VEGA is an industry leading media analysis platform for debugging, verification of standards compliance, and interoperability testing of encoded streams. VEGA enables navigation down to the deepest levels of a media file to generate error reports and analysis. This significantly reduces R&D and QA time in delivering standards-compliant video. VEGA supports all popular video compression and container standards and includes features such as video comparison and quality checks. These features help deliver high-quality media.

VEGA Usage Model

- Frame by frame analysis, error identification and reports for audio video elementary streams
- Analysis of the stream structure through syntax elements from the high level to the block level
- Powerful reporting of overflow/underflow in TSTD and CPB model
- Analysis of information from the high level to the block level graphically like bitrate, frame distribution, compression ratio, QP etc.
- Detailed analysis of statistics at different levels like stream, sequence, NAL, frame etc.
- PCR inaccuracy and intervals, PCR drift rate, PCR frequency offset analysis
- Integrated player to test bitrate switching and video quality errors
Advantages

- Accurate, in-depth video analysis assures standards compliance & interoperability
- Comprehensive format support: Apple ProRes, AV1, HEVC, H.264, MMT, HLS, MXF, VP9, VP8, VVC, VC1, MPEG-2, MPEG-DASH, JPEG-2K, ISM, PCAP, Dolby Vision, Dolby AC4, HEIF/HEIC, Dolby Atmos, ATSC 3.0, Dolby E, DTS Audio
- Cost-effective, PC-based software with multi-core support
- Fast performance improves operational, R&D & QA efficiency
- Value-added tools enable video comparisons, video quality checks, buffer analysis and debugging
- Regular updates and aggressive product roadmap anticipates next generation requirements, meeting customer needs
- Encoding comparison, encoding regression tests, STB compatibility
- Responsive support team available 24X7 worldwide

Key Features

- Comprehensive, easy to navigate visuals, high level picture information down to feature thumbnail structure
- Fast performance improves operational, R&D & QA efficiency
- Frame by frame navigation down to the smallest block partitions of Frame
- Conformance violations at all levels to enable accurate examination of media standards
- Summary information for all levels - stream summary, sequence summary, Block (NAL / OBU, etc.) summary, picture summary and more
- Analytical graphs for bird’s-eye view of the stream: Bitrate, frame distribution, compression ratio, QP, DPB occupancy, prediction data and transform data
- Overlay of Slices, Tiles, Blocks over the picture
- Quick examination of coded bits, prediction data, motion vectors, QP, interpolation and reference index over the picture
- Detailed display of syntax elements at header and data levels
- DPB and reference picture information
- Quad Tree view for both HEVC and VP9 which displays the block splitting
- Display pixel values and pictures at every stage of decoding
- Graphical representation of in-loop filter process
- Graphical representation of Intra prediction process
- Visualization of Closed Caption data
- Support for detailed residue view for HEVC and H264 streams
- Efficient and high-performance analysis - multi-core support
- Support for SCC (Screen Content Coding) Extension in HEVC video
- Support for Frext Streams (4:2:2, 4:4:4)
- Provides a microscopic view into MPEG-2 transport streams
- PCR inaccuracy and intervals, PCR drift rate, PCR frequency offset and PTS/DTS analysis
- Strong ABR content validation with respect to the manifest file and ability to report the minutest violations
- Compliance to media standards
- Verification of encoded streams’ bit rates
- Detailed verification of chunks alignment based on the following:
  - Timing of encoded frame rate in elementary streams
  - Chunks play time
  - Stream structure
  - PTS/DTS encoded in TS
  - IDR alignment at start of chunks
- Verification of video and audio quality checks, such as blockiness, black frames, freeze frames, loudness, silence and CALM specification checks
- Play and switch between different Variants
- Analysis of QP variations across different bit rate streams
- Analysis of frame size and compression ratio variation
Utilities

Buffer Analyzer
- Analyzes Coded Picture Buffer (CPB) and T-STD Buffer Model
- Conformance violation as per standard
- Rich Buffer analysis report for easy debugging

YUV Quality Viewer
- Evaluate video quality matrices such as PSNR, RMSE and SSIM
- Evaluate pixel level comparisons
- Play reference, comparison and residual video
- Compare multiple YUVs

Trace Viewer
- Examine various syntax elements in detail e.g. syntax element name, offset and value. The elements are linked with the Hex View

File Info
- Quickly identify the high-level information about the stream
Comparison Viewer (HEVC/H264/VP9 vs HEVC/H264/VP9)
- Encoding comparison - bit rate, QP data, buffer occupancy, motion vectors and more
- Quality comparison - contrast, blockiness, pixelation, and blurriness

Error Log Viewer
- Examine, search, and filter error messages and dump the errors in XML or PDF file

Batch Mode
- Used to analyze multiple files simultaneously in GUI

Standard Support

**Video Streams** - Apple ProRes, AV1, H.264, HEVC, JPEG-2K, MPEG-2 TS, WebM, VVC, VP8, VP9, MPEG-DASH, Apple HLS, ISM, Dolby Vision, AVS and AVSPlus Video, AVI

**Audio Streams** - AAC, AC-3, EAC3, LPCM G.711 (A Law/Mu Law Audio), G.722 (ADPCM Audio), MP3, ALS Audio, AES3 Audio, FLAC, Vorbis, Dolby AC4, Dolby Atmos, Dolby E, DTS Audio

**System Streams** - MMT, MXF, Transport / Program, MP4, MPEG-2, WebM, MKV, PCAP, TLV-MMT, HEIF/HEIC container

**ABR Streams** - MPEG-DASH, HTTP Live Streaming (HLS), Microsoft Smooth Streaming (ISM), OGG

**Line 21 formats** - EIA 608, EIA 708, AFD, XDS, SCTE-608, DIVICOM-608, CMAF Constraints

**Other Formats** - HDR-BT2020, HDR10, DVB Subtitle, ATSC 3.0 checks, TELETEXT, JPEG, JPEG-XS, HEIF

**Conformance Checks** - TR101290 checks, Cable Labs 3.0, ARIB STD-B1 Annex C, ARIB TR-B14 Profile C, and HbbTV checks