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International Telecommunication Union
International Multimedia Telecommunications Consortium

Session 3-New Media Codec Developments Highlights & Conclusions

AVC/H.264 Digital Video Comp. Std & its Apps / A. Luthra, Motorola
Current speech codec developments at the ITU-T / C. Lamblin, FT
The G.729EV Codec / I. Varga & C. Beaugeant, Siemens
Time to enhance JPEG-1 / J. Mitchell, IBM
JPSEC: Security for Digital Imagery in JPEG 2000 / S. Wee, HP

Dave Lindbergh
Director of Standardization,
Polycom, Inc.

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Highlights from "AVC/H.264 Digital Video Compression Standards & its Applications"

- H.264 doubles the compression of MPEG-2
  - At all bitrates: < 64k to > 250M bps (5000x)
  - Why?
    - Better prediction
    - Better prediction
    - Better prediction
- H.264/AVC enjoying ubiquitous adoption
  - In every video market segment

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Highlights from Presentation 2 "Current speech codec developments at the ITU-T"

- Steady decrease in bitrate for audio
  - This seems to have slowed lately
- Now motion is toward
  - Increased Quality
    - Bandwidth, more channels, error robustness…
  - Increased Flexibility
    - Complexity, scalability, embedded coding…
- Many good codecs – feature tradeoffs
- Goal: "Universal" codec

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Highlights from Presentation 3 "The G.729EV Codec"

- Core = G.729 narrowband (8 kbps, 3 kHz)
  - CELP – good performance for speech
- Bandwidth Extension
  - Wideband (+4 kbps, 7 kHz)
  - Transform coding – music, non-speech
- Quality eq. or better than other standards
  - At 32 kbps
  - Still high quality at 14 kbps
  - PSTN quality (eq. G.711) at 12 kbps

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Highlights from Presentation 4
"Time to enhance JPEG-1"

- Lossless rotations
- Component registration
- Standardized IDCTs (lossless)
  - Waiting on MPEG work
- Improved lossless
- Alternate scan orders
- Specialized scaling FDCTs/IDCTs
- Call for participation ,interest, feedback

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Highlights from Presentation 5
"JPSEC: Security for Digital Imagery in JPEG 2000"

- JPEG 2000 offers great decoder flexibility
  - Resolution, SNR, size, etc.
- JPEG 2000 allows rate adaptation without transcoding
- JPSEC goal: Offer privacy without breaking JPEG 2000 features
  - Rate adaptation without decryption
- Method: Separate encryption of each layer
  - Can drop layers in the network
  - Preserve end-to-end security model

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CONCLUSIONS - Personal views of the chairman

- Bandwidth is getting cheaper (quickly)
  - This changes the requirements for standards
- Compression is still important for video
  - But less so than it used to be
- We have enough compression for audio
  - Focus now is on features, quality, etc.
- Flexibility and interoperability becoming key
  - Security, rate adaptation, complexity/power
  - Error robustness, etc… - these are the future