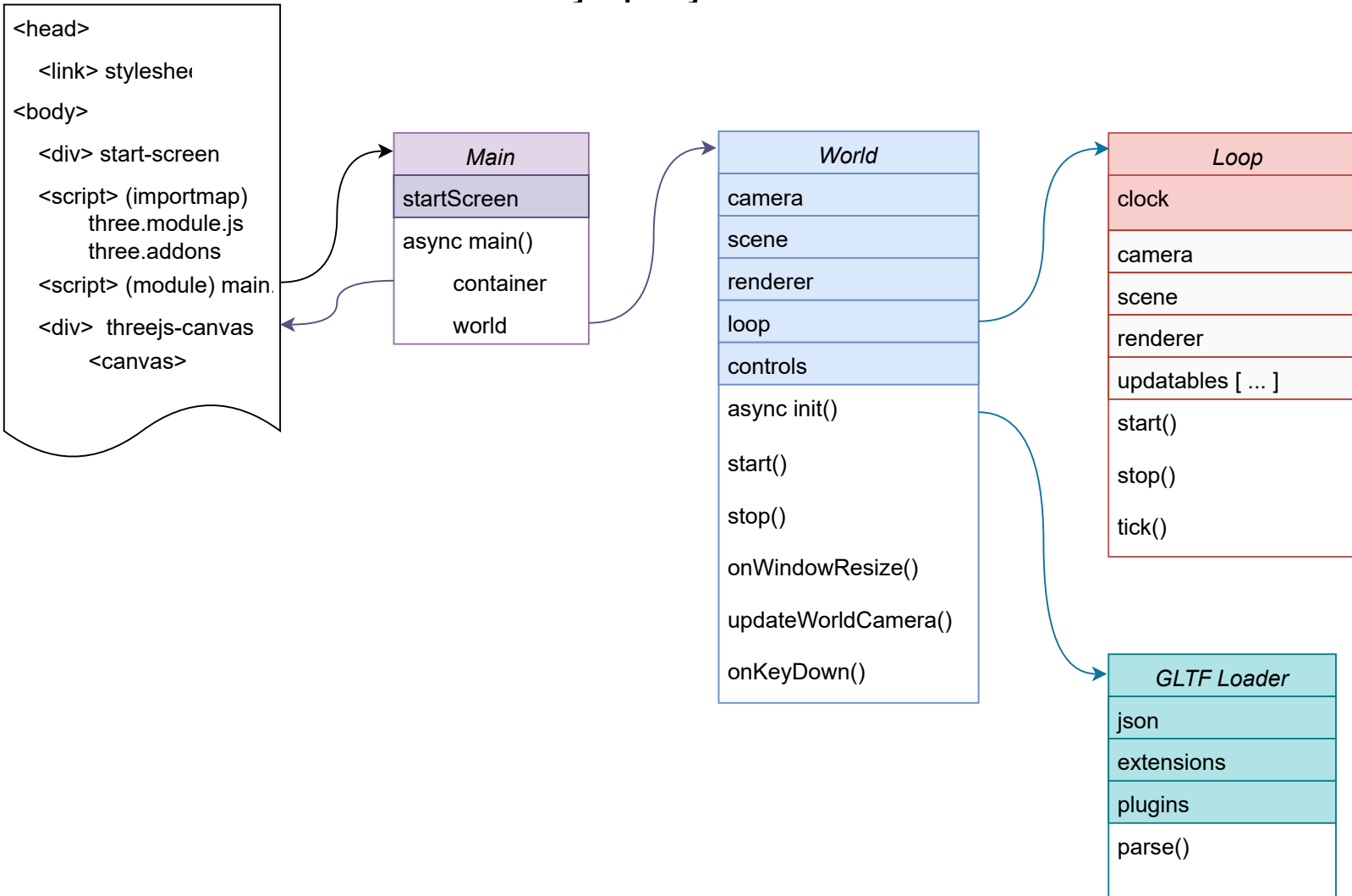


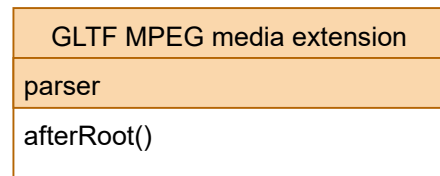
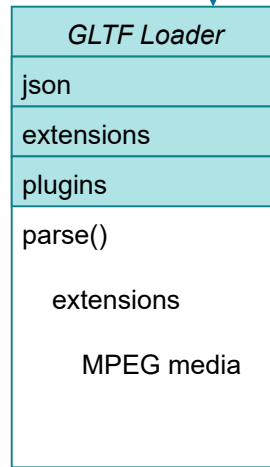
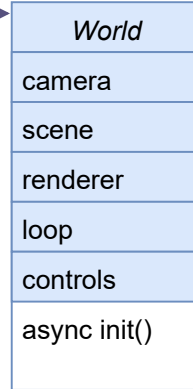
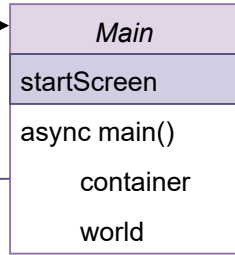
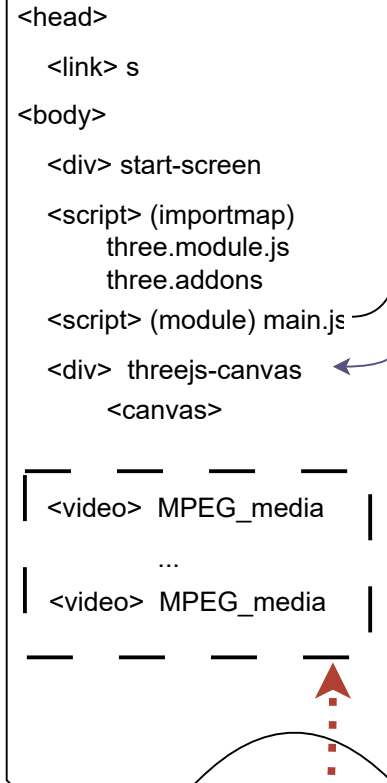
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THREE.js project architecture

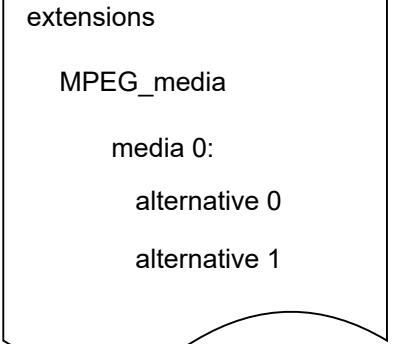


MPEG_media extension

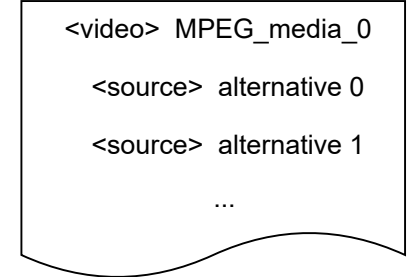
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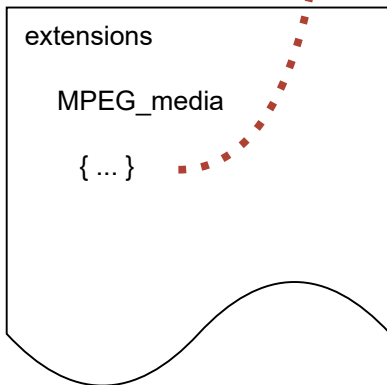
GLTF



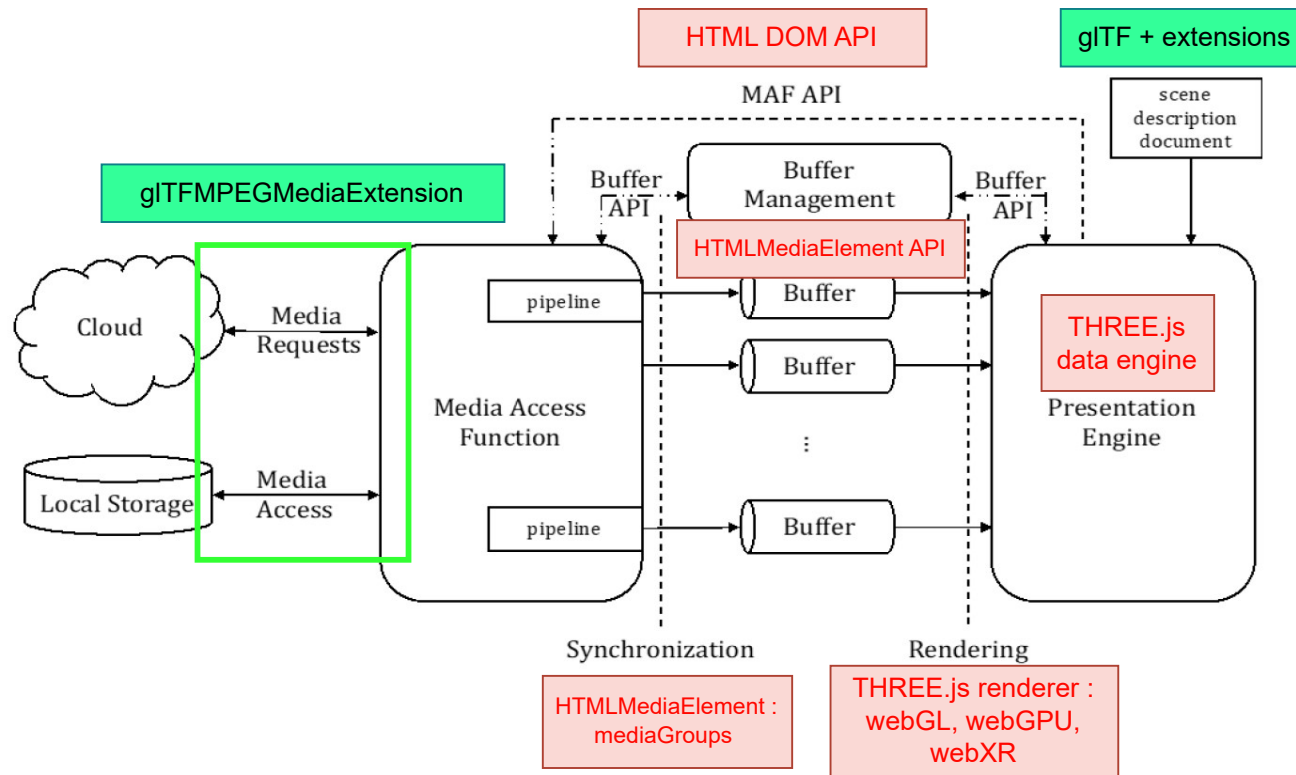
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GLTF



in the context of the MPEG-I SD Architecture...



THREE.js mappings for MPEG-I SD media:

- Media Requests / Media Access:
 - handled by our MPEG_media THREE.js extension.
 - asynchronous requests / loads media referenced in the MPEG-I SD glTF extensions.
 - checks for playback compatibility (codec support) and embeds media.
- Media Access Function / MAF API:
 - access to MPEG-I SD media is managed via the DOM and the corresponding DOM API.
 - provides seamless integration with THREE.js VideoTexture and PositionalAudio components
 - permits bidirectional communication between "raw" media and the presentation engine (i.e. rendering, glTF export)
- Buffer Management / Buffer API:
 - individual buffers are managed via the HTMLMediaElement API. Specifically the <video> element and Media Source Extensions (MSE)
 - closely aligned with MPEG-I SD spec (referenced in the paper!)
 - allows the presentation engine to synchronize subsets of the requested media (via MediaGroups)
 - permits the user / presentation engine to specify playback at runtime (i.e. play, stop, seek)
- Presentation Engine
 - we use a THREE.js 'scene' to embed and render an immersive scene in the browser

media header ?

```

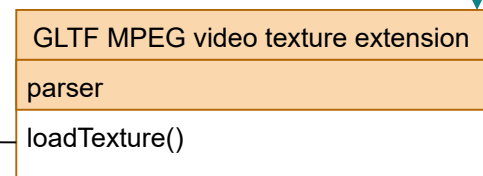
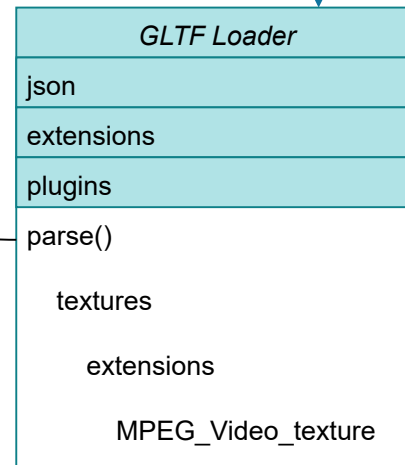
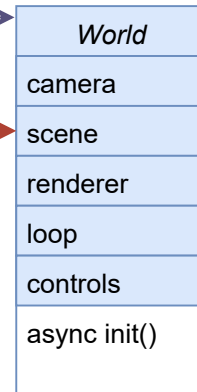
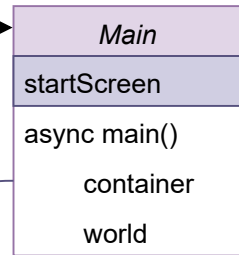
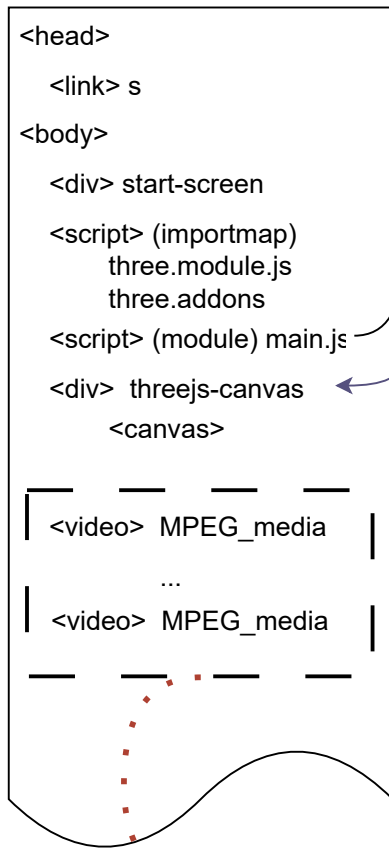
General
- Complete name: C:\Users\isaac\Documents\summer_2023\threejs-mpeg-4ide
- Format: MPEG-4
- Format profile: Base Media
- Codec ID: isom (isom/iso2/avc1/mp41)
- File size: 59.1 MiB
- Duration: 9 min 56 s
- Overall bit rate: 331 kbps
- Frame rate: 24.000 FPS
- Movie name: Big Buck Bunny - https://archive.org/details/BigBuckBunny\_124
- Writing application: Lav59.27.100
- Comment: license http://creativecommons.org/licenses/by/3.0/

Video
- ID: 1
- Format: AVC
- FormatInfo: Advanced Video Codec
- Format profile: Constrained Baseline@L3
- Format settings: 1 Ref Frames
- Format settings, CABAC: No
- Format settings, Reference frames: 1 frame
- Codec ID: avc1
- Codec IDInfo: Advanced Video Coding
- Duration: 9 min 56 s
- Bit rate: 697 kbps
- Width: 640 pixels
- Height: 360 pixels
- Display aspect ratio: 16:9
- Frame rate mode: Constant
- Frame rate: 24.000 FPS
- Color space: YUV
- Chroma subsampling: 4:2:0
- Bit depth: 8 bits
- Scan type: Progressive
- Bits/(Pixel*Frame): 0.126
- Stream size: 49.6 MiB (84%)
- Writing library: x264 core 142 (2431 a5631aa)
- Encoding settings: cabac=0 / ref=1 / deblock=1:0:0 / analyse=0x1:0x111 / me=he
- Codec configuration box: avcC

Audio
- ID: 2
- Format: AAC LC
- FormatInfo: Advanced Audio Codec Low Complexity
- Codec ID: mp4a-40-2
- Duration: 9 min 56 s
- Source duration: 9 min 56 s
- Source_Duration_LastFrame: -4 ms
- Bit rate mode: Constant
- Bit rate: 132 kbps
- Channels(s): 2 channels
- Channel layout: L R
- Sampling rate: 48.0 kHz
- Frame rate: 46.875 FPS (1024 SPF)
- Compression mode: Lossy
- Stream size: 9.22 MiB (16%)
- Source stream size: 9.22 MiB (16%)
- Default: Yes
- Alternate group: 1
```

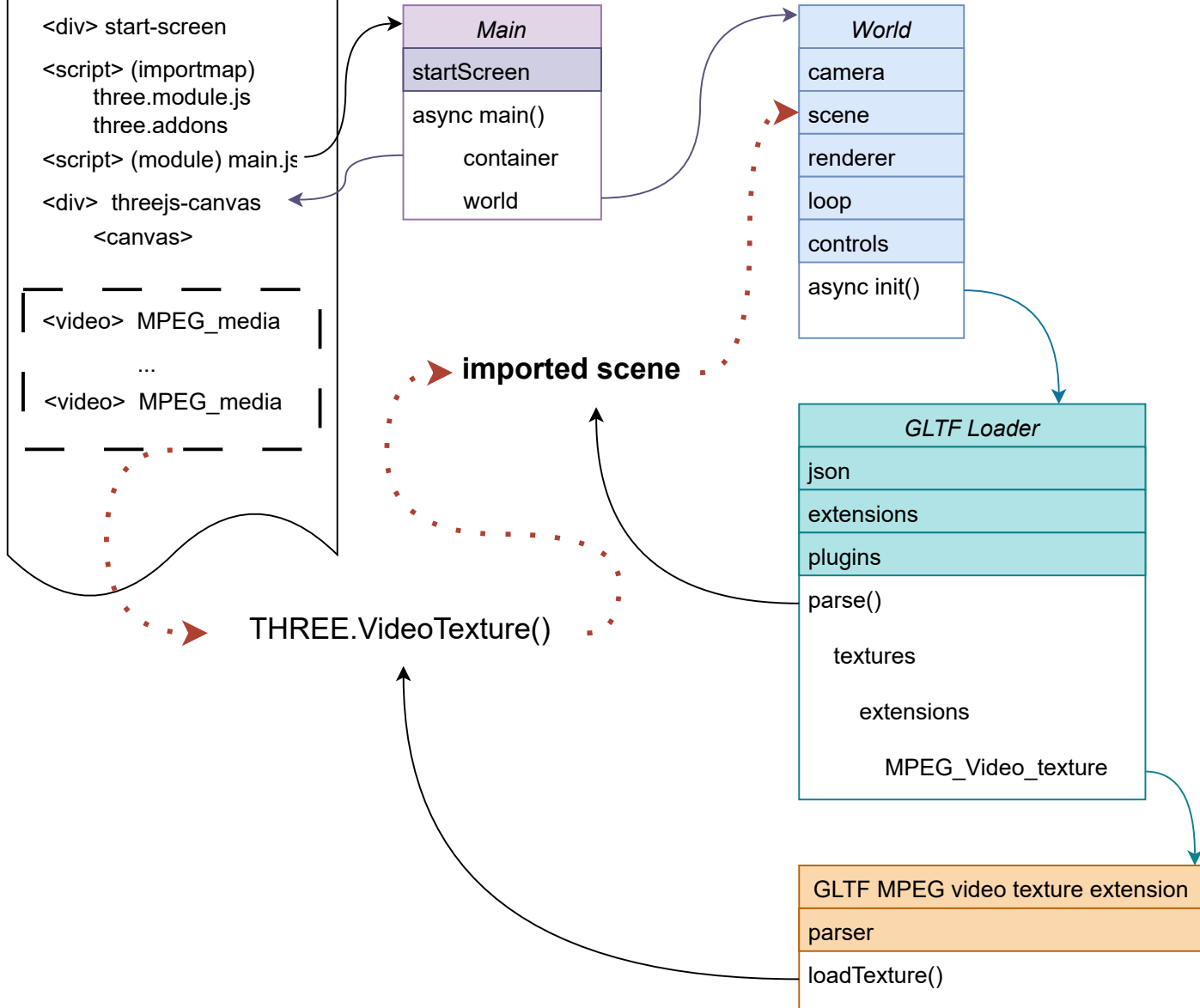
MPEG_texture_video extension (with embedded MPEG_media)

< HTML >



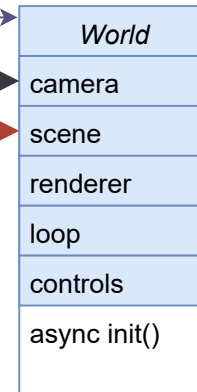
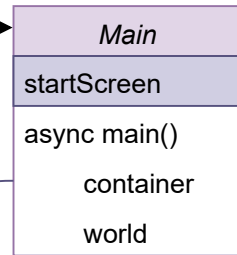
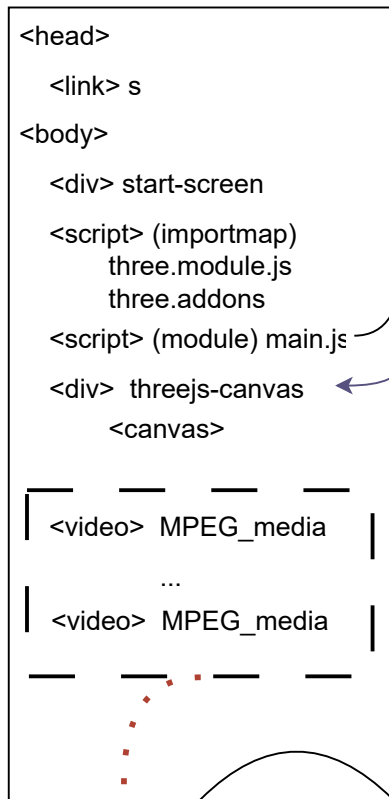
THREE.VideoTexture()

imported scene



MPEG_audio_spatial extension (with embedded MPEG_media)

< HTML >



imported scene

