

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

VRIF Members Demo list 1/2



Company	Booth	Demo description
B<>com	N2035FP	<ul style="list-style-type: none"> • 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	<p>8k x 4k 360° Video Compression using Ericsson's encoding technology.</p> <p>VR / AR Bandwidth Optimization Optimizing bandwidth management and quality of experience for media for virtual and augmented reality based on field of vision.</p> <p>AR Sports graphics at home Displaying AR sports graphics to complement real sports content on the TV. Hololens headset in the home environment.</p>
Fraunhofer HHI	<p>* Fraunhofer Booth 6110, South Upper Hall</p> <p>** SES Booth 1910, South Upper Hall</p> <p>*** Booth N1216VR at Virtual & Augmented Reality Pavilion (North Hall)</p>	<ul style="list-style-type: none"> - 3D Human Body Reconstruction (volumetric video)* - Live satellite HEVC streaming of 10Kx2K Panoramas*, ** - 10Kx2K Panoramic Video on UHD screens*, ** - 360° OmniCam with closed sphere* - Tile Based HEVC/DASH Streaming for VR***
Harmonic	SU 1210	<ul style="list-style-type: none"> - 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 <p>Demonstration done in collaboration with Tiled media & Viaccess orca</p>
Intel	SU9410	<p>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</p> <p>Powered by Intel technology at Intel booth, "New virtual reality Cinema experiences", prelude to "Le Musk" VR feature directed and scored by AR Rahman</p>

VRIF Members Demo list 2/2



INDUSTRY FORUM

Company	Booth	Demo description
Ittiam	SU14513	Codec agnostic view dependent streaming (demo) with significant bit-rate reduction
NGCodec	North Hall N2635SP-A in the Sprockit pavilion	Cloud VR 4K H.265/HEVC codec
Orah	North Hall, VR Pavilion, Booth N1017VR	Multi-camera live VR in 4K on the spot with their Orah 4i cameras.
Qualcomm	SU11013	<ul style="list-style-type: none"> • 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	<p>Pushing the boundaries of immersive experiences</p> <p>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.</p> <p>- The Raid (4:Legacy), Wonder Buffalo, Passenger: Awakening, John Lewis' Buster's Garden</p>
TNO, Tiledmedia	South Hall, Upper Level, booth SU1210.	Efficient streaming of 8k VR content using Tiled Streaming
Vantrix	SU10825	<p>Low Latency, Studio Grade VR</p> <p>Vantrix will be demoing the following at NAB SU10825 – please contact me to book an appointment</p> <ol style="list-style-type: none"> 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 <p>We will have our full range of VR cameras on display</p>
Verizon	SU3605 Verizon Digital Media Services	Uplynk 360 powered by envrmt, 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/>