VQEG Meeting, Glasgow

Monday, September 14, 2015

Hosted by the University of West Scotland

# Website Updates:

* Tools project page: change Nicholas to Tools to Bert (board is correct)
* JEG-Hybrid project page: change Nicholas to Glenn (board is correct)

# Group Updates

**ILG:** Proposal will be discussed later, to expedite model validation

**AVHD:** Novel experiment design update to come later, adaptive streaming is main topic

**Tools:** Has made a new tool available.

**JEG:** Encourages collaboration within VQEG. Has been highly successful, so may no longer be needed.

**3DTV:** Finishing work on three ITU Rec. drafts related to 3D video quality (providing comments & improved text); DVB test will not be moving forward; Ground Truth dataset moving forward

**JEG-Hybrid:** Extending dataset with more source sequences, resolution, packet loss scenarios, etc.

**RICE:** Physiological measurements effort continues (like EEG), special session organized for the next electronic imaging organized (February)

**MOAVI:** Presentations to come Wednesday

**HDR:** Extending past work due to needs of compression to include HDR and wide gamut color. Project name should be extended / changed to include wide gamut color. Started to build database of HDR images from consumer devices; some characterization of mobile devices, to be presented.

**UHDTV:** Netflix provided a 4K video; database work in progress.

**VIME:** Regular meetings in progress; focus is on capture quality (cameras) and rendering (e.g., image enhancement post-processing) on image & video quality. VIME will have photo shoots this week.

**eLetter:** Need to choose topics & articles for 3rd issue.

**MPEG:** Licensing terms for HEVC under discussion; there are some concerns about costs & counting bits.

**ITU-R:** Progress on HDR, e.g., format and how to transmit.

**ITU-T SG12:** P.NATS (parametric models for adaptive streaming) is both competitive but run collaboratively. Models to be submitted in October.

**ITU-T SG9:** Agreed to VQEG edits on the draft 3D Recs. Liaisons to be written by Pinson, Lee and Huynh-Thu

**Qualinet:** is active but not funded under COST. QoMEX will occur in June 2016. ICIP will be late September 2016, with papers to be submitted shortly.

**ITU IRG:** To be conducted later this week, this is a coordination meeting.

**ICDM Project:** Presentation Thursday to summarize ICDM (display measurements).

**IEEE CPIQ:** No update

**EBU liaison to VQEG on HDR:** Reply liaison to be written by Corriveau.

# Presentations

Ioannis (Netflix) summarized the 4K content provide from Netflix to VQEG via CDVL (El Fuente). See [www.cdvl.org](http://www.cdvl.org) for the sequence documentation. The coded versions of El Fuente on Netflix will be updated within the next month to match the version available on CDVL. Netflix plans to make two other 4K sequences available soon (Chimera and another to-be-named).

# 3DTV Session #1

### Ground Truth Database

Presented by Jing Li, see document “VQEG\_3DTV\_2015\_126\_IRRCyN\_GroTruQoE3D\_exp\_v1.pptx”

**Call for Participation:** Subjective testing is needed to complete the Ground Truth Dataset. The experiment is completely prepared (by IRCCyN). Participating labs only need to run 40 subjects. Test duration is 1 hour or less.

Labs interested in contributing to this subjective testing effort:

* UWS, BSkyB, NTIA/ITS, Yonsei

To become involved, please contact Marcus Barkowsky [marcus.barkowsky@univ-nantes.fr](mailto:marcus.barkowsky@univ-nantes.fr) and Jing Li  jing.li2@univ-nantes.fr

### Draft Edits to 3DTV Recommendations

The first document examined was “VQEG\_3DTV\_2015\_105\_3D-disp-req\_td641\_Rev1.docx”

The second document examined was “VQEG\_3DTV\_2015\_106\_3D-fatigue\_TD642\_Rev1.docx”

A 2nd revision was created for each

# Presentations

Phil Corriveau (Intel) “VQEG\_VIME\_2015\_119\_Intel\_Contribution\_September 2015\_v2.ppx” Eclipse open source license to be used. To be hosted on GitHub, with links to VQEG website for easy access. Netflix would like to have this tool be useful for video and professional cameras (e.g., production houses, Hollywood) and to give feedback beyond quality (e.g., here is the problem).

**Schedule:** framework to be presented during a VIME meeting / audio call (perhaps October).

May be able to fold MOAVI metrics into this effort; presentation will occur later this week. Process of integration and builds will be discussed by the VIME co-chairs.

**Agreement was reached:** Proposal accepted, to release full open source framework to be worked on by VIME under the VQEG/VIME banner. This will form the basis of this VQEG open source effort.

# Presentations

Chris Schmidmer (OPTICOM) “VQEG\_AVHD\_2015\_120\_Opticom\_AS\_Introduction\_pub.pptx” to be discussed during the AVHD project

ILG Co-Chairs Proposal to make the validation process go more quickly. See “VQEG\_AVHD\_2015\_111\_ILG Proposal to AVHD.docx”

Margaret Pinson (NTIA/ITS) & Lucjan Janowski (AGH) Update on "no scene reuse" experiment design validation effort. See “VQEG\_AVHD\_2015\_117\_Novel\_scene\_test.pptx”

VQEG Meeting Notes, Tuesday, 15. Sep. 2015

Notetaker: C. Schmidmer

# Other Business Session

Minutes from Monday were accepted

## Discussion on next meeting

Two offers available:

* Qualcomm, San Diego
* Cannon Research, Australia

Timeframe would be around March 2016

Michele Saad pointed out that Visa take a long time to be granted

OPTICOM expressed preference for San Diego due to time lost by traveling

# VIME

## Presentation: James Goel, Qualcomm, “Evolution of High Resolution Video”

(see document “VQEG\_VIME\_2015\_127\_QualComm\_0010 - VQEG Presentation Low-Impairment Compression.pdf”)

* Presentation of screen resolutions and associated interface standards (DP, HDMI..)
* Display stream compression (DSC) is used to transfer data from device to monitor.
* DSC is “visually lossless”
* Qualcomm is in search for still material with 12, 14 or 16bit resolution per component, as well as HDR content.
  + 16bit seems not available in consumer-affordable cameras
  + Quan raises the question if the request for such material makes sense within the VIME project since it is more oriented towards consumer devices
  + Qualcomm’s effort requires raw format photos which can’t be uploaded to Flikr
* New subj. test method for very small impairments, ISO-29170/2 (user compares two versions and answers if he/she sees a difference or not)
* Contact James (email:  jgoel@qti.qualcomm.com ) to join the DSC subjective test (starts 2016)
  + 40 subjects
  + Simple configuration
  + Multiple trials required
  + Possible corporate funding

## Presentation: Mikolaj Leszczjuk, AGH, “Image Classifiers”

(See file:“VQEG\_VIME\_2015\_140\_AGH\_ Image Classifiers – 150.pdf”)

Name of the project at AGH is IMCOP

Classifiers available so far:

* Age
  + Detects faces of persons with age below 18 years
  + Can be retrained to other ages
  + Can be fooled by makeup etc.
* Bokeh effect
  + Determines if bokeh around a face is present or not
* Dominant color of clothes
  + Detects the dominant color (one out of eight) or a value for “colorful”
  + Probably requires a red carpet in the background…
* Dominant color counter
  + Counts how many dominant colors are detected
* Nudity identification
  + Returns probability that a photo contains nudity
* People counter
* Profile/front detection for faces
* Red eye detection
* Smile detection
* Detector for unshaved faces
  + Can also differentiate between beards and unshaved faces

Executables for all classifiers can be made available

## Other VIME Discussion

### VIME Image Database

Update on the database status (VQEG\_VIME\_2015\_128\_VIME\_Agenda\_Glasgow\_meeting.pptx)

* Flickr group: “VIME Image Database”
* All contributions must be under CC0 license
* Tag photos with relevant keywords (optional)

Next project steps: Order and categorize the photos in the database

## Presentation: Andrew Catellier, NTIA, “Python Flickr Tools” (Demo-No document)

Shows how work with Flickr can be automated using Python scripts through an API published by Flickr.

11:25 Break

# HDR

## Presentation: John Ho, QD Vision, "Introduction to Quantum Dot Display Technology"

(document: “VQEG\_VIME\_2015\_116\_QD\_Intro\_150914.pdf”)

Quantum Dots are an efficient method to convert the color of light and are used to enhance the color reproduction and color gamut of displays. Quantum dot technology reduces leakage between the primary color components by converting the color of the background illumination to sharply separated spectral ranges. The subsequent RGB filters can then better filter out their respective wavelengths.

A display may compensate weaker Luminance by better color reproduction. Some people prefer brightness, others color reproduction. It is all about saturated colors which are perceived as brighter.

Color Gamut of OLED displays is slightly worse than QD.

## Presentation: Ludovic Malfait, Dolby, “Overview of EBU and EPFL Subjective tests on HDR Video”

(document “VQEG\_HDR\_2015\_123\_EBU\_EPFL\_subjective\_tests.pptx”)

Need for a subjective test method for HDR is outlined and some results of pair comparison tests are presented.

Standard test procedure with regard to instructions etc. were followed

The Dolby reference monitor with 4000 nits luminance (peak) was used in the test.

Tests were double stimulus pair comparison (with partial comparison) and subjects were asked to rate the overall quality considering certain, predefined aspects.

EBU displayed the stimuli sequentially, while EPFL showed them side by side (using cropped images).

Side by side resulted in smaller CI95

Subjects preferred brighter images

EPFL also conducted an experiment with full pair comparison, result were similar.

## Presentation: Ioannis Katsavounidis, Netflix, “Native resolution Detection of video sequences”

(VQEG\_TALK\_2015\_118\_Netflix\_VQEG\_SEP15.pdf)

You can’t always be sure that a high resolution video was really produced as fully high resolution or just upsampled.

There are many reasons for various resolutions to be used in the production process (camera, special effects, limitations of editing stations capabilities etc.)

Netflix detects this by frequency domain analysis and determining the filter curves of known up- or downsampling filters. This inspection is applied per scene.

# ULTRA HD project

Progress report by Chulhee Lee (VQEG\_UltraHD\_2015\_139\_project\_update\_Lee)

Outline of the scope for planned J.q-uhd

Results from three subjective tests are available now (two still, one video).

Difference between UHD and 1080p is sometimes very small or even inverse to the expected ranking, for both still as well as video experiments.

In the presence of noise, if SI is > 60, then UHD is scored better than 1080p.

* End of morning session -

September 15, 2015 Afternoon Sessions

# Ultra HD Session continued:

Presentation by Chulhee Lee

* Continued UHD presentation by Chulhee Lee.
  + Work to be done in UHD:
    - Asked who would be interested in participating in the UHD subjective testing
      * University of Nantes (Patrick le Callet), AGH (Mikolaj Leszczuk), British Sky Broadcasting (potentially) (Florence Agboma), Opticom (Shahid Satti), Kingston University (Maria Martini)
    - Tools to measure UHD signals: asked if there are proponents of new models.
      * None from the audience
      * Updates to already submitted models are allowed

Presentation by Patrick Le Callet

* UHD subjective test presentation (pair comparison HD video versus UHD video)
* Presentation on preliminary analysis of pair comparison data
* Trend for UHD preference. Need for more content to further verify the trend.
* Note made that: content selection can be critical in evaluating UD models

# HDR

Patrick Le Callet and Phil Corriveau

* Following two paths:

1. Metrics for HDR
2. HDR capture and characterization and the link to subjective methodologies

Presentation by Phil Corriveau: Video HDR Camera Characterization report: test HDR capabilities of three cameras (mobile devices) See “VQEG\_HDR\_2015\_122\_Intel\_VideoHDR\_camera\_characterization.pptx”

Presentation by P. Le Callet: See “VQEG\_HDR\_2015\_124\_IRCCyN\_september2015\_final.pptx”

* Proposal to rename the HDR project to include “Wide Color Gamut”.
* Progress on project:
  + Methodologies to assess QoE in the context of HDR
  + Focus on artistic intention (mos and visual attention)
  + Several datasets have been produced
  + Work on objective measures (still images and video measures)
* Next steps:
  + Address wide color gamut scenarios
  + Gamut mapping a new HRC condition in addition to TMO

-Suggestion to change the HDR project name to include wide gamut.

-Question: subjective methods and metrics: possibly a future recommendation (Study Group 9 and there meeting in January)

# 3DTV

Editing the 3D Fatigue Revision 2 Document 106:

* Reviewing definition of terms.

# AVHD Session

Adaptive streaming services perceptual quality measurement

Presentation by Shahid Satti: Perceptual quality measurement of OTT VoD Services using PEVQ-S. (extension of PVQ)

See (This Document not currently available).

Chris Schmidmer: Comments on proposal from (Monday Sept. 14, 2015 proposal) regarding method for benchmarking models for adaptive streaming services. Reasonable test cases: protocols, containers, codecs, bitrates, resolutions, frame rates… Is there agreement from audience?

* Comment on 25 fps is low, comment to increase that to 60 fps (more applicable to 4K).
* Comment to include 4K.
  + Issue: source material/content availability and logistic problem (memory), selected services that stream 4K
* Clip duration up to 5 minutes (one MOS for this duration)
* Comments on quality changes in the PVS: concern about having too few test cases (for the proposed duration of the sequences)
* Sources + conditions: crowdsourcing: large number of sequences viewed one at a time.
* Question about who is interested in being a proponent?
  + Opticom, Kingston University (potentially), Yonsei (potentially), SwissQual
* Proposal: Shahid Satti to edit the test plan
* Suggestion for regular teleconferences for this project
* Question regarding approval to move forward with this proposal?
  + No objection from the audience.
  + Comment on independent selection of test content.
  + Expected to need 8 to 12 subjective tests in total (~3 tests per proponent)

**Decision: It was decided to move forward with this work item. The corner cases in document “VQEG\_AVHD\_2015\_120\_Opticom\_AS\_Introduction\_pubV2.pptx” will be used to begin drafting the validation test plan (e.g., resolutions, bit-rates, codecs).**

VQEG Meeting, Glasgow

Wednesday, September 16 2015

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# IRG-AVQA

Chulhee presented the following Joint Rapporteur Group work items:

**ITU-T SG9**

* Consent is planned for January 2016 for the following: ITU-T P.3D-sam, ITU-T P.3D-fatigue, ITU-T J.913-rev, ITU-T J.343-rev, and ITU-T P.912-rev.
* Contributions are still needed in these two areas: ITU-T J.src-vq, and ITU-T J.op\_tr.
* Review proposals for developing J.vqm-hevc, and J.q-uhd.

**ITU-T SG12**

* The submission deadline for P.NATS (parametric models for adaptive streaming) models is 28th October 2015.

**WP6C**

* The last meeting was held in July 2015. Work continues on WP6C HDR draft recommendations. As yet, there are no tentative dates for consent on the draft recommendations.

**Next ITU IRG-AVQA Meeting**

* ITU IRG-AVQA will meet during the next SG9 meeting in January 2016.

**IRG-AVQA meeting ended. Joint Rapporteur Group Q2/9 & Q12/9 started.**

Margaret reviewed the VQEG\_3DTV\_2015\_107\_3D-sam\_td643\_Rev2 document.

* The Qualinet definition of Quality of Experience should be inserted.
* Action item given to Phil to rewrite the editor’s note on the definition of Rendered Picture Quality.
* Phil offered to find a reference to a psychology textbook on asking multiple questions after the experiment.
* Action item on Informed Consent Form?

**Joint Rapporteur Group Q2/9 & Q12/9 ended.**

# MOAVI Project

### Presented by Mikolaj. See presentation slides: “VQEG\_MOAVI\_2015\_138\_update\_AGH-Glasgow.pptx”

MOAVI project progress includes normalization of results returned by the interlace indicator, addition of the flickering and contrast indicator algorithms, optimization of the all performance metrics. All video quality indicators have been exported to the JEG-HYBRID virtual machine.

Here is the link to find out more about the video quality indicators <http://vq.kt.agh.edu.pl/>

Plans for h.264/MPEG AVC: new noise indicator algorithm, new frame drop indicator algorithm, new audio indicator algorithms, inclusion of brightness indicator, and new indicators for frames larger than 1080p (4k and beyond). Working towards an embedded version of MOAVI for different hardware devices. Work continues to verify if the VQ indicators are relevant to h.265.

Notes

* Revise the MOAVI project description, and include the links to MOAVI updates.
* To integrate the MOAVI libraries into ffmpeg. In theory, a user could run ffmpeg, and use “add options” for specific indicators.
* How to integrate native detection indicator, professional grade indicators.
* Video heats indicator should be considered.
* Naeem to provide subjective scores from the HEVC subjective experiments to substitute VQM ground truth.

# News

* Springer accepted the publication series of the QoE Journal.

# QART Project

### Presented by Mikolaj. See presentation slides: “VQEG\_QART\_2015\_137\_update\_AGH-Glasgow.pdf”

Revision updates to the ITU-T Recommendation P.912. 10 contributions made so far to P.912, which includes test methods, single and multiple-choice methods, instructions and training subjects, statistical analysis and reporting.

Call for contributions to include gamification at the next ITU SG9 meeting

Plans

* Advance the multiple-choice method
* Seeking for consent, and finalizing the revision at the next ITU SG9 in January 2016.

# Afternoon

# AVHD

- Chris: (1:15 pm)

Start writing the document, no one monolithic test plan but split into different docs (margaret's idea)

First a basic document (prepared by Chris), contains an executive summary.

->agreement on the introduction

->Project synopsis

silvio: swissqual will be interested in hybrid no reference models, without much dependency of protocols.

netflix: mention that this projects deals with lossless protocols, which may have delays, but all data will eventually make it there.

the name of the project was decided to be AVHD-AS.

netflix: one concern is that only the highest quality shud be taken as the ref as otherwise we not be testing the adaptive streaming only

but also the codings done in the server.

Source signal video properties: we can de-interlace the interlaced video to increase the availability of source.

agreement on stall durations and initial buffering durations.

model input is decided, for hybrid models it is still have to be decided.

validation will be made by ILGs, proponents will provide the sources but the selected sources and test design will be unknown to the proponents.

It was decided that subjective test method should qualify P.913 environment, the final decision is to be determined. The ILG will look at BT.2035 to see if it should be used.

# VIME

Quan: Topics in no order

tagging of the photos taken yesterday, Quan ook 26 photos, 11 people were in the photo shoot session.

tags example:

* outdoor
* landscape
* vqegGlasgow:scene=scene01

the details for the photo tagging will be uploaded.

it was planned to take night shots after dinner

update to the VIME flicker page admin policy

James gave a short presentation how we can use imagenet.com like idea for classification of the photos.

this was decided to be too involved and not necessary for the time being.

**Agreement was reached** that people will tag images as they see fit.

VQEG did not agree on a tagging taxonomy.

Slides in “VQEG\_VIME\_2015\_128\_VIME\_Agenda\_Glasgow\_meeting.pptx” give the tags and file names to be used for the vqeg Glasgow photos on Flikr.

# Thursday

* RICE:
  + Sebastian Arndt (T-Labs) - Background and motivation for collaborate EEG based test:
  + See: “VQEG\_RICE\_2015\_131\_RICE-VQEG\_EEG\_September2015R1.pptx”
    - Points discussed:
      * Video sequences (need to have 3-5 minutes, approximately 5 sequences, open source):
        + Margaret offered sequences based on collaboration with Colorado State University, available in 6 months
        + Ioannis offered Netflix sequences (El Fuente & Chimera)
        + Marie-Neige proposed using Blender sequences
        + Margaret proposed other CDVL sequences (Flamenco dance for instance)
        + SVT sequence is also appropriate. Full length 1080p 50fps (and lower resolution formats) is available on CDVL in 8-bit. Marie-Neige has the entire 4K sequence in SGI format (and lower resolution formats) in 10-bits.
      * Coding:
        + Ioannis (Netflix) proposed to use x264.
        + Naeem proposed to use also other codecs
      * Labs having or interested in having EEG equipment:
        + UWS - having
        + Intel - having
        + NTIA - interested
        + AGH - interested
        + Acreo - interested
      * It was agreed that each lab needs to check individually for ethical approval
      * **Action item:** Sebastian to send list of any possible harm to subject
      * **Note:** test plan must have a section that describes ethics approval
      * Other topics did not raise any discussion, so it is safe to assume the values proposed Sebastian have been fixed
  + Advance the status of draft test plan
    - Next teleconference: 30 September, 9:00 CET, 8:00 GMT
    - Interested parties shall subscribe to RICE reflector
  + Kjell Brunnström (Acreo) - Special session on “Psychophysiological Measures of Visual Quality” at HVEI in San Francisco:
  + See “VQEG\_RICE\_2015\_130\_SpecialSessionAnnounce\_RICE. pres 150915 v2.pptx”
    - Deadline for submissions has just passed
    - Still calling for participation
  + Sebastian: how about the liaison statement between VQEG and ITU-SG12 on Physiology? I think this may be good if we have something alike. Just let me know what and how I can contribute to this.
* eLetter:
  + Upcoming issue:
    - Calling for presentations from VIME session to write a short article (1000 words) for the eLetter
    - VIME presenters generally agreed to prepare contributions
    - Also John Ho (non VIME member) will prepare his contributions
    - Deadline for submission: October 23
  + Next issue:
    - Discussed the topic for the next issue
    - First proposal, to have RICE-oriented issue
    - Kjell to confirm with Sebastian and Eva
    - Possible conflict with HVEI
    - Another proposal is HDR
    - Also to be confirmed by Phil
    - HDR & UHD project chairs to express interest in „owning” an issue of eLetter
    - First half of 2016, coordination to start in January
* Presentations:
  + Judith Redi (Delft University of Technology) - Quality Ruler “VQEG\_TALK\_2015\_114\_Quality\_Ruler\_TUDelft\_Redi\_VQEG2015.pdf”
  + Joe Miseli (JVM Research & Technology) - ICDM Overview (Document not currently available).
    - Asking if VQEG can suggest visual assessment methods for evaluating a display which will result in numeric results?
  + Andrew Catellier (NTIA/ITS) - Comparing HEVC / H.265, AVC / H.264 and MPEG-2 “VQEG\_TALK\_2015\_115\_HEVC\_AVC\_Comparison.pptx”.

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* JEG Hybrid:
  + Calling for involvement:
    - Encoding
    - Transmission simulation
    - Decoding
    - Developing pixel/bitstream indicators
    - Combining algorithms
  + ICIP 2016 Challenge Session Proposal - development of a NR model distinguishing 4K from HD content
  + Invitation to teleconferences and mailing list
  + Possible liaison with AVHD has been discussed
* Presentations:
  + Arthur Webster (NTIA/ITS) - Revision of VQEG rules: “VQEG\_ADMIN\_2015\_014\_VQEG\_Rules\_version1.1.doc”
    - New proposals, sometimes modified ad hoc, have been recorded by Arthur
    - **Agreement was reached** to adopt this text, as modified during the meeting
    - Arthur will find definitions for subjective & objective, to be edited & inserted
    - Text with Agreements (but not definitions) here: “VQEG\_ADMIN\_2015\_129\_VQEG\_Rules\_version1.2”
  + VQEG Co-Chairs - Proposed rule change for decisions “VQEG\_ADMIN\_2015\_112\_Proposal on Decisions from VQEG Co-ChairsR1.docx”
    - Captured in the separate document, Arthur will fold the document into the updated rules
    - **Agreement was reached** to adopt this procedure & insert into VQEG rules
  + Michele Saad (Intel) et al. - Impact of Camera Pixel Count and Monitor Resolution Perceptual Image Quality (CCRIQ Database) “VQEG\_VIME\_2015\_132\_Intel\_CCRIQ\_Presentation\_VQEG.pptx”
  + Margaret Pinson (NTIA/ITS) - Image quality from surveillance footage: “VQEG\_VIME\_2015\_113\_Image Quality from surveillance footage.pptx”
    - Proposal to extend VIME
    - Checking if the picture just taken has any value as forensic evidence
* VIME:
  + Call for Flickr uploads
* Date & location for next meeting discussed
  + February 29 to March 4 identified as a good option
  + Two locations under consideration: Sydney, Australia (Canon) & San Diego, CA, USA (Qualcomm)

# Friday

# AVHD

We progressed the base AVHD-AS test plan. The approved version may be found in file “VQEG\_AVHD\_2015\_136\_AVHD\_AS\_Project\_Synopsis\_v2.docx”. Notes on division of labor may be found in “VQEG\_AVHD\_2015\_111\_ILG Proposal to AVHD, with VQEG discussion.docx”

We discussed the document submitted by Marie-Neige in “VQEG\_AVHD\_2015\_135\_TLabs\_2015\_VQEG-AVHD.pdf”

**Agreement was reached** to post announcements / call for participation to the VQEG main reflector, the VQEG AVHD reflector, the IRG-AVQA reflector, the ITU-T SG9 & SG12 reflectors, and the Qualinet reflector.

See the above presentation for Marie-Neige’s concerns regarding inappropriate uses of the ITU-T SG12 P.NATS databases, which were distributed among those proponents under NDA. VQEG does not have access to those databases. Marie-Neige identifies an area where there may be some overlap between these two validation efforts (AVHD-AS and P.NATS, especially Track 2). This seems to be an issue for the ITU to address.