 'Skript' action. It makes it much more clear when you have more things going on.

Small fictitious example:

```
<keyframes1 name="tpoint2" />
<keyframes1 name="tpoint3" />
< ! - John says high to the girls - - >
<keyframes1 name="tpoint4" ath="-157.65876602886664" atv="2.892482719411432" scale="1.00000" rx="0.00000"
ry="0.00000" rz="0.00000" />
<keyframes1 name="tpoint5" ath="-152.84680498972767" atv="3.9952204691803037" scale="1.00000" rx="0.00000"
ry="0.00000" rz="0.00000" />
<keyframes1 name="tpoint6" ath="-149.56874739091884" atv="5.343251821580155" scale="1.00000" rx="0.00000"
ry="0.00000" rz="0.00000" />
.....
```

We see 2 empty keyframes, a quote, and 3 filled keyframes.

The script we do in the '**Skript**' action in the settings.xml.

I will show you after having said that you/i could build an whole interface to give you all possibilities but i think you have the most freedom when you do it just in code.

I would advise to use the following methode and syntax in the **Skript** action.

```
< ! - John says high to the girls - - >
    if(vtmh_tpoint GE 4,
        if(vtmh_tpoint LE 6,
            set(hotspot[trackinghtsp_1].url, skin/hello.png);
        );
    );
```

So between 'tracking frame' 4 and 6 the state of the trackinghotspot 1 is:
`url, skin/hello.png`

Now look at these 2 possible scene's in the script:

```
if(vtmh_tpoint GE 10,
  if(vtmh_tpoint LE 15 ,
    set(hotspot[trackinghtsp_1].visible,true);
    set(hotspot[trackinghtsp_1].html, 'Hello sir, what are you doing?');
    set(hotspot[trackinghtsp_1].backgroundcolor, 0xFFFFFF);
    set(hotspot[trackinghtsp_1].css, text-align:center; color:#112C62; font-family:Verdana; font-weight:regular; font-size:24px; display:block; width:100%; );
    set(hotspot[trackinghtsp_1].ondown,plugin[vtmh_video1].pause();js{showsecondscreen();}wait(1);
    set(layer[closespot].visible, true);
  );
);

if(vtmh_tpoint GE 17,
  if(vtmh_tpoint LE 25 ,
    set(hotspot[trackinghtsp_1].visible,true);
    set(hotspot[trackinghtsp_1].html, 'Hello my son, i am trying to catch some nanocopters, look [u][i] HERE[/i][[/u]]');
    set(hotspot[trackinghtsp_1].backgroundcolor, 0xFFFF00);
    set(hotspot[trackinghtsp_1].css, text-align:center; color:#112C62; font-family:Verdana; font-weight:regular; font-size:18px; );
    set(hotspot[trackinghtsp_1].ondown,plugin[vtmh_video1].pause();openurl(http://www.kickstarter.com/projects/1387330585/hex-a-copter-that-anyone-can-fly/widget/video.html\_blank);
  );
);
```

We can conclude that:

- the hotspot `trackinghtsp_1` in this time of the video is **one** normal krpano textfield,
- That we can change the state of the hotspot completely, for example to an distorted video or just a graphic, any time in the video.
- That tpoint_16 is not filled. So then we will see no hotspot.
- The hotspots are clickable, open an link or trigger an javascript function or krpano action, pause the video and look different.

Lets have a quick look to the timeline xml that could triggering that Skript action.

```
<!-- Hello sir.. -->
<keyframes1 name="tpoint10" ath="-21.729582258137327" atv="0.8847675208249834" scale="1" rx="0" ry="0" rz="0" />
<keyframes1 name="tpoint11" ath="-21.729582258137327" atv="0.8847675208249834" scale="1" rx="0" ry="0" rz="0" />
<keyframes1 name="tpoint12" ath="-19.29715956180371" atv="2.4107806434200225" scale="1" rx="0" ry="0" rz="0" />
<keyframes1 name="tpoint13" ath="-17.239180600414954" atv="3.173568529224568" scale="1" rx="0" ry="0" rz="0" />
<keyframes1 name="tpoint14" ath="-13.827066414406374" atv="0.7540201153532656" scale="1" rx="0" ry="0" rz="0" />
<keyframes1 name="tpoint15" ath="-17.261469306759864" atv="0.12606023936601388" scale="1" rx="0" ry="0" rz="0" />
<!-- Hello my son -->
<keyframes1 name="tpoint16" />
<keyframes1 name="tpoint17" ath="-61.14751273803563" atv="12.94848601317699" scale="1" rx="0" ry="0" rz="0" />
<keyframes1 name="tpoint18" ath="-61.14751273803563" atv="12.94848601317699" scale="1" rx="0" ry="0" rz="0" />
<keyframes1 name="tpoint19" ath="-61.14751273803563" atv="12.94848601317699" scale="1" rx="0" ry="0" rz="0" />
<keyframes1 name="tpoint20" ath="-59.69737641458357" atv="14.246159231895385" scale="1" rx="0" ry="0" rz="0" /> ..
```

I leave frame 16 (tpoint16) empty so that i can change the position and function from the hotspot freely. So i have a conversation going on with just one timeline/tracking hotspot. When i would not leave frame 16 empty the hotspot would move visible from person 1 to 2. As you see at the **ath value**, person 1 is at aprox -20 and person 2 is at aprox -60.

Imagine what you can do!

And then imagine what you can do with **7** timelines!!

I would build it fully in the editor. And when finished, just copy the timeline xml's in the '**Player** / code' folder which stands for ' your own project' with your own interface design etc... The 'Skript' action you copy in/over the one in the settings.xml.

For the moment it is not possible to use different tracking rates/speeds per timeline, but that is on top of my list. And i hope i can implement that before the first release.
If not then it hopefully comes quick in the first update.

I will also provide soon an example that shows how to do in 'krpano scene 1' a tracking hotspot and also one in 'scene 2'.

For masking, which is great but a bit complicated, you need 2 timelines. One for your graphic and one for the mask.

So with 7 timelines you could do 3 masking events and another hotspot 'thing' **at the same time**. And you could do that for example 20 times 4 frames in a video of 1.5 minutes... depends on the time in seconds that you need for the masking to happen offcourse.. It's a job though, to make that. But you will see that; once you know, it can be done rather quick. It could be heavy on the processor though.

I find around 10 tracking frames per second a point that it gets a bit less stable in the editor. It could happen with higher tracking rates that when you press the space bar that it keeps running...

Just copy the code to your timeline xml quick and stop the video, drag it back to the point where it went 'wrong', maybe search with the space bar (not to quick!!) for the exact right keyframe to set and then clear the code list and go on with placing the hotspot and spacebar...

But i also have done some 24 frames a second tracking without any problems.

I have an idea how i possibly could make that better, but then i have to re-write a important part of the base code of the tracking. And that needs some time, brainwork and testing.

With a high amount of trackingframes you can be very accurate or follow a fast moving object, but it could also look very 'nervous'. With 2 trackingframes per second it will look much more smooth.

Every project has it's own needs, but i think you will use 2 frames a second most of the time.

So much text... sorry for that.... but i hope it helps you to understand the procedure and why it is so.. and i hope you appreciate the freedom you have in the code to do nice and special things with masks, distorted video , graphics, animated hotspots .. etc etc

I hope you have fun with this trial, your own 360 video and your own hotspots.

You need some krpano code experience, but i think it is 'easy' to do things nice, quick and easy. The full package, with 7 timelines and no watermark will be released very soon for a good price.

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I would appreciate reaction, tips, bug reports, results etc etc.

Just contact me at virtualtuur@gmail.com

Or find me on facebook or krpano forum

Enjoy!

Arthur van den Enk (Tuur) | www.virtualtuur.com