Limits of high-resolution video in WebVR

Investigation report

W3C WebVR Authoring Workshop 2017
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Some background

> Largest R&D institute in the Netherlands

> Media is one of our research areas

> Standardisation, consulting, PoC developments

> Shared research in European or national setting

> Scientist / Innovator

> Prototype development, experiments, research

> Research on Social VR, 5G, Media Orchestration

High resolution 360° video

› Investigating zooming in on 360° video

  › Without user feeling nauseated

› When using a Oculus Rift CV1

  › Approximately 12% of a 360° image is visible

  › 4K image looks ok

  › 8K image starts to saturate the display

  › 16K image requires zooming in to view details in the image

Our approach

Web Building blocks

Consumer hardware

Limitations

- › Current decoders support up to 4K
- › 16K image can be stored in video memory on a system with a Nvidia 1060 GTX
  - › Two apparently cannot
  - › Encountered a bug in A-Frame, where textures aren't reused
- › No 8K decoding support is becoming available in consumer hardware at this moment
  - › Not yet 16K (or higher?)
  - › Mobile not there yet…

- › Tiled streaming circumvents this problem
  - › Split high-resolution video into tiles
  - › Only render visible part of the video
  - › Allows viewing of 16K 360° content, but requires pre-processing

Conclusion

› Current hardware supports 16K textures

› Current decoders are limited to 4K

› For 360° video, tiled streaming may provide an alternative

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Checkout the demo

https://tnomedialab.github.io/