Advanced Image Synthesizer

he Advanced Image Synthesizer (Synth Image) provides the ability to combine multiple laser content Images into one Image. The Synth is the Image and it should be made up of at least one Image, otherwise it will be invisible. Typically, more than one laser content Image will be inside a Synth image; you can create a Synth Image with only one Image inside it, but by design, the Advanced Image Synthesizer is made to combine multiple laser content images.

The difference between a Capture Image and a Synth Image. A Synth is an Image and is made of Images; all rules of an Image are applicable to a Synth. A Capture is made of Cues; a Capture can include various Cue types including DMX or Beam sequences, but a Capture cannot be used within a Timeline Show.

The base element of a Synth Image is an Item. An Item contains 4 things:

- Image
- Effect
- Settings
- List of Items

The Item is an element of construction that contains multiple Items (same as it is) inside itself. The level of insertion is not limited. The Number of items inside the list is unlimited too. Such construction is similar to the Folders of a file system.

Image

A Synth Image can contain any Image type, including another Synth Image although we do not recommend combining Synth Images. The Main menu "Edit" provides a set of editors similar to the Cue grid "Edit" options.

Effect

The Image+Effect combination is used in many places within BEYOND, and the Synth Image is not an exception. A key to remember is an Effect is applied to an Image and a List of Items. In other words, an effect will modify all Images inside of a current Item.

It is possible to have Items without Images that only contains effects. This the normal use of a Synth Image.

Settings

Location settings can be adjusted for positioning an item within the coordinate system. Time shift

settings allow you to set the time shift for the Images of Effects of an item. Enable/Disable sequencer allows the organization of reactions to audio in, or script executions, and also a simple beat-based sequencer.

Routing

The Synth Image, just as other Image types, has its own routing settings. If you want to display different parts of the Synth Image to different projection zones, you can set the routing settings of the synth while it is empty. Empty settings of a higher level object allows it to use settings or Synth items.

Main menu and toolbar

File - contains standard New, Open and Save operations. Edit - provides access to Image editors and operations with Items. Modify - commands for the list/tree control.

New	creates a new empty Synth Image.
Open	opens a Synth Image from a saved file.
Save	saves a Synth Image to a file.
Tag	assigns identifiers to a Synth Image.
Stop	stops playback of the Synth Image.
Play	play/calculates the Synth Image.
Grid	shows coordinate cube.
Show it now	outputs the Synth Image to the laser controller hardware

List/Tree
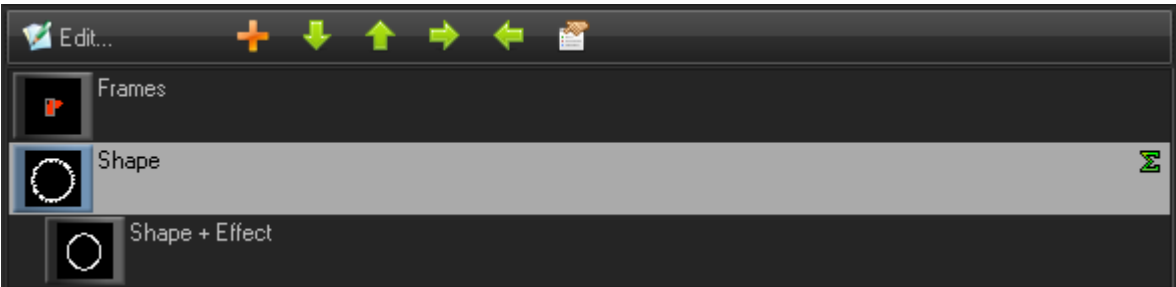
Create/Edit button - for items without an Image button, this icon creates and calls up menus with editors. For Items with an Image button, this will open the corresponding editor.

| Plus | adds an item. |
| Up, Down, Left, Right | controls the item position within the tree. |

Property	opens the Image Properties dialog.

Hint: Item list has "right click" context menus with additional standard commands.

Location settings

Each Item has controls for Size, Position, and Angle. It is made for positioning an item inside the BEYOND coordinate system. This is not an effect, or animation, it is a fixed setting that allows you to set the Item in place.
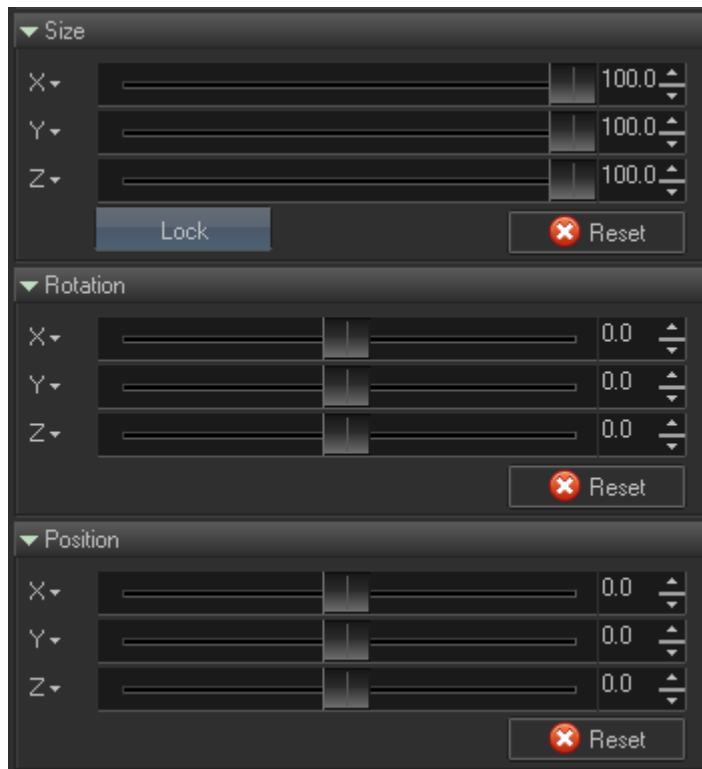
Time and Beat shift settings

Time and Beat shift settings allow you to shift the time (add a constant) that comes into the Item`s Image and Effect. The Synth Image gets the input time, and before applying it to the Item, the time will be modified according to these settings.

For example, you can use the same Effect in multiple Items, but each effect will be time shifted. This will also work for Images.

There are multiple places where a time shift can be applied. For Images, the Synth Image is a good place because it is a complex container and you can shift each Item as you desire.

Enable/Disable sequence settings

A sequence allows you to enable or disable items depending on Beats or Events.

On/Off	Items have an internal "enabled" property. You can define events that will enable the item, and events that will disable it.
On/Off sequence (Beats and Events)	There is a more complex option that defines a sequence of enabled/disabled states which can be for good for multiple items. For example, the first item will work on the first event, second item on second event, and so on. An Effect has a few items, but only some of them will be active.
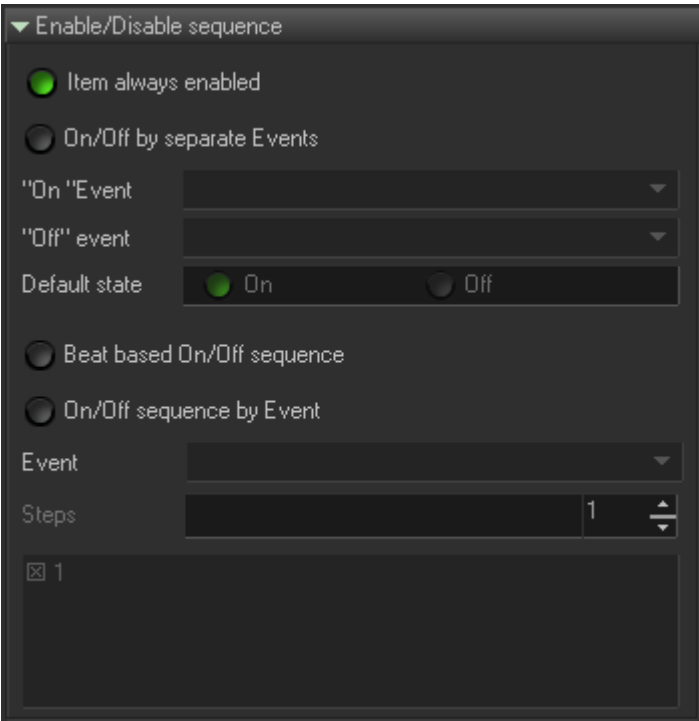
Kinect - Position

There are a few basic operations that can be applied to a Synth Image item from a Kinect sensor.
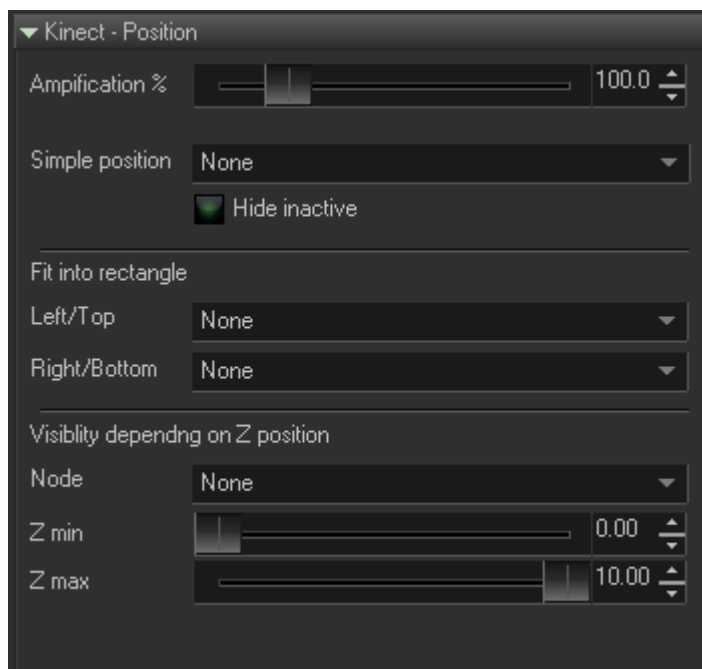
Action 1: **Simple Position** - Select a point name in the "Simple Position" drop down listbox. The Synth Image will use X and Y coordinates based on this defined position. Amplification allows increased motion amplitude. By marking the "Hide inactive" box, it will hide the Synth item if the point defined is not recognized.

Action 2. **Fit into rectangle** - Works well with hands. The idea behind this is to fit the Synth Image into a rectangle (XY) between your hands. Your hand positioning defines diagonally, where to place the corners of the rectangle.

Note: Do not use Action 2 together with Action 1.

Action 3. **Visibility dependent on Z position** - Here you define the min and max value of a Z coordinate; you stay behind the Z coordinate range and move your hand forward into the range you defined. This movement will make the Synth Image visible. You move your hand back, and the Image becomes invisible. There may be many options with this feature but the main intention is to show or to hide items depending on your distance to the Kinect sensor.

Using these actions, you can use X and Y for position, and Z for visibility control.