MOVING A TARGET CAMERA ALONG A PATH

Making a target camera
Target cameras are provided as default items in many programs but in Blender you’ve got to make your own. Fortunately this is a simple process, and once done you can save the resulting target camera in a new default startup file.

A target camera is simply a camera that looks at another object - in this case, an empty object. Empty objects in Blender have no properties other than location and default appearance (cross, sphere, cube, etc) in the 3D window. An empty object that is the target of a camera gives you much easier and more accurate control over what the camera sees. Moving a target is faster and simpler than rotating a regular untargeted camera. The target can be animated to follow a moving object and can jump instantly to create what looks like a cut between scenes.

Exercise
Open up a Blender scene and create a camera. Name this appropriately: here I’ve called mine z-cam.main. Then create an Empty object from the Shift_A primitives menu and call that something like z-cam.main.target. This ensures that the target will be immediately under its camera in the Outliner list.

Next we want to make the camera a child of the target, but in a particular way. The order of selection before we do this is important. First we select the child (or children) using Shift_RMB and finally we select the parent, which in this case will be the Empty object. The children will be highlighted in orange and the final one selected (known as the Active object) will be highlighted in yellow.
Then hit Control_T and choose Track to Constraint.

The camera will jump to look at the target object. As you move the camera, it will continue to look at the target. As you move the target, the camera will rotate to follow it. Both the target and the camera can be animated as needed and they will keep this relationship. You can also animate the influence of the target on the camera in the Constraint tab with the camera only selected.

Moving the camera along a path
Create a Bezier curve from the Shift_A primitives menu. Adjust the handles and nodes until you have a curve you like.

Remember that if you change the scale of the curve in Object mode that will affect the way the curve influences anything following it. Make all your edits to the nodes - and you can use S for scale, R for rotate, G for move, and E for extrude another section - in Edit mode.

When you’re done return to Object mode and check that the curve is normalized (has a scale of 1 in all directions) at the top of the right hand fly-in. You can see that with the N key. If the scale is not 1 (mine isn’t) then use Control_A to apply the scale change.
Move the path in side view until it is at a suitable height above the target, which should be close to the ground plane. The dotted blue line shows that a relationship exists between the camera and the target. Now we want to clear all the location data from the camera; in other words, to move it to the scene origin. Otherwise when we add a Follow Track constraint to it that distance from the origin will be added to the distance from the path. The way we remove location data from something is to use Alt_G. When we do this with the camera selected it will jump to the intersection of the X, Y, and Z axes at the center of the scene.

Now add the Follow Path constraint and choose the curve in the drop-down Target box.

The camera will jump to the start of the path - but it will not be looking at the target. This is because the Follow Path constraint is below the Auto Track constraint in the stack. Constraints are evaluated from top to bottom, so the Auto Track constraint that makes the camera look at the target is being over ridden by the second constraint. There is an easy fix for this - move the Follow Path constraint to the top of the stack with the Move Up button (or you can use the Move Down button in the Auto Track panel).
We’re almost there. Now to animate the camera moving along the path.

Check Fixed Position. Now animate the value in the Offset value box by holding the cursor over it and hitting I. The box will turn yellow, indicating that it is keyframed. Move to another time on the timeline by dragging the cursor and change the value in the Offset value box. Hit I again to set another keyframe.

Now when you scrub along the timeline you will see the camera move between the two keyframed values. Note that these values can be normalized (restricted between 0 and 1) by checking the Fixed Position button, but this is not necessary to animate the camera moving.

In this way you can have your camera - and target - moving smoothly or irregularly along a path. It can stay still, jump forwards or back, or move at any speed.

There is a video of this process at https://youtu.be/WDB71zzMs_Y.

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