WHAT IS CLAIMED IS:

1. A method for transmitting viewpoint switching capabilities in a Virtual Reality 360 (VR360) application, comprising:

determining a configuration for switching between viewpoints in the VR360 application; and

signaling the configuration for switching between viewpoints to the VR360 application;

wherein the configuration is implemented by at least one box attached to a viewpoint or switching transition;

the viewpoint is a virtual location in a virtual space where a device generating the VR360 application is located;

a viewpoint switching is a switching performed by the device generating the VR360 application between different physical locations corresponding to different viewpoints; and

the configuration comprises a viewport parameter indicating an initial viewport for a specific viewpoint switching.

2. The method in accordance with Claim 1, wherein the configuration is an ISO Base Media File Format (ISOBMFF) box attached to a viewport or a switching transition.

3. The method in accordance with Claim 1 or 2, wherein the configuration comprises any or any combination of following parameters:

~~a viewport parameter indicating an initial viewport for a specific viewpoint switching,~~

a transition effect parameter indicating a specific transition effect for a specific viewpoint switching,

an activation window parameter indicating at least one activation window for a viewpoint switching, or

a time switching parameter indicating a start position of playout in a destination media time during a specific viewpoint switching.

4. The method in accordance with Claim 3, wherein the viewport parameter comprises:

a viewport flag indicating whether the initial viewport for a destination viewpoint is present.

5. The method in accordance with Claim ~~3~~1, the configuration further comprises ~~a switching possibility parameter indicating~~ multiple switching possibilities ~~for a specific viewpoint, each switching possibility comprises~~ with at most one ~~viewport that is indicated by a~~ viewport parameter per switching possibility, and the viewport parameter~~switching possibility parameter~~ comprises at least one of following parameters:

a number parameter indicating the number of possible viewpoint switching, or

an ID parameter indicating ID of a destination viewpoint of a viewpoint switching.

6. The method in accordance with Claim 3, wherein the transition effect parameter comprises at least one of following parameters:

a transition effect flag indicating whether a transition effect is present,

a transition effect type flag indicating the type of transition effect for a specific switching, or

a transition effect indicator indicating the position where a specific transition effect video is stored.

7. The method in accordance with Claim 3, wherein the time switching parameter comprises at least one of following parameters:

a timeline-switching-offset flag indicating whether a time offset is present;

an offset indicator indicating the value of the time offset, or

a relative-to-current flag indicating information about starting point from which the offset is provided.

8. The method in accordance with Claim 3, wherein the activation window parameter comprises at least one of following parameters:

a minimum time flag indicating whether a minimum time for a switching transition is present; wherein the transition can only be activated after the minimum time ~~upon determining that~~when the minimum time is present,

a minimum time parameter indicating value of the minimum time,

a maximum time flag indicating whether a maximum time for a switching transition is present; wherein the transition can only be activated before the maximum time ~~upon determining that~~when the maximum time is present, or

a maximum time parameter indicating value of the maximum time.

9. The method in accordance with Claim 8, wherein the activation window parameter is attached in a time metadata track of a playout timeline.

10. A method for transmitting viewpoint switching capabilities in a Virtual Reality 360 (VR360) application, comprising:

obtaining a configuration for switching between viewpoints in the VR360 application; and

switching between viewpoints in the VR360 application according to the configuration;

wherein the configuration is implemented by at least one box attached to a viewpoint or switching transition;

the viewpoint is a virtual location in a virtual space where a device generating the VR360 application is located;

a viewpoint switching is a switching performed by the device generating the VR360 application between different physical locations corresponding to different viewpoints; and

the configuration comprises a viewport parameter indicating an initial viewport for a specific viewpoint switching.

11. The method in accordance with Claim 10, wherein the configuration is an ISO Base Media File Format (ISOBMFF) box attached to a viewport or a switching transition.

12. The method in accordance with Claim 10 or 11, wherein the configuration comprises any or any combination following parameters:

~~a viewport parameter indicating an initial viewport for a specific viewpoint switching,~~

a transition effect parameter indicating a specific transition effect for a specific viewpoint switching,

an activation window parameter indicating at least one activation window for a viewpoint switching, or

a time switching parameter indicating a start position of playout in a destination media time during a specific viewpoint switching.

13. The method in accordance with Claim 12, wherein the viewport parameter comprises:

a viewport flag indicating whether the initial viewport for the destination viewpoint is present.

14. The method in accordance with Claim 12, wherein the configuration further comprises multiple switching possibilities with at most one viewport parameter per switching possibility, and the viewport parameter comprises at least one of following parameters:

a number parameter indicating the number of possible viewpoint switching, or

an ID parameter indicating ID of a destination viewpoint of a viewpoint switching.

15. The method in accordance with Claim 12, wherein the transition effect parameter comprises at least one of following parameters:

a transition effect flag indicating whether a transition effect is present,

a transition effect type flag indicating the type of transition effect for a specific switching, or

a transition effect indicator indicating the position where a specific transition effect video is stored.

16. The method in accordance with Claim 12, wherein the time switching parameter comprises at least one of following parameters:

a timeline-switching-offset flag indicating whether a time offset is present,

an offset indicator indicating the value of the offset, or

a relative-to-current flag indicating information about starting point from which the offset is provided.

17. The method in accordance with Claim 12, wherein the activation window parameter comprises at least one of following parameters:

a minimum time flag indicating whether a minimum time for a switching transition is present; wherein the transition can only be activated after the minimum time ~~upon determining that~~when the minimum time is present,

a minimum time parameter indicating value of the minimum time,

a maximum time flag indicating whether a maximum time for a switching transition is present; wherein the transition can only be activated before the maximum time ~~upon determining that~~when the maximum time is present, or

a maximum time parameter indicating value of the maximum time.

18. The method in accordance with Claim 17, wherein the activation window parameter is attached in a time metadata track of a playout timeline.

19. A device for transmitting viewpoint switching capabilities in a Virtual Reality 360 (VR360) application, comprising at least one memory, and at least one processor configured to execute the ~~method for transmitting viewpoint switching capabilities in a Virtual Reality 360 (VR360) application according to any of claims 1-9~~instructions of:

determining a configuration for switching between viewpoints in the VR360 application; and

signaling the configuration for switching between viewpoints to the VR360 application;

wherein the configuration is implemented by at least one box attached to a viewpoint or switching transition;

the viewpoint is a virtual location in a virtual space where a device generating the VR360 application is located;

a viewpoint switching is a switching performed by the device generating the VR360 application between different physical locations corresponding to different viewpoints; and

the configuration comprises a viewport parameter indicating an initial viewport for a specific viewpoint switching.

20. A device for transmitting viewpoint switching capabilities in a Virtual Reality 360 (VR360) application, comprising at least one memory, and at least one processor configured to execute the ~~method for transmitting viewpoint switching capabilities in a Virtual Reality 360 (VR360) application according to any of claims 10-18~~instructions of:

obtaining a configuration for switching between viewpoints in the VR360 application; and

switching between viewpoints in the VR360 application according to the configuration;

wherein the configuration is implemented by at least one box attached to a viewpoint or switching transition;

the viewpoint is a virtual location in a virtual space where a device generating the VR360 application is located;

a viewpoint switching is a switching performed by the device generating the VR360 application between different physical locations corresponding to different viewpoints; and

the configuration comprises a viewport parameter indicating an initial viewport for a specific viewpoint switching.

21. A computer-readable storage medium having stored therein at least one instruction which is loaded and executed by a processor to execute ~~the method for transmitting viewpoint switching capabilities in a Virtual Reality 360 (VR360) application according to any of claims 1-9.~~acts comprising:

determining a configuration for switching between viewpoints in the VR360 application; and

signaling the configuration for switching between viewpoints to the VR360 application;

wherein the configuration is implemented by at least one box attached to a viewpoint or switching transition;

the viewpoint is a virtual location in a virtual space where a device generating the VR360 application is located;

a viewpoint switching is a switching performed by the device generating the VR360 application between different physical locations corresponding to different viewpoints; and

the configuration comprises a viewport parameter indicating an initial viewport for a specific viewpoint switching.

22. A computer-readable storage medium having stored therein at least one instruction which is loaded and executed by a processor to execute ~~the method for transmitting viewpoint switching capabilities in a Virtual Reality 360 (VR360) application according to any of claims 10-18.~~acts comprising:

obtaining a configuration for switching between viewpoints in the VR360 application; and

switching between viewpoints in the VR360 application according to the configuration;

wherein the configuration is implemented by at least one box attached to a viewpoint or switching transition;

the viewpoint is a virtual location in a virtual space where a device generating the VR360 application is located;

a viewpoint switching is a switching performed by the device generating the VR360 application between different physical locations corresponding to different viewpoints; and

the configuration comprises a viewport parameter indicating an initial viewport for a specific viewpoint switching.

23. An apparatus, comprising:

a determining module, configured to determine a configuration for switching between viewpoints in the VR360 application; and

a transmitting module, configured to signal the configuration for switching between viewpoints to the VR360 application;

wherein the configuration is implemented by at least one box attached to a viewpoint or switching transition;

the viewpoint is a virtual location in a virtual space where a device generating the VR360 application is located;

a viewpoint switching is a switching performed by the device generating the VR360 application between different physical locations corresponding to different viewpoints; and

the configuration comprises a viewport parameter indicating an initial viewport for a specific viewpoint switching.

24. An apparatus, comprising:

an obtaining module, configured to obtain a configuration for switching between viewpoints in the VR360 application; and

a switching module, configured to switch between viewpoints in the VR360 application according to the configuration;

wherein the configuration is implemented by at least one box attached to a viewpoint or switching transition;

the viewpoint is a virtual location in a virtual space where a device generating the VR360 application is located;

a viewpoint switching is a switching performed by the device generating the VR360 application between different physical locations corresponding to different viewpoints; and

the configuration comprises a viewport parameter indicating an initial viewport for a specific viewpoint switching.