VRIF Open Meeting

NAB f2f meeting - 23 April 2017
Welcome!

• This meeting will give an update on the status and activities of the VR Industry Forum
VRIF – Mission Statement

- Purpose according to Bylaws:

  To further the widespread availability of high quality audiovisual VR experiences, for the benefit of consumers

- Non-profit organisation established during CES 2017, after a year of informal meetings
- 28 founding members, grown to 35 members
VRIF Membership

• VRIF now has 35 members
• Founders + 7
• 14 Charter Members
• 10 Contributor Members
• 11 Associate Members
VRIF Membership
VRIF’s Goals

- Advocating voluntary *industry consensus* around common technical standards for the end-to-end VR ecosystem, from creation to delivery and consumption

- Advocating the creation and adoption of *interoperable standards* (VRIF will not develop standards itself); promoting the use of common profiles across the industry, and promoting and demonstrating interoperability

- Developing *voluntary guidelines* that describe best practices, to ensure high quality VR experiences

- Describing and *promoting* the use of VR services and applications
Goals for 2017

• Most important goal: publish our **Guidelines** by year-end
  – Interoperable distribution, based on MPEG’s Omnidirectional Media Format (“OMAF”)
    • Enables Interoperability to be tested
  – Security Guideline for 360VR
  – Production Guideline

• Drafts available by IBC (mid-September 2017)
Working Groups

• **Requirements WG**
  – Lexicon/Taxonomy
  – Requirements from VR Verticals – Use Cases
  – Storytelling
  – Human VR Factors & Social Aspects
  – Quality Factors (A, V, Immersion)

• **Communication WG**
  – Membership
  – Advocacy

• **Liaison WG**
  – Advocacy with SDOs and other groups

• **Guidelines WG**
  – Production & Acquisition (live as well as post-produced)
    • Merged Graphics, Content Mapping, Spatial Audio
  – Distribution
    • Coded representation, Storage, Distribution
  – Presentation
  – Security

• **End-to-end Interoperability WG**
  – Works on e2e interoperability based on guidelines from Guidelines WG;
  – Content
Call for Content

- Seeking content that can be used by VRIF, and preferably also outside the Forum
- For testing and demonstration purposes
- 4k x 2k and up
- A form of spatial audio
- Light “advertising” acceptable
- Call for Content to be published on website shortly
Requirements Working Group

• Bi-weekly Conference calls through March
  – Gather requirements, use cases for MPEG Phase 1
  – Communicate to MPEG via liaison letter
  – Call for additional requirements beyond MPEG
    • Beyond those already identified for MPEG
    • Intended to be in 2017 VRIF Guidelines
    • Explore impacts of additional use cases

• Additional use cases to be reviewed 27 April
• Begin work on human factors (April/May)
• F2F meeting of Reqs. WG in Berlin (May)
• Begin collecting requirements for Phase 1b (2018 timeframe).
Guidelines Working Group

• 2 Conference calls around
  – Establishment of task forces
  – Architecture strawman based on first agreed use case
  – Expect to have bi-weekly meetings to
    • Progress Architecture
    • Explore impacts of additional use cases
    • Understand supporting technologies (MPEG OMAF, OpenXR)

• A short session at the Berlin F2F is anticipated to resolve any significant/blocking issues

• Expect Architecture description to be complete by mid-July
Report Production Guidelines Task Force

• Meeting structure
  – Co-Chaired by Richard Lindsay-Davies (DTG) and Chris Johns (Sky)
  – First discussions during members meeting

• Achievements
  – Charters approved
  – Delivered Strawman guidelines
  – Document posted to work space for ongoing discussion

• Current Activities
  – Recruiting membership to further the work.
  – Discussion of the Strawman

• Next Steps
  – Deliver draft for IBC
  – F2F expected at Berlin
  – Request information from requirements Working Group.
Distribution Task Force (TF) 1/2

• Distribution TF Guidelines Charter
  – **Compression**: Media codecs for VR, i.e., encoding of different production formats and related media profiles for video, audio and other media types such as text, graphics, etc.
  – **Storage**: Media formats for VR content (e.g., file/segment encapsulation) for different distribution means, including but not limited to storage, download, adaptive bitrate streaming and broadcasting
  – **Delivery**: Interfaces and protocols for Live, Linear and VOD delivery over streaming (unicast), and broadcast applications

• Meeting structure
  – Three *virtual* meetings of 90mins each (from 6th April), one short F2F (today)
  – Task Force will continue with weekly cadence from first week of May

• Current Scope
  – VR use cases based on initial set of requirements described in the [VRIF Liaison to OMAF](from Requirement WG)
  – Use cases are OTT for streaming and download

• Achievements
  – Skeleton distribution guidelines document with relevant interoperability interfaces
  – Criteria for media profile selection developed and to be sent for board approval
Distribution Task Force (TF) 2/2

- Next steps (after NAB)
  - Analysis/review of liaison response from OMAF MPEG (expected to be ready after April 27th)
  - Address new use cases from Requirements WG (Live VR, etc.) with gap analysis on OMAF MPEG
  - Coordinate work with
    - Production TF (e.g. Live vs Post-Production IF or profiles)
    - Requirement WG on new vertical use cases

- Planning 2017
  - End of May: Joint F2F meeting with MPEG Ad hoc on OMAF in Berlin.
  - Considering a F2F meeting end of August/beginning of September (before IBC)
  - IBC (Sep 2017):
    - Draft Guidelines for an initial set of candidate media profiles based on OMAF
    - Gaps identification of available VR technologies (based on input from Requirements Group)
  - By end of 2017
    - Final Guidelines for an initial set of candidate media profiles based on OMAF
Security Task Force (TF)

• Meeting structure
  – Ongoing meeting cadence and slot being agreed at next meeting – current proposal is fortnightly.
  – First full task force meeting (call) held April 11th.

• Achievements / discussions to date
  – Charter published
  – Vision reviewed during first meeting – some key points highlighted:
    • Avoid reinvention - build on today’s technology and best practices for non-VR content.
    • Ensure new functionality is supported in secure media path across devices.
    • VR brings new security concerns – e.g. motion sickness attack/prevention, and new challenges for existing security technologies – e.g. watermarking
    • Protection of return path user data and proper handling of PII highlighted as focus areas.

• Next Steps
  – Gathering initial feedback based on movie labs Enhanced Content Protection document. Agreed approach is to build on current best practice for non-VR media and identify deltas, specifically for each guideline:
    • Applies for VR
    • Does not apply for VR
    • Needs to be modified for VR
    • New requirement for VR
  – Gathering secure media path use case examples
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<tr>
<th>Company</th>
<th>Booth</th>
<th>Demo description</th>
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| B<>com      | N2035FP                         | • 6DOF demo featuring multi-user, smart interactions & presence  
• VR/360 immersive audio production/post-production with Higher Order Ambisonics  
• Forensic watermarking for VR/360/3DOF contents                                      |
| Ericsson    | South Hall (Upper Level) SU720 | 8k × 4k 360º Video Compression using Ericsson’s encoding technology.  
VR / AR Bandwidth Optimization  
Optimizing bandwidth management and quality of experience for media for virtual and augmented reality based on field of vision.  
AR Sports graphics at home  
Displaying AR sports graphics to complement real sports content on the TV. Hololens headset in the home environment. |
| Fraunhofer HHI | * Fraunhofer Booth 6110, South Upper Hall  
** SES Booth 1910, South Upper Hall  
*** Booth N1216VR at Virtual & Augmented Reality Pavilion (North Hall) | - 3D Human Body Reconstruction (volumetric video)*  
- Live satellite HEVC streaming of 10K×2K Panoramas*, **  
- 10K×2K Panoramic Video on UHD screens*, **  
- 360º OmniCam with closed sphere*  
- Tile Based HEVC/DASH Streaming for VR*** |
| Harmonic    | SU 1210                         | - Premium content in VR 8K / Ambisonics 3D sound played on Gear VR & Oculus Rift  
- Video experience comparison of DASH 4k vs Tiled 4K vs Tiled 8K on a Gear VR  
Demonstration done in collaboration with Tiled media & Viaccess orca |
| Intel       | SU9410                          | Intel NAB VR session with A R Rahman on Monday 24th at 11:30 AM (S222-223) and launch of his VR experience "Le Musk" at Intel booth  
Powered by Intel technology at Intel booth, "New virtual reality Cinema experiences", prelude to "Le Musk" VR feature directed and scored by AR Rahman |
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<tr>
<td>Ittiam</td>
<td>SU14513</td>
<td>Codec agnostic view dependent streaming (demo) with significant bit-rate reduction</td>
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<tr>
<td>NGCodec</td>
<td>North Hall N263 SSP-A in the Sprokit pavilion</td>
<td>Cloud VR 4K H.265/HEVC codec</td>
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<td>Orah</td>
<td>North Hall, VR Pavilion, Booth N1017VR</td>
<td>Multi-camera live VR in 4K on the spot with their Orah 4i cameras.</td>
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| Qualcomm     | SU11013     | • Demonstration of a live end-to-end production workflow of VR using MPEG-H 3D Audio. Audio/Video will be captured, stitched, mixed, encoded and streamed from a ‘live area’ room to the show floor – to be played back over head-mounted-displays in real time. The same production workflow can cater for simultaneous OTA and OTT transmission by simultaneously outputting content in both ‘channels + objects’ format as well as scene based (HOA) + objects format. The latter is particularly conducive for live VR streaming and interactivity.  
• In addition, we will also showcase a High-Quality HEVC cloud and server based encoder, which is well suited for OTT services and 4K real-time encoding with multithreading on a single machine. It implements HEVC Main and Main10 profiles with adaptive rate control. It is designed to handle high-quality encoding of HDR content and includes the CRI SEI message metadata for display adaptation. The High-Quality HEVC encoder has significantly lower complexity than x265 for same coding efficiency. |
| Technicolor  | Technicolor Demonstration Suite – Paramount Room 2nd Floor in the Renaissance Hotel | Pushing the boundaries of immersive experiences  
Showcase how our talented teams are pushing the boundaries of creating immersive experiences, exemplified through a range of content across the film, TV, and advertising industries.  
- The Raid (4:Legacy), Wonder Buffalo, Passenger: Awakening, John Lewis’ Buster’s Garden |
| TNO, Tiledmedia | South Hall, Upper Level, booth SU1210.       | Efficient streaming of 8k VR content using Tiled Streaming                                                                                       |
| Vantrix      | SU10825     | Low Latency, Studio Grade VR  
Vantrix will be demoing the following at NAB SU10825 – please contact me to book an appointment  
1. Award winning glass-to-glass millisecond latency for live VR  
2. Studio grade VR quality with National Film Board’s Kyma full-dome movie  
3. Get closer to the VR action with Virtual Zoom  
4. Complete back-end video management and delivery platform for VoD and Live  
We will have our full range of VR cameras on display |
| Verizon      | SU3605 Verizon Digital Media Services          | Uplynk 360 powered by envrnmt, end-to-end 360 Video Distribution Workflow                                                                       |
VRIF – Membership Levels

**Associate Members – $1,000 / year**  
– Open to all companies with an annual revenue less than $10 million, academic institutions and sole proprietor consultants  
– Participate as a voting member of Working Groups  
– Participate in the VRIF’s promotional activities  
– Be listed on the VRIF’s website

**Contributor Membership – $4,500 / year**  
Same as Associate, plus:  
– Be listed as a Contributor Member in all press releases of VRIF  
– Vote in Board of Director elections

**Charter Membership – $10,000 / year**  
Same as Contributor, plus:  
– Stand for Election / Nominate representatives for Board of Directors  
– Be listed as a Charter Member in all VRIF press releases and events
Structure

- Board: 9 seats to be elected in July
  - Now have interim Board
  - Charter members can stand; Contributor and Charter members can vote
- Support staff in CA
- 3-4 f2f meetings per year
- Many calls, most bi-weekly
- Supporting ecosystem for document management and calls
- Any member can participate in any of the WGs, regardless of membership level
Next Meeting(s)

• Tue/Wed 30 and 31 May, Berlin Fraunhofer HHI
How to Join

• Talk to a Board Member at this meeting
• See [http://www.vr-if.org/join/](http://www.vr-if.org/join/)