VQEG meeting minutes

Dates: Feb 23-27, 2015

Host: Intel.

Location: Santa Clara, CA, USA

- *Santa Clara Marriott Hotel*, 2700 Mission College Blvd., Feb 23-25, 2015
- Intel Corporation, 2200 Mission College Blvd., Feb 26-27, 2015

Participants: See Section Participants at the end the document

Monday, February 23, 2015

Presentations Expected:

- OPTICOM (P.NATS / AVHD, 30 min, Chris)
- Qualcomm (image quality, 30 min, James)
- British Sky Broadcasting (AVHD, 20 min, Florence) challenges faced when doing subjective testing for OTT streaming
- Acreo and UPM (AVHD, 30 min, Samira & Kjell)
- Acreo (statistical analysis, 15 min, Kjell)
- Netflix (AVHD) may be able to present their needs/requirements which should be relevant for http streaming
- AGH University (AVHD, 30 min, Lucjan)
- AGH University (MOAVI, Mikolaj)
- AGH University (QART, Mikolaj & Lucjan)
- Intel (Tuesday at 10:30am, on HEVC, 15 min, Mark)
- UWS (UltraHD results, 10 min, Naeem)
- IRCCyN (UltraHD, 20 min, Marcus)

Project Updates

ILG—nothing to report

AVHD—(1) video only objective quality metrics, may interact with UHD, (2) adaptive streaming, of high interest, will consider P.NATS effort this week, and (3) audiovisual quality, e.g., subjective testing, mapping & objective models.

Hybrid Perceptual/Bitstream—Officially closes at this meeting, pending consultation with Co-Chairs not in attendance.

Tools & Subjective Labs—see http://vqegstl.ugent.be/

- Update of Acreo software available, open source, renamed "VQEG Player", based on work by Acreo & University of Nantes; includes 3DTV support, Windows based
- AV quality estimation tool made available by DT Tlabs

Agreement was reached that Nicolas Staelens steps down as Co-Chair, to be replaced by **Bert Vankeirsbilck** (University of Ghent).

JEG—encourages new joint projects.

3DTV—adjust subjective testing methods for 3DTV via (1) Ground Truth Database, to evaluate quality of videos using paired comparison (PC), to evaluate efficacy of different scales (e.g., ACR); PVSs have been

created; (2) COSPAD1, influence of environment on subjective testing, (3) objective metrics, waiting until subjective methods stable, (4) analysis of formats side-by-side, top-bottom and tiled with DVB; test plan being discussed this week. Feedback to be given on ITU draft Recommendations related to 3D subjective testing.

QART—widened scope to include other applications such as medical imaging. Has begun proposing changes to ITU-T Rec. P.912 with results from QART research.

JEG-Hybrid—Joint development of an improved hybrid objective metric. Currently running objective metrics on 80,000 PVSs to serve as a robust training database (i.e., train Hybrid model from FR model predictions). Database includes a large variety of packet loss. One goal is publications, including three last year.

Agreement was reached that Nicolas Staelens steps down as Co-Chair, to be replaced by **Glenn Van Wallendael** (University of Ghent).

RICE—videoconferencing & interactive subjective testing is on hold until stronger interest is expressed by participants. Active work focuses on physiological measurements related to subjective quality, such as EEG (such as Sebastian Arndt's work).

MOAVI—no reference quality indicators to detect artifacts. MOAVI is contributing to other projects, currently JEG-Hybrid and VIME.

HDR—getting started on subjective & objective measurements of HDR, Dolby is doing work in this area

Agreement was reached that **Elaine Jin** (Intel) will be added as a Co-Chair to HDR.

UHDTV— Creation of Ultra HD database: 10 4K video contents are available on request. It will be shared through external HDD however the source of the contents is http://medialab.sjtu.edu.cn/web4k/index.html and is free to download. Initial testing and subjective evaluation is performed for quality evaluation. H.264/MPEG-4, H.265/HEVC and VP9 codecs are used to encode and perform quality evaluation.

VIME—This new project was formed at the July 2014 VQEG meeting, to examine objective metric design and subjective testing for user applications of image quality, intended to be extensible to video quality. VIME has been meeting by audio call. (VIME stands for video and image model for consumer content evaluation)

eLetter—Two issues of the VQEG eLetter were released in 2014. Goal this meeting is to pick topic & editors for the next eLetter.

VQEG Progress Report—Being put together for 2014, Kjell is leading this effort.

Liaison Activity

MPEG—HDR initiative underway, evaluations expected by June. Future video coding is gathering requirements for standard coder to follow HEVC; process expected to start around 1 year. HEVC will not be revised to include specialized support for interlaced content.

ITU-R WP6C—November 2014 meeting had few contributions due to the short interval from prior meeting. HDR is of high interest. Starting to revise the 3D subjective testing Recommendation. There are three incoming liaisons (see meeting files for details).

ITU-T SG12—There was no report on SG12 activities.

ITU-T SG9—There are five incoming liaisons (see meeting files for details). One liaison request that VQEG validates whether previously standardized objective metrics extend to HEVC. The UltraHD group will be asked to consider this topic. New project mentioned to establish a mapping function to optimize video parameters to minimize transmission bandwidth while maintaining optimal quality (e.g., based on resolution, screen size). Interest was mentioned to provide feedback within AVHD (e.g., from Netflix, Qualcomm).

Agreement was reached that **Chulhee Lee** (Yonsei University) will be added as a Co-Chair to UltraHD.

Cost Action ICI003—The Qualinet project is closed, however closely related initiative has been proposed. Regardless, there is agreement to continue funding the QoMEX conference.

Proposal to draft a liaison that VQEG could host the Qualinet deliverables if that website looses funding.

QoMEX—Greece in May. Paper submission deadline is March 1; special session “On The Dark Side of the Moon” submission is March 15.

ICDM Project—There is potential within the next version of the IDMS for joint projects, particularly on 3D and HDR.

CPIQ (IEEE 1858)—Camera image quality metrics, no-reference metrics, such as a color saturation metric.

EBU Liaison to VQEG-HDR—This liaison is assigned to the HDR group.

3DTV Session

Project overview:

> “VQEG_3DTV_2015_041_barkowsky_3dtv_session_overview_v1.pdf”

This was an editing session for document “VQEG_3D_2015_016_Draft ITU Rec P.3D-disp-req Nantes Rev1.docx”. The output was document “VQEG_3D_2015_016_Draft ITU Rec P.3D-disp-req Rev2.docx”. This document contains some proposals that were made off-line after the session closed (i.e., during the break), which will be discussed during the next 3D session.

Input: “VQEG_3DTV_2015_016_Draft ITU Rec P.3D-disp-req Nantes Rev1.doc”

Output: “VQEG_3DTV_2015_016_Draft ITU Rec P.3D-disp-req Rev2.doc”

VIME Session

See VIME project update in below file for a detailed project overview.

“VQEG_VIME_2015_021_ Project_Update_SantaClaraMeeting_Feb2015.pptx”

Presentation by Phil Corriveau and Michele Saad (Intel)

Strong industry need for an NR metric of image quality, representative of consumer images. The rest of the presentation summarized a paper that will be published shortly, describing an image quality subjective test and NR image quality objective model. Tool (metric) to be shared with VIME. See file:

“VQEG_VIME_2015_020_Feb2015_PhilipCorriveau_MicheleSaad.pptx”.

A reference tool was distributed that implements the approach that was discussed in this presentation. To obtain an evaluation copy, contact Michele Saad at Michele.a.saad@intel.com Please provide feedback to Michele. This feedback can be discussed in the VIME working group.

Presentation by James Goel (Qualcomm)

What are consumer images? Consumer use cases (DSLR, digital still cameras, rear mobile camera, front mobile camera, action style camera) & consumer-generated web content. Automatic consumer modes by use cases (e.g., action, landscape); may be able to detect mode by automated algorithm. Break problem by use case. ImageNet (image-net.org) provides a huge database of images, categorized by people (no MOS). Use restrictions (e.g., Qualcomm cannot publish or share images, can publish link, can report aggregate results). 4 million images with human categorization. See file:

“VQEG_VIME_2015_024_ Consumer_Images_Goel.pdf”.

Tuesday, February 24, 2015

Note: the ITU Intersector Rapporteur Group on Audiovisual Quality Assessment (IRG-AVQA) meeting is held coincident with VQEG. A special session is devoted to ITU matters on Thursday morning.

Tuesday 24th Feb

Meeting minutes of Monday reviewed and approved.

QART

Mikolaj gives a brief overview of QART goals and status. See:

"VQEG_QART_2015_023_QART_Update-Santa Clara.pdf"

One goal is to investigate and propose subjective testing methodology for recognition tasks (e.g. scenarios of fire safety, surveillance camera). This feeds in work of ITU-T SG9.

ITU-T SG9 published initial Rec. P.912 in 2008 but needs improvements. Based on results from QART, proposals for amendments to P.912 have been submitted to ITU-T SG9 for the following sections of the P.912:

- Section 5 (source signal): proposed to explicitly limit the scope of applications
- Section 6.1 (Multiple choice method): "Unsure" option response is problematic, as subjects tend to abuse its use. Proposed to amend text to put a warning against its use.
- Section 6.2 (Single answer method): problem to exclude results based on single error. Proposed to expand the method to correlate with other answers/information.
- Section 7.3 (Subjects): current text recommends using expert subjects. Recent experimental results, non-expert subjects produced similar results as long as they were motivated to participate in the experiments. However, for some areas, e.g. medical imaging, only experts should be used.

Mikolaj and Lucjan present the plans/ideas to update P.912 in H1 2015. See presentation slides:

"VQEG_QART_2015_022_T-REC-P.912-Revision1.docx"

QART ends.

Presentation

Presentation by Intel (Mark Buxton, software tools and codec components group). See slides:

"VQEG_UltraHD_2015_019_input_HEVC_INTEL_mjbuxton_2_24_2015.pptx"

Title: HEVC commentary and call for local temporal distortion

Presentation's main points:

- Pixel-based metrics for quality evaluation are less useful on HEVC than H.264/AVC: PSNR is even worse predictor of quality for HEVC, especially at low bit rates
- Local temporal (flickering) artifacts due to changing block size partitions: HEVC large block partitions bring the benefit in coding efficiency but cause local effects affecting perceived quality (spatially localized defects varying temporally)

Presentation

Presentation by Netflix (Anne Aaron, video algorithm team)

"VQEG_AVHD_2015_035_VQEGNetflixEncodingOverview.pdf"

Title: Video encoding and quality assessment

Overview of Netflix activities, including encoding technologies (server-side processing to client)

Netflix use software encoders.

Video algorithm team focuses on the inspection and encoding steps of the media pipeline (3rd step is packaging): parallel inspections and parallel encoding of video segments (thus real-time encoding is not a constraint/requirement).

Presentation provides information about the following points:

- Content inspection
- Content encoding
- Interests/needs:
    - Quality monitoring using perceptual quality assessment (not just signal fidelity)
    - Quality assurance
    - Perceptually optimized encoding parameters
    - Codec and processing technology evaluation
    - Possibly, optimize client adaptive streaming algorithm
- Use cases:
    - High-end content (UHD, HFR, CCG)
    - Low bitrate VOD (around 200kbps) for markets with developing network infrastructure
- Roadmap:
    - Developing research on video coding, open collaboration with academia and research institutes
    - Starting standardization involvement (next-gen video codec)

MOAVI

Mikolaj Lesczuk (AGH) provides an overview of the goals and current status:

VQEG_MOAVI_2015_048_ProjectUpdate_Mikolaj_AGH_SantaClara.pdf

MOAVI aims at developing no-reference metrics/indicators addressing different types of artifacts:

- Capture
- Processing
- Transmission
- Display

AGH hosts the webpage where some metrics are available to download. Metrics are pixel-based.

All available indicators have been contributed to the JEG-Hybrid project as one binary executable. Indicators can also be inputs to the VIME project.

Since the last meeting, 8 more indicators are available. Some indicators have been tested but not all of them so the plan is to continue with experimental setups to extend the testing/validation of the MOAVI indicators.

New application area (investigated in DEEP collaboration project): second screen where visual quality of the content being pulled from the web to the second screen needs to be assessed.

24/02/15 (Afternoon)

JEG group (Co-chairs: Marcus, Glenn, Lucjan)

JEG activities' overview is presented by Marcus.

"VQEG_JEG_2015_044_barkowsky_vqeg_jeg_overview_v1.pdf"

Netflix agrees to run some encoding with HEVC and AVC on their platform.

Glenn Van Wallendael presented the JEG activities with experimental detail "Full HD HEVC encoded Video Quality Assessment database"

"VQEG_JEG_2015_045_van_wallendael_hevc_large_scale_database_v1.pdf"

Shahid presented On "Bitstream features based perceptual quality estimation of HEVC coded videos"

"VQEG_JEG_2015_046_shahid_feature_based_quality_estimation_v1R1.pdf"

Marcus presented on behalf of Enrico Masala title "The large scale databases - packet loss simulator"

"VQEG_JEG_2015_047_masala_packet_loss_simulation_v1.pdf"

AVHD session (Co-chairs: Margaret, Quan Huynh-Thu)

Samira Tavakoli presented on “About Subjective Evaluation of Adaptive Video Streaming”

“VQEG_AVHD_2015_027_HAS study_SPIE15_Fina_ACREO&UPMl.pdf”

Lucjan presented on “Multiple Laboratory Experiment targeting Different Experiment Design”

“VQEG_AVHD_2015_031_Lucjan_AGH_differentSRC.pdf”

Volunteer Lab to run subjective test to define Different Experimental Design are:

- Intel (Phil)
- UWS (Naeem)
- BSkyb (Florence)
- Acreo (Kjell)
- AGH (Lucjan)
- ITS (Margaret)
- University of Ghent (Glenn)

Wednesday, February 25, 2015

Note: the ITU Intersector Rapporteur Group on Audiovisual Quality Assessment (IRG-AVQA) meeting is held coincident with VQEG. A special session is devoted to ITU matters on Thursday morning.

Approving minutes

Arthur Webster (NTIA/ITS) will add names and institutions to the minutes.

Thanks to Lucjan Janowski (AGH) for taking notes.

3DTV – DVB Test Plan

Marcus Barkowsky (IRCCyN, Université de Nantes) presents status of the test plan and the project in general. Presentation can be found here:

"VQEG_3DTV_2015_042_barkowsky_dvb_3dformats_testplan_overview.pdf"

Question Huynh-Thu Quan (Canon Information Systems Research): Why do you need part 1 and part 2. Part 2 should be enough?

Answer: It was discussed at the teleconference. It is more efficient to run both questions.

Question Agboma Florence (British Sky Broadcasting Ltd): Can we use only part 1?

Answer: Using only part 1 test BTL model would not produce discriminative results. If we are evaluating part 2, then BTL can also be used to answer first two questions.

Margaret Pinson (NTIA/ITS): Part one gives limited answers where we cannot better understand the obtained results. For example, we will not have information if instead of changing format we could change bitrate and neither change is significant.

Question Agboma Florence (British Sky Broadcasting Ltd): It is possible that DVB will be interested only in the part 1 answer.

Ramzan Naeem (University of West Scotland): Pointed that if the comparison is not statistically significant, then part 2 will help to draw some meaningful conclusions.

Marcus Barkowsky (IRCCyN, Université de Nantes): If only part 1 was executed, then after showing results and deciding that additional information is needed we would need to repeat all part 1 and add part 2.

There was more information provided why running both part 1 and part 2 is superior over running only part 1. Information provided by part 1 can be found on slide 5 of presentation: VQEG_3DTV_2015_042_barkowsky_dvb_3dformats_testplan_overview.pdf

Questions posted by DVB were discussed and resolved.

Agboma Florence (British Sky Broadcasting Ltd) suggested to add to the test plan clear explanation of what will be provided by running only part 1 or only part 2.

Formal change to the plan: Thursday Quart session is changed to 3D.

Other Business

Agreement: Mikolaj Leszczuk (AGH) was proposed and accepted to be a leader of VQEG linkedin group.

AVHD Session

Brunnström Kjell (Acreo Swedish ICT) presented:

"VQEG_AVHD_2015_032_ACREO_Kjell_Pres_Mulr_xomp_v1.pdf"

Generally the presentation addressed the problem of comparing the obtained results by statistical comparison.

Agreement: There was discussion about the presented results and the consequence. It was agreed that the presented methodology dealing with multiple comparison should be implemented by VQEG. It will be also discussed with SG12 to include it in P.1401.

Other Business

There was voting for the date and place for the next meeting. Two option were considered, middle of July (four people in favor) or middle of September (8 people in favor).

Decision: The next meeting will be around middle of September.

There was not strong support for choosing between two hosts UWS (Glasgow) and Sky (London). It will be decided by the potential hosts and VQEG chairs.

In general there is preference for spring/autumn comparing winter/summer.

E-Letter

It was proposed to dedicate next e-letter to VIME. The answer from VIME chairs will be delivered before the end of the meeting.

Naeem (University of West Scotland) proposed that VQEG should begin a journal. Web software support would be needed. Lucjan Janowski (AGH) did not support this idea. He reminded that VQEG supported the idea of creating a QoE Journal. A discussion of advantages and disadvantages ensued.

"VQEG_ADMIN_2015_036_UWS_Naeem_VQEG Journal.pptx"

Question: Who wants to be associate editor of a proposed VQEG Journal?

Brunnström Kjell (Acreo Swedish ICT), Katsavounidis Ioannis (Netflix), and Ramzan Naeem (University of West Scotland)

RICE

Sebastian Arndt presented:

"VQEG_RICE_2015_033_Sebastian_Arndt_EEG_Proposal.pptx"

Margaret Pinson (NTIA/ITS): Asked what kind of content is needed. Some longer sequences are available at CDVL; some contain non entertainment content.

Ramzan Naeem (University of West Scotland): Is 80 minutes with such device on head difficult for subject?

Answer: No, we run such tests and subjects did not complained about it.

Margaret Pinson (NTIA/ITS): Proposed to use audio visual test instead video only.

Huynh-Thu Quan (Canon Information Systems Research): What is the goal of the study?

Answer: Predict quality by the physical measurements.

Huynh-Thu Quan (Canon Information Systems Research): Pointed that EEG was used in the past and obtained results shows that only very bad or very good quality can be detected.

Answer: For audio quality test, we obtained better precision than the answer drawn from subjects answer analysis.

Katsavounidis Ioannis (Netflix): How it would be better than just subjects answer? Maybe some users devices could be used?

Answer: Yes, not only what they answer but we see differences in cognitive state. The problem with user devices is that they are very different and probably not stable.

Who is interested in the study:

Katsavounidis Ioannis (Netflix) (maybe), Margaret Pinson (NTIA/ITS) (will have consumer device), Ramzan Naeem (University of West Scotland) (have two consumer devices).

VIME

Discussion about how to share photo resulted in solution:

We will create Flickr group. VIME chairs will propose a specification how the images should be uploaded.

Discussion about collecting subjective data: Pair comparison, ACR, SAMVIQ were discussed. The idea is to run tests with different methods in a single experiment.

Thursday, February 26, 2015

Thanks to Mikolaj of AGH

The first session (morning):

IRG-AVQA

Remote participants:

- Silvio Borer
- Vittorio Baroncini

Chulhee Lee presented:

Recent progress in each SG (more details in IRG-AVQA document):

SG9

SG12 (presented by Silvio Borer)

WP6C

Information on WP6C contributions (more details in IRG-AVQA document)

Discussion on ways to overcome disagreement among parties caused by Deutsche Telecom and Opticom

Questions from Marcus Barkowsky and Naeem Ramzanon the scope of Ultra HD studies

Question from Ioannis Katsavounidis on the inclusion of compressed bitstreams

Question from Margaret Pinson on the relationship between SG9 Recommendations and the work being done by WP6C

Remark from Arthur Webster on Recommendation BT.2020 (with respect to color space converting)

Question from Florence Agboma on the expected time schedule

Q2&Q12 Rapporteur Group Meeting:

Presentation of Chulhee Lee on: „J.op_tr" (more details in J.op_tr presentation)

"VQEG_UltraHD_2015_034_VQM_HEVC_SG9_WorkItems_Chulhee_Lee.ppt"

Question from Lucjan Janowski on the contents of the Recommendation with respect to ways to characterize content

Question from Quan Huynh-Thu on the source of the contribution

Question from Florence Agboma on the output of the Recommendation and duration of clips

Question from Kjell Brunnström on the codex to be considered

Question from Florence Agboma and Naeem Ramzan on bandwidths and devices

Remark from Marcus Barkowsky on the similarity to the classical rate-distortion problem

Remark from Ioannis Katsavounidis on the industrial applicability

Remark from Mikołaj Leszczuk on similarities to JEG-Hybrid work

Remark from Ioannis Katsavounidis on changing the resolution

Presentation of Chulhee Lee on: „J.src_vq" (more details in J.src_vq presentation)

Ultra HD

Presentation of Chulhee Lee on: "Objective Video Quality Models for HEVC" (more details in Objective Video Quality Models for HEVC presentation):

"VQEG_UltraHD_2015_034_VQM_HEVC_SG9_WorkItems_Chulhee_Lee.ppt"

Remarks from Quan Huynh-Thu, Ioannis Katsavounidis, Lucjan Janowski and Marcus Barkowsky on the scope of the work

Remark from Kjell Brunnström on the way the test shall be performed

Chulhee Lee presenting relationships to BT.2020

Further discussions with various VQEG participants, no actual decisions taken

The second session (before lunch) - HDR:

Remote participants:

- Patrick Le Callet
- Manish Narwaria

Presentation of Patrick Le Callet on progress on HDR (more details in HDR presentation)

"VQEG_HDR_2015_039_vqeg_hdr_Manish_feb2015.pdf"

Question from Margaret Pinson on the codec complexity

Questions from Quan Huynh-Thu on the way points have been computed and on the source sequences

Question from Marcus Barkowsky on the display size

The third session (after lunch) - 3DTV:

3DTV DVB:

Decisions have been recorded in the Test-Plan Document, aided by Marcus Barkowsky and Margaret Pinson.

Agreed on the phrase: „VQEG recommends immediately moving forward with 2 parts (which effectively includes part 1), because this allows more robust data analysis and also answers all four DVB questions with a reasonable effort"

Agreed on finalizing the final test plan and send it to DVB

"VQEG_3DTV_2015_043_DVB_testplan_v0_14.doc"

Further changes reflected in the document edited by Marcus Barkowsky

3DTV

Standardization on P.3D-disp-req:

Standardization contribution presented and discussed by Margaret Pinson

Agreed to remove a paragraph on „3D perception..."

Agreed to accept changes into paragraph on „Impact of overall illumination..."

Agreed to approve the current version and send it around for comments

Output: "VQEG_3DTV_2015_016_Draft ITU Rec P.3D-disp-req Rev2.doc"

Standardization on P.3D-sam:

Standardization contribution presented and discussed by Marcus Barkowsky

Changes sent by Pierre Lebreton discussed

Added warning proposed by Mikołaj Leszczuk: „The experimenter should be aware that individual subjects tend to overuse the "the same" choice, leading to contamination of results. Consequently, special care must be taken."

Further changes reflected in the document

Discussion with Ludovic Malfait took place concerning subjective assessment methodologies

No further comments have been received from the audience

Output: "VQEG_3DTV_2015_029_Draft ITU Rec J.3D-sam Rev 2.docx"

The fourth session (afternoon):

Standardization on P.3D-fatigue:

Standardization contribution presented and discussed by Margaret Pinson

Changes reflected in the document

Output: “VQEG_3DTV_2015_030_Draft ITU Rec P.3D-fatigue Rev 2.doc”

ULTRA-HD:

Presentation of Naeem Ramsan on: „Quality Evaluation of Different Coding Standards for Full HF and Ultra HD..." (more details in presentation)

“VQEG_UltaHD_2015_037_Different_Coding_Standards_UWS_Naeem.pdf”

Questions from Florence Agboma on the SRC and HRC

Question from Margaret Pinson on the subjects

Presentation of Marcus Barkowsky on: „Comparing upscaling algorithms..." (more details in presentation)

“VQEG_Ultrahd_2015_040_barkowsky_UHD_upscaling_methods_from_HD.pdf”

Questions from Lucjan Janowski, Florence Agboma and Naeem Ramsan

Friday, February 27, 2015

Thanks to Andrew Catellier of NTIA/ITS

Old Business

Margaret went through the notes for the minutes for the previous day and the minutes were approved.

AVHD

Remote Participants:

* Shahid Mahmood Satti

* Iheanyi Caleb Irondi

Marcus set up the bridge, and Shahid gave a presentation remotely.

Shahid gave an overview on the P.NATS activity. It was on the scope and its connection to VQEG. P.NATS is under study by Q14 of the ITU-T SG12. their goal is a bitstream-based parametric no-reference model and they're interested in audio-visual quality estimation of adaptive HTTP streaming.

"VQEG_AVHD_2015_015_P.NATS_Description_Opticom.docx"

P.NATS have agreed on a new architecture for their algorithm. There are separate audio and video quality scores and it measures short term scores. It takes into account stalling quality impacts.

P.NATS will be conducting a subjective test with sequence lengths from 30 seconds to 5 minutes, encoded using h.264, high profile. There were three different video resolutions and three distinct audio quality levels. Quality changes happen on 5 second intervals.

VQEG should fill the end-to-end measurement gap. Proposal: start with one minute evaluations now and move towards longer evaluations.

Quan opened the floor for questions.

* Margaret Pinson thanked Shahid for the overview of P.NATS.

* Arthur asked about the scope of the AVHD test as it relates to P.NATS.

* Margaret Pinson remarked that AVHD won't be using bitstream parameters.

* Margaret Pinson asked which methodology was used, and the answer was ACR without hidden reference.

* Margaret Pinson asked for an update when testing is finished, how the test methodology was received in the context of adaptive streaming.

Presentation

Florence Agboma gave a presentation on over the top audiovisual quality.

"VQEG_AVHD_2015_025_Evaluating_OTT_video_quality-Challenges&Lessons_learnt_1_Agboma .pdf"

Sky has 20 million customers in 5 different countries. UK, Ireland, Italy, Germany. It's direct to your house—there's a STB in your living room. But they've extended towards OTT streaming. They have several channels, movies, sports, etc.

But there are some challenges to OTT. There are different systems, different packaging, different libraries, ads must be inserted, etc. There are lots of challenges, but let's start with a step at a time. But how do you compare two OTT services? Treat the internet as a black box.

Different catalogs cause problems comparing similar content. Maybe use complexity to pick similar scenes? But the act of filming the content is different enough, along with picture in picture things, both cause problems. Hard to do a side-by-side test also. Also, is ACR an appropriate test methodology?

For the experiment design, they got a hold of manifest files. There were 16 seconds for each profile, there were two groups of test subjects, and test profiles were randomized among each session per group. They used ACR.

Quan and Lucjan commented about being emotionally connected to a particular sports team.

Florence continued by mentioning that feelings towards service providers may also affect scores.

A research firm was recruited to recruit football fans. The subjects were pre-screened for football fandom and familiarity with streaming services. There were 47 football fans, 75% male, 25% female, aged 16-65 years old. They used Seven Samsung Galaxy Note 10 and used the default earbuds. At the end they conducted a survey. They rented a house in which to conduct the test. The room illumination was changing throughout the day, but the changes were documented.

* Naeem Ramzan asked if the videos were watched same time same room? yes. but quality can be affected by the emotions of other people.

* Ioannis Katsavounidis asked about the actual configuration of the seating arrangement.

* Arthur Webster asked if they were watching the same thing or different things. A group watched the same sequence, a different group watched a different sequence.

* A group discussion ensued.

Provider A and Provider B were not usually statistically different, except for few cases, at least as stated on the bar charts. ACR seems to have worked for this test. Florence opened the floor for questions.

* Lucjan asked to see the results again. He asked if if the hard sequences were actually easy to code or if there was some other effect that made people vote higher. Florence answered that provider B had a higher quality.

* Ioannis mentioned that perhaps the difficulty of the scenes may have been different. He also asked if the bitrates for the video were the same. He mentioned that the only comparison metric would be total bitrate.

* Naeem Ramzan gave a suggestion for a future test—he suggested that those participating at the same time may affect the results of the test. Again.

Presentation

Iheanyi Caleb Irondi gave a presentation remotely.

> "VQEG_AVHD_2015_038_Caleb_UWS_SPIE-US-2015_2_AdaptiveStreamingHEVC.pdf"

See also:

> "VQEG_AVHD_2015_028_UWS_SPIE2015_Subjective_evaluation_of_H.265HEVC_based_dynamic_adaptive_video_streaming_over_HTTP.pdf"

The study was about DASH. Because it works over HTTP, it works through firewalls. It adapts to the network conditions of the clients. There's no subjective test methodology that's approved for use evaluating DASH. They set up a DASH web server, sent traffic through a network emulator and then viewed video on a client. They emulated packet loss ratios of 1, 3, 5%, delays of 50ms, 100ms, 150ms. They investigated the different between different segment sizes. The test was conducted in a controlled environment on a 22" monitor and ACR was used.

The results showed that greater bandwidth improved quality. For the most part, the differences between segment size were not statistically significant. Same for delay. Increased packet losses generally decreased measured quality.

They have developed a testbed for DASH and conducted a subjective test with a few different parameters. Dash has problems with initial delay, stalling during playback, and flickr.

Quan opened the floor to questions.

* Ioannis asked why packet loss was considered for an HTTP protocol. The goal was to investigate the nature of dash—does packet loss actually influence this?

* Lucjan asked what the length of the sequences were. There was a 60 second clip used. Lucjan asked if impairments towards the end of the clip were influencing the quality more than impairments at the beginning of the clip. Flicker and startup delay were often more annoying.

Quan and Margaret then closed the session.

Second session: 3DTV

Marcus opened the session to discuss the definitions of 3DTV—there was not much interest. Marcus proposed to not go through the definitions during the session.

Kjell asked how to make progress with the offline work effectively. Marcus suggested giving email reminders and doing conference calls.

Margaret had a discussion with SG9 and would like to go forward by sending the most recent documents to the rapporteurs.

3DTV was closed.

VQEG ELETTER

Margaret will work with Quan and Michelle would work on the eletter. Ioannis said that he may be able to submit something.

Naeem added that if you would like to organize an issue following the VIME issue, contact Naeem so they can organize topics.

Margaret will look for open research problems that are of value to industry. Ioannis will be writing such an article.

Agreement was reached that Glenn will be replacing Nicholas as an editor for the eletter.

OTHER BUSINESS

Liaisons:

Margaret displayed the list of liaisons.

Naeem agreed to write a liaison on UHD Service Quality Iussues and Measurement Tools.

Marcus agreed to write a liaison on 3D recommendations.

The method is to write the text and send it to the cochairs of VQEG. After the liaisons are reformatted, they'll distribute to the board and give one week for a reply. Then the liaisons will be approved.

Kjell will write two new liaisons about Qualinet server support, and one to SG12 to consider Type 1 error in amendment P.1401.

There were no objections to the liaison plan.

Next bit of business is to approve the last set of minutes.

[Note following meeting: The following presentation was submitted but not made as the presenter was called away on other business:]

"VQEG_VIME_2015_026_Subjective_Literature_Review_Goel.xlsx"

Incoming and Outgoing Liaisons

Incoming Liaison	topic
VQEG_LIASON_2015_005_LS_EBU_to_VQEG_EBU_liaison_to_VQEG_HDR_final	Development of methodology for assessing the quality of HDR video
VQEG_LIASON_2015_006_LS_SG9_to_VQEG_sp15-sg9-oLS-00072	LS on UHD Service Quality Issues and Measurement Tools
VQEG_LIASON_2015_007_LS_SG9_to_VQEG_sp15-sg9-oLS-00073	LS on HEVC Objective Video Quality Metrics
VQEG_LIASON_2015_008_LS_SG9_to_VQEG_sp15-sg9-oLS-00087	LS on 3D Recommendations
VQEG_LIASON_2015_009_LS_SG9_to_VQEG_sp15-sg9-oLS-00088	LS on consent of J.bitvqm
VQEG_LIASON_2015_010_LS_SG9_to_VQEG_sp15-sg9-oLS-00089	LS on SG9 quality related activities
VQEG_LIASON_2015_011_LS_WP6C_to_VQEG_LS_06_WP6C-TD-205R1e_pnh	a new Rapporteur Group to study methods to assess, measure and specify "Quality of Experience" in television broadcasting
VQEG_LIASON_2015_012_LS_WP6C_to_VQEG_LS_07_WP6C-TD-204R2e_pnh	REVISION OF Recommendation ITU-R BT.2021
VQEG_LIASON_2015_013_LS_WP6C_to_VQEG_LS_08_WP6C-TD-206R1e_pnh	Recommendation to address subjective assessment methods for image quality of UHDTV

Response to Liaisons

Document	Action to VQEG	responsible	accepted
VQEG_LIASON_2015_005_LS_EBU_to_VQEG_EBU_liaison_to_VQEG_HDR_final	keep EBU informed	Patrick	?
VQEG_LIASON_2015_006_LS_SG9_to_VQEG_sp15-sg9-oLS-00072	Comment	Naeem	Yes
VQEG_LIASON_2015_007_LS_SG9_to_VQEG_sp15-sg9-oLS-00073	Comment	Chulhee	?
VQEG_LIASON_2015_008_LS_SG9_to_VQEG_sp15-sg9-oLS-00087	Action	Marcus	Yes
VQEG_LIASON_2015_009_LS_SG9_to_VQEG_sp15-sg9-oLS-00088	Information	-	-
VQEG_LIASON_2015_010_LS_SG9_to_VQEG_sp15-sg9-oLS-00089	Information	-	-
VQEG_LIASON_2015_011_LS_WP6C_to_VQEG_LS_06_WP6C-TD-205R1e_pnh	Information	-	-
VQEG_LIASON_2015_012_LS_WP6C_to_VQEG_LS_07_WP6C-TD-204R2e_pnh	Information	-	-
VQEG_LIASON_2015_013_LS_WP6C_to_VQEG_LS_08_WP6C-TD-206R1e_pnh	Information	-	-

New Outgoing Liaisons

Topic	Responsible	Accepted
QUALINET about server support	Kjell	Yes
SG12 Type I amendment in P.1401	Kjell	Yes

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Remote equipment provided by Marcus Barkowsky