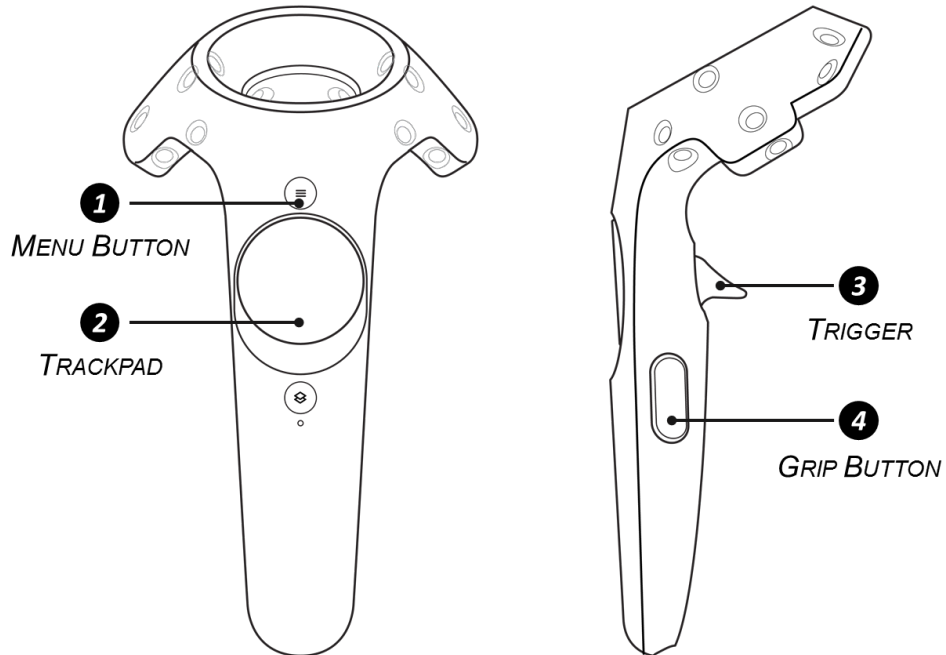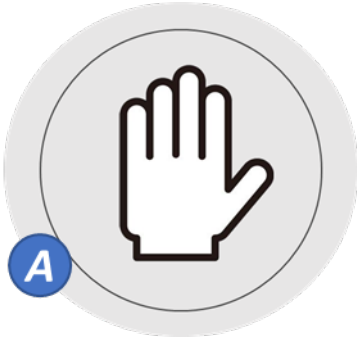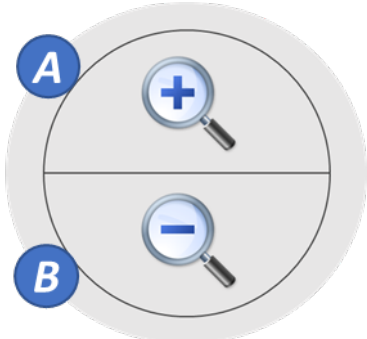# VR Blender User Manual: Hand Controllers' Interaction

Interaction with VR Blender is based on the hand controllers of the HTC Vive. Names used in this manual for referring to available buttons are reported below.
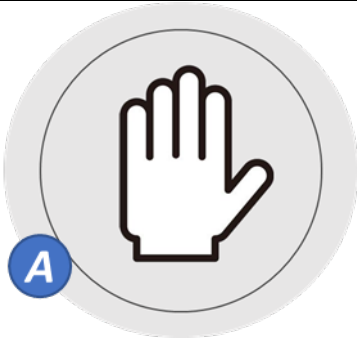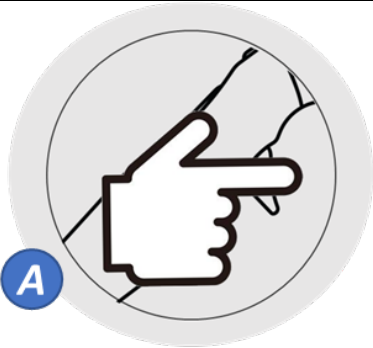

In the following, buttons' configurations based on the active state of the VR Blender tool are shown.

A. Navigation state

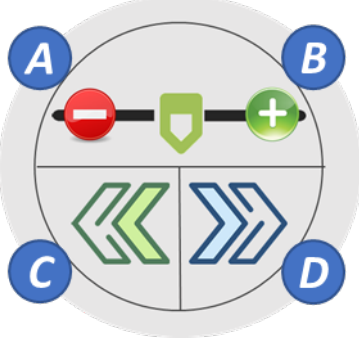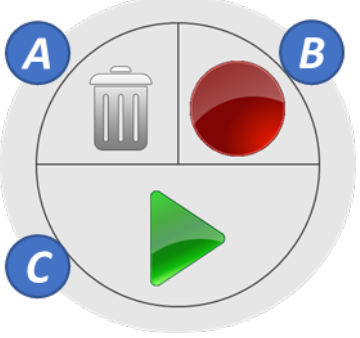|		Left controller	Right controller
1			Deactivates the Navigation state
2		A No trackpad's functionality available	A Zooms-in the entire virtual scene B Zooms-out the entire virtual scene

3		Applies a rotation to the origin of the virtual scene
4		Moves the origin of the virtual scene to a new position

B. Settings panel
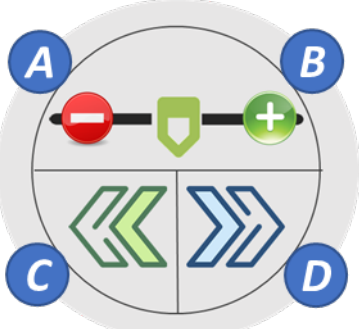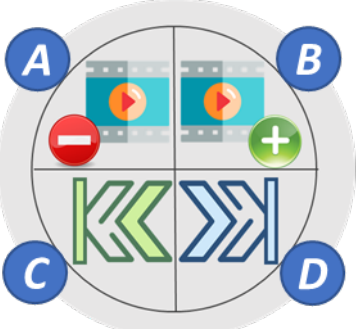
	Left controller	Right controller
1	Hides the Settings panel	Activates the Navigation state
2	Ⓐ No trackpad's functionality available	Ⓐ No trackpad's functionality available, only the interaction with the controls of the Settings panel is allowed via the Trigger button
3		Interacts with the controls of the Settings panel
4		

C. Performance mode w/ transformation keyframes

	Left controller	Right controller
1	Opens the Settings panel	Activates the Navigation state
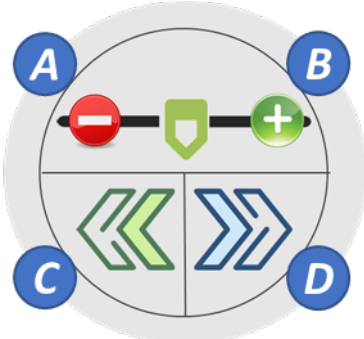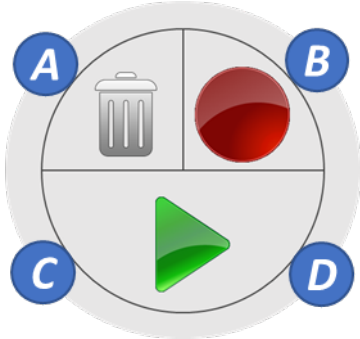
	Left controller	Right controller
2	A (red −) / B (green +) at top, C (green ◀◀) / D (blue ▶▶) at bottom	A (trash 🗑) / B (red circle) at top, C (green ▶ play)
	A Decreases the value of the transformation property been animated	A Deletes all the actions of the selected elements
	B Increases the value of the transformation property been animated	B Starts the recording of transformation keyframes for the selected elements (first press); stops the recording and creates an action for the selected elements (second press)
	C Decreases the current frame by one	C Starts the playback of the generated animations
	D Increases the current frame by one	
3	Activates the Interaction state, which transfers the movement (location and/or rotation) of the left controller to the currently selected element	Activates the Interaction state, which transfers the movement (location and/or rotation) of the right controller to the currently selected element
	Applies a scaling transformation if the same element is selected by both the controllers, by executing a 3D pinch gesture	Applies a scaling transformation if the same element is selected by both the controllers, by executing a 3D pinch gesture
4	Activates the Selection state to change the currently selected element	Activates the Selection state to change the currently selected element
	In the Interaction state, scrolls the list of constraints that can be applied to the controllers' movements	In the Interaction state, scrolls the list of constraints that can be applied to the controllers' movements

D. Keyframing mode w/ transformation keyframes
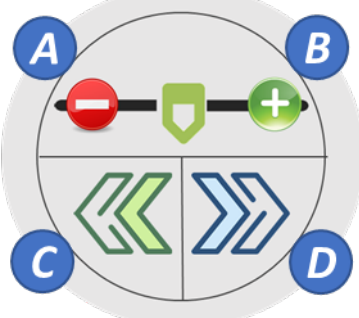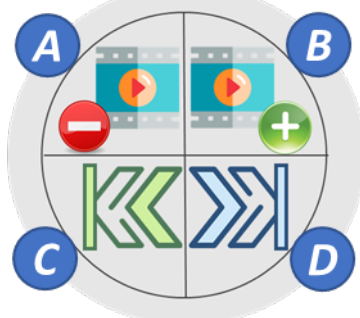
	Left controller	Right controller
1	Opens the Settings panel	Activates the Navigation state
2	A (red −) / B (green +) at top, C (green ◀◀) / D (blue ▶▶) at bottom	A / B at top with keyframe icons, red (−) and green (+), C (green ◀◀) / D (blue ▶▶) bottom
	A Decreases the value of the transformation property been animated	A Deletes current transformation keyframe of the currently selected elements

	Left controller	Right controller
	(B) Increases the value of the transformation property been animated (C) Decreases the current frame by one (D) Increases the current frame by one	(B) Inserts a transformation keyframe for the currently selected elements (C) Sets the current frame to the previous keyframe of the currently selected elements (D) Sets the current frame to the next keyframe of the currently selected elements
3	Activates the Interaction state, which transfers the movement (location and/or rotation) of the left controller to the currently selected element	Activates the Interaction state, which transfers the movement (location and/or rotation) of the right controller to the currently selected element
4	Activates the Selection state to change the currently selected element	Activates the Selection state to change the currently selected element

E. Performance mode w/ other keyframes
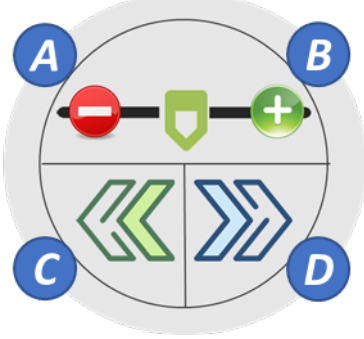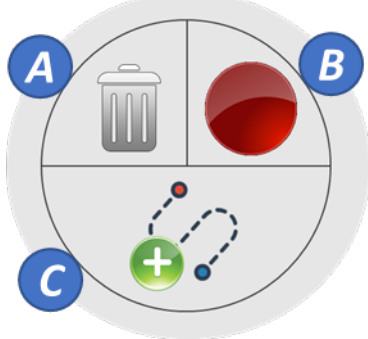
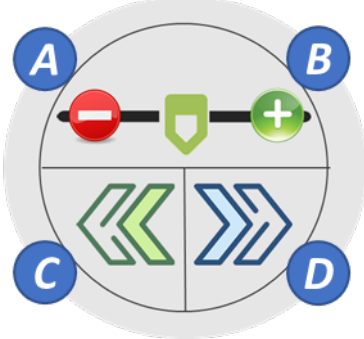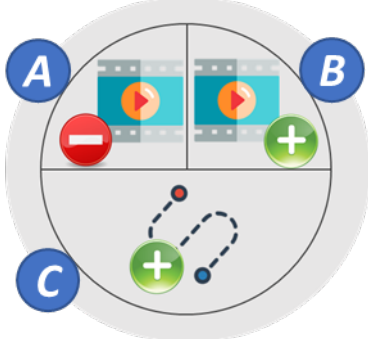|	Left controller	Right controller
1	Opens the Settings panel	Activates the Navigation state
2	 (A) Decreases the value of the property selected (B) Increases the value of the property selected (C) Decreases the current frame by one (D) Increases the current frame by one	 (A) Deletes all the actions of the currently selected element (B) Starts the recording of the selected property's value for the current element (first press); stops the recording and creates an action for the selected element (second press) (C) Starts the playback of the generated animations
3	Modifies the value of non-scalar property	Activates the Interaction state, which transfers the movement (location and/or rotation) of the right controller to the currently selected element
4	Activates the Selection state to change the current property (different from transformation) to be animated for the selected element by scrolling a list of available properties	Activates the Selection state to change the currently selected element

F. Keyframing mode w/ other keyframes

	Left controller	Right controller
1	Opens the Settings panel	Activates the Navigation state
2	 **A** Decreases the value of the current property selected **B** Increases the value of the current property selected **C** Decreases the current frame by one **D** Increases the current frame by one	 **A** Deletes current keyframe of the currently selected element **B** Insert a keyframe of the current property's value for the selected element **C** Sets the current frame to the previous keyframe of the selected elements **D** Sets the current frame to the next keyframe of the selected elements
3	Modifies the value of non-scalar property	Activates the Interaction state, which transfers the movement (location and/or rotation) of the right controller to the currently selected element
4	Activates the Selection state to change the current property (different from transformation) to be animated for the selected element by scrolling a list of available properties	Activates the Selection state to change the currently selected element

G. Performance mode and Path tool activated

	Left controller	Right controller
1	Opens the Settings panel	Activates the Navigation state

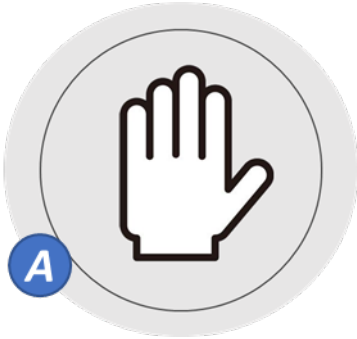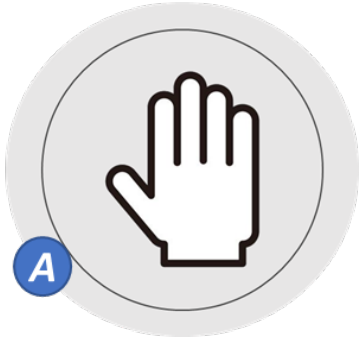|	Left controller	Right controller
2	A Decreases the value of the curve's evaluation time B Increases the value of the curve's evaluation time C Decreases the current frame by one D Increases the current frame by one	A Deletes all the actions of the currently selected element B Starts the recording of the evaluation time (first press); stops the recording and creates an action for the selected element (second press) C Creates a new path or adds a new control point to the existing curve of the currently selected element
3	Applies translation/rotation to the entire path	Moves the curve's control point in the 3D space
4		Activates the Selection state to change the current curve's control point selected

H. Keyframing mode and Path tool activated

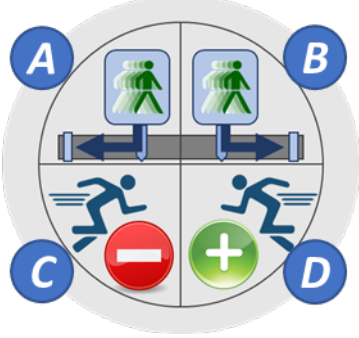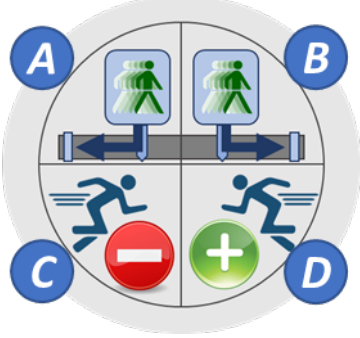|	Left controller	Right controller
1	Opens the Settings panel	Activates the Navigation state
2	A Decreases the value of the curve's evaluation time B Increases the value of the curve's evaluation time C Decreases the current frame by one D Increases the current frame by one	A Deletes current keyframe of the currently selected element B Insert a keyframe of the curve's evaluation time for the currently selected element

		C Creates a new path or adds a new control point to the existing curve of the currently selected element
3	Applies translation/rotation to the entire path	Moves the curve's control point in the 3D space
4		Activates the Selection state to change the current curve's control point selected

I. F-Curves tool activated

	Left controller	Right controller
1	Opens the Settings panel	Activates the Navigation state
2	A No trackpad's functionality available	A No trackpad's functionality available
3		Moves the selected curve's control point or handle
4	Activates the Selection state to change the interpolation curves to be modified by scrolling a list of available curves	Activates the Selection state to change the current curve's control point or handles selected

J. Edit action tool activated

	Left controller	Right controller
1	Opens the Settings panel	Activates the Navigation state

2	 **A** Anticipates in the timeline the beginning of the action selected with the controller **B** Delays in the timeline the beginning of the action selected with the controller **C** Decelerates the playback by halving the duration of the action selected with the controller **D** Decelerates the playback by doubling the duration of the action selected with controller	 **A** Anticipates in the timeline the beginning of the action selected with the controller **B** Delays in the timeline the beginning of the action selected with the controller **C** Decelerates the playback by halving the duration of the action selected with the controller **D** Decelerates the playback by doubling the duration of the action selected with the controller
3		
4	Activates the Selection state to change the current action to be modified with the controller	Activates the Selection state to change the current action to be modified with the controller