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Video**Q** **P**roductivity **T**ools and **M**edia **A**mbit ™

Advanced Metadata Acquisition and Usage

VideoQ Technology Presentation

August 2022

www.videoq.com

VideoQ Philosophy of Media Data Processing

1. Automatically generated **Extended Technical Metadata** and **Reports** are must be and must cover:

Image aspect ratio, contrast, sharpness, sound loudness, noise and other unwanted components levels are among the most critical parameters affecting the subjective estimation of AV content quality.

2. Traditional professional image & sound QA/QC methodology, based on the usage of large number of high-grade video & audio monitors, etc. is no longer the answer, ***but we learn that QA/QC is still needed***.
3. In this automated environment a **smaller number of human operators** should focus ***only*** on optional final checks and/or complicated cases.
4. And these operators must be equipped with appropriate **software tools and indicators** presenting all relevant parameters in a time-saving “easy to spot at a glance” way.

*The VideoQ **VQPT** modules answer the need for such automatic tools.*
*Combination of VQPT suite modules with other VideoQ tools, such as **VQV** – Player/Viewer/Analyzer and **VQMP** – Advanced QA/QC Media Player, will result in further increase of workflow efficiency.*

VideoQ Productivity Tools Core Foundations

1. VideoQ Productivity Tools are designed "**by engineers, for engineers**"
2. An ever higher number of channels/programs/titles
3. And a permanently growing number of formats, frames sizes, bitrates, etc.
4. Human resources required for input QC and output QC has escalated
5. A new approach and **new tools** are needed *as demanded by our customers*
6. Hence VideoQ has changed the focus from our traditional T&M tools to **Automated Productivity Tools**
7. Automation is essential, but …
8. Human intervention cannot be excluded
9. Thus, our slogan is: **'Robot-assisted human decisions'**

Learn more about **V**ideo**Q** **P**roductivity **T**ools: www.videoq.com/vqpt.html

About Media Ambits

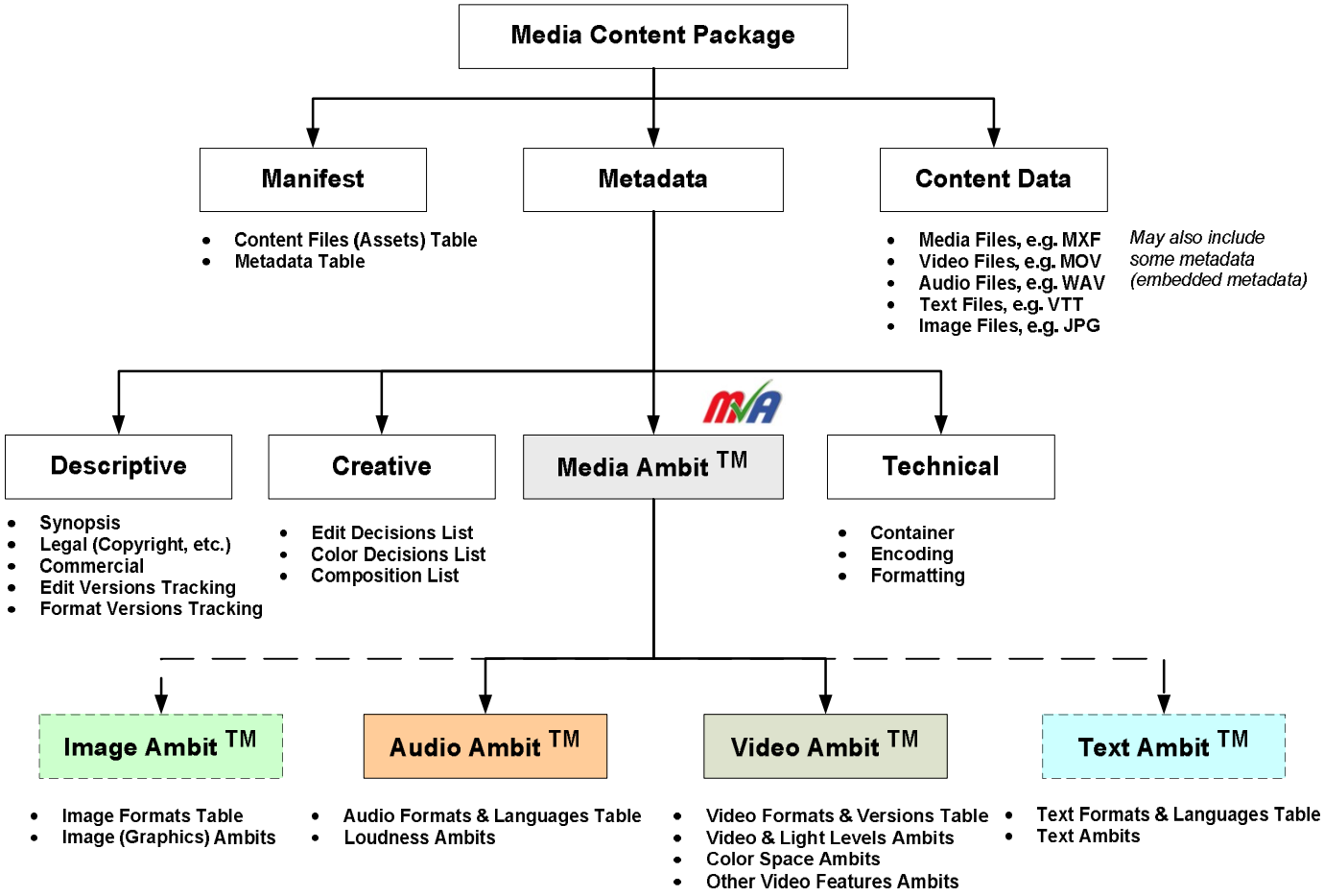
What it is:

- [*me·dia am·bit*] noun: Technical and semantic **metadata** about moving images, sounds, and timed text; **embedded** in files or **externally centralized**.
- Sentence example: Their system uses media ambits to automate ingest and delivery.
- Variations: Video Ambit, HDR Ambit, Audio Ambit, Timed Text Ambit, etc.

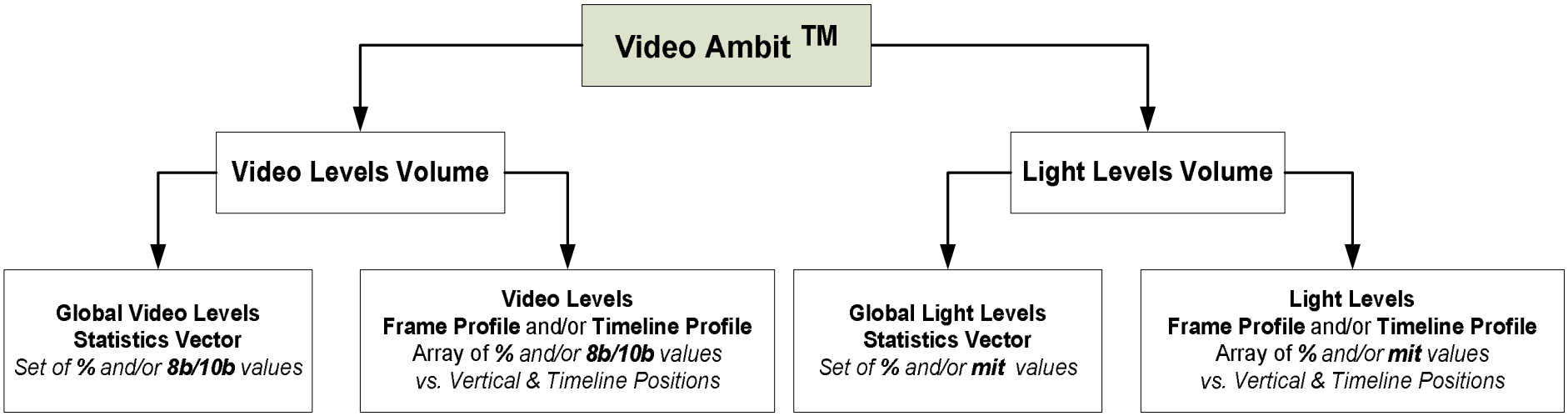
Ambit's Role for Automated and Automation-Assisted Workflows:

- Robot-assisted human decision-making **tools**.
- Robots-learning-from-people **tools**.
- **Ambits repositories** and **machine services** optimized for automation, web services, and directed acyclic workflows.
- Automated and manual control of **optimized** video and audio processing/conversion
- Automated and manual **quality assurance** and **quality control** tools
- Measure, annotate and automatically **modify** files to match **target ambits**.
- **Notify** machines, people and dashboards in **automated workflows**.

Media Ambit and Media Package Data Structure



Video Ambit Data Structure Example



Video Levels in % are calculated by offsetting Video Levels by **Nominal Black** value and division by the specified **Nominal Range** of the corresponding **Channel**.

Model nit = **Video Levels** to **Light Level** Model output. Standard Conversion Models: **SDR**, **HDR-PQ**, **HDR-HLG**

Levels Statistics Vector & Profile Channels:

- **Y, U, V** – *primary data read/decoded from media file/stream*
- **R, G, B** – *secondary data derived from YUV data*
- **D** = MinRGB – *darkest of 3 image components*
- **M** = MaxRGB – *brightest of 3 image components*
- **LL** = Light Level – *data derived from M data via HDR/SDR model*

Examples of Video Ambit individual parameters:

Frame **A**verage **L**ight **L**evel = **FALL**

- **FALL T**imeline **P**rofile = **FALLTP**
- **G**lobal **M**ax **L**ight **L**evel = **GMLL**
- **F**rame **A**verage **Y L**evel = **FAYL**
- **L**ine **U**pper **M L**evel **F**rame **P**rofile = **LUMLFP**

Media Ambits and VideoQ

VideoQ developed essential tools for Ambit-based Automated and Automation-Assisted Workflows:

- **VQPT** - **V**ideo**Q** **P**roductivity **T**ools, suite of unattended program modules for Windows/Mac/Linux platforms that make Media Ambit metadata, plots, and images required for databases & orchestrators
  http://www.videoq.com/vqpt.html

- **VQV** - Media Files Player/Viewer/Analyzer/Converter for deep analysis QA/QC applications
  http://www.videoq.com/vqv.html

- **VQMP** - Advanced QA/QC Media Player compatible with VideoQ VQV Viewer-Analyzer
  http://www.videoq.com/vqmp.html

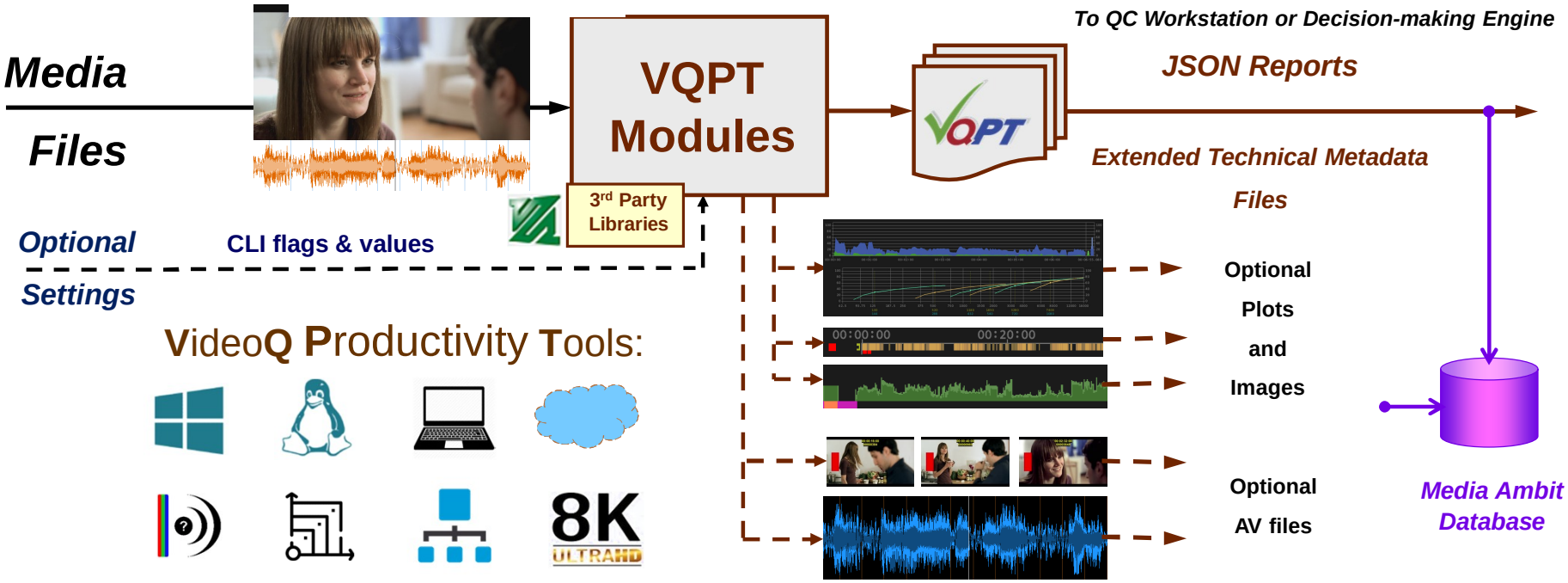
- **VQCP** - Video QC secure player for human review and supervision, compatible with Media Ambit tools and practices
  http://www.videoq.com/vqpt.html

Media Ambit Metadata Acquisition Workflow

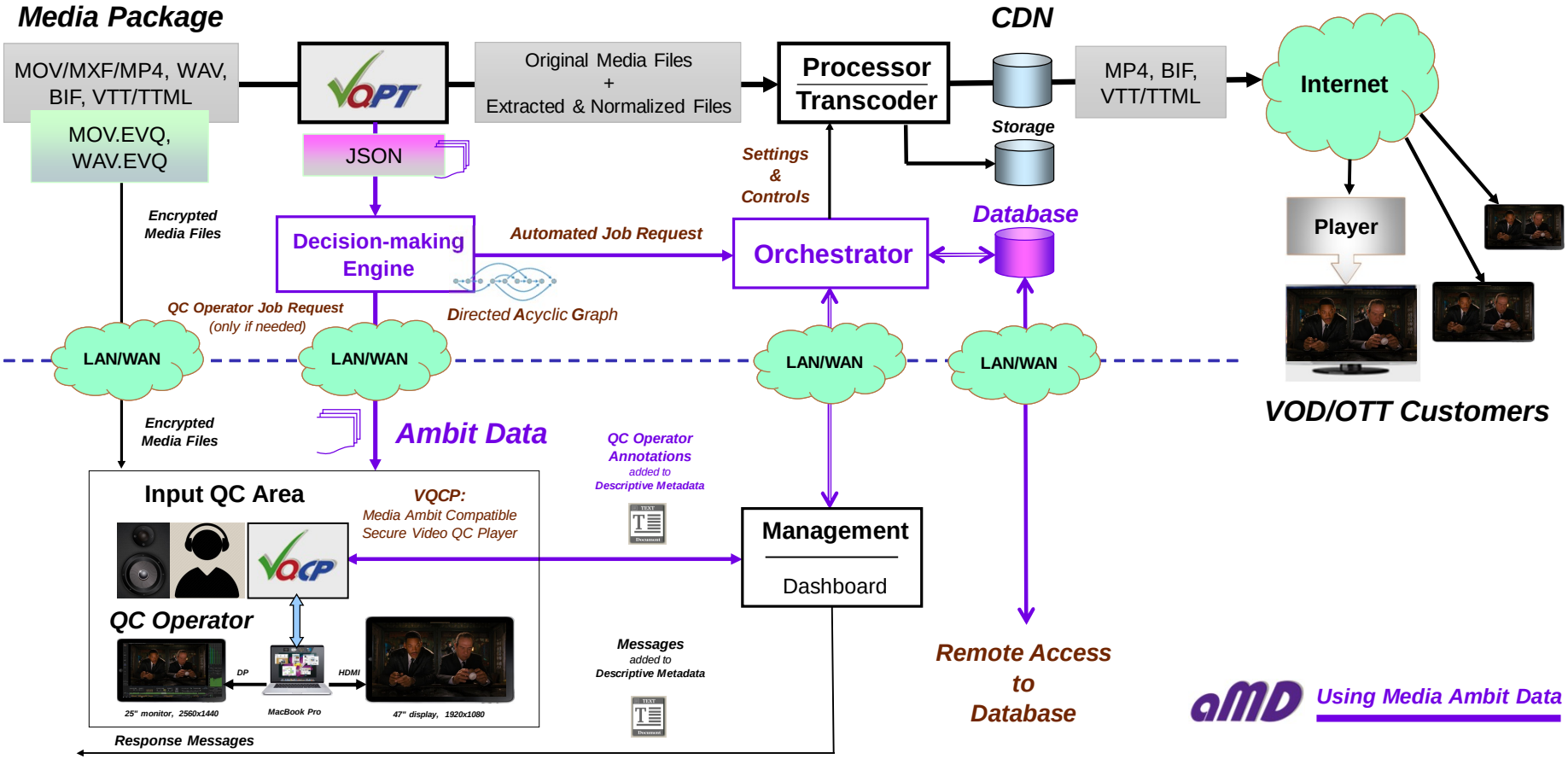
VQPT is a suite of portable Windows/Linux CLI programs for on premises and cloud computing.

It can be used for production, post-production and distribution applications.

The program modules can be purchased and used separately or grouped for typical applications.



VQPT and Media Ambit Data Usage Workflow Example



About VideoQ

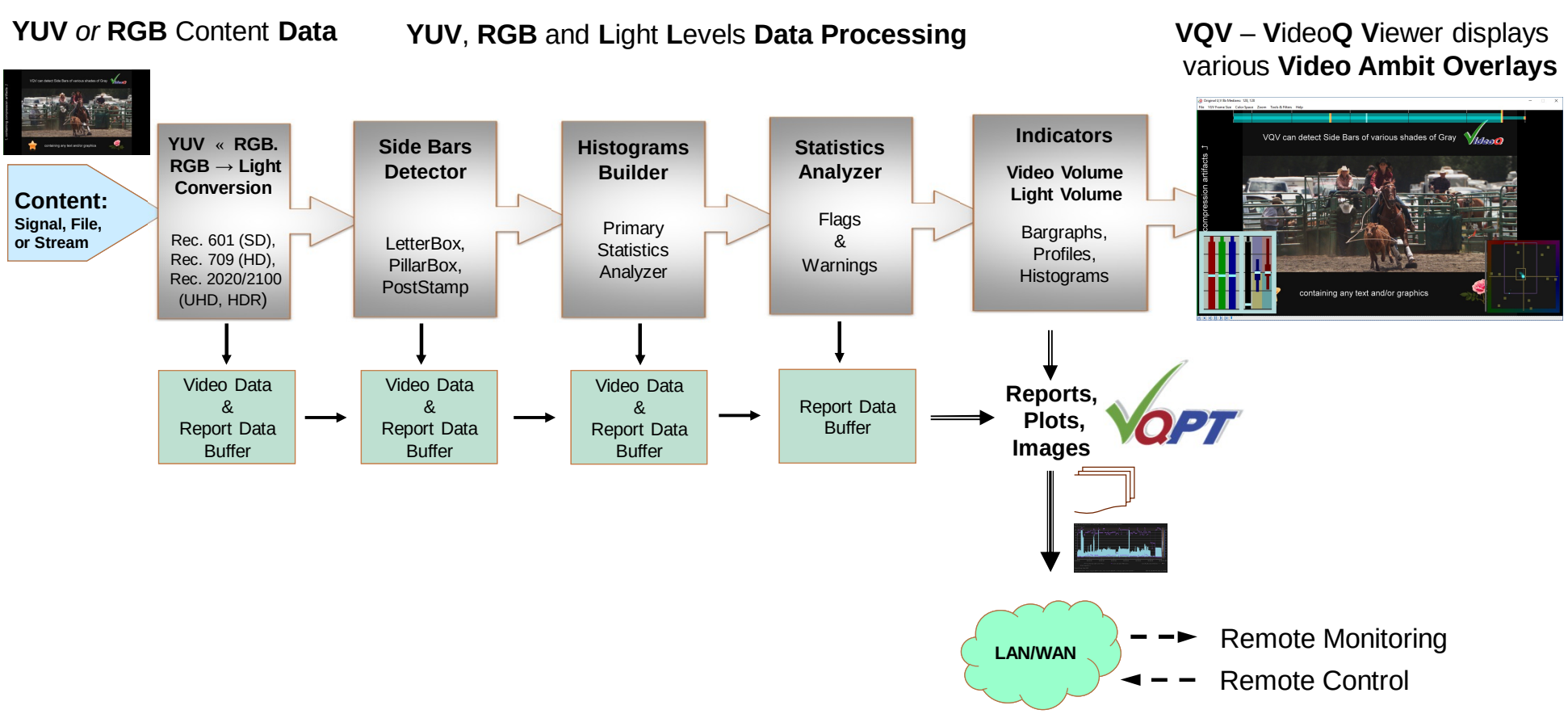
Company History

- Founded in 2005
- Formed by an Engineering Awards winning team sharing between them decades of global video technology.
- VideoQ is a renown player in calibration and benchmarking of Video Processors, Transcoders and Displays, providing tools and technologies instantly revealing artifacts, problems and deficiencies, thus raising the bar in productivity and video quality experience.
- VideoQ products and services cover all aspects of video processing and quality assurance - from visual picture quality estimation and quality control to fully automated processing, utilizing advanced VideoQ algorithms and robotic video quality analyzers, including latest UHD and HDR developments.

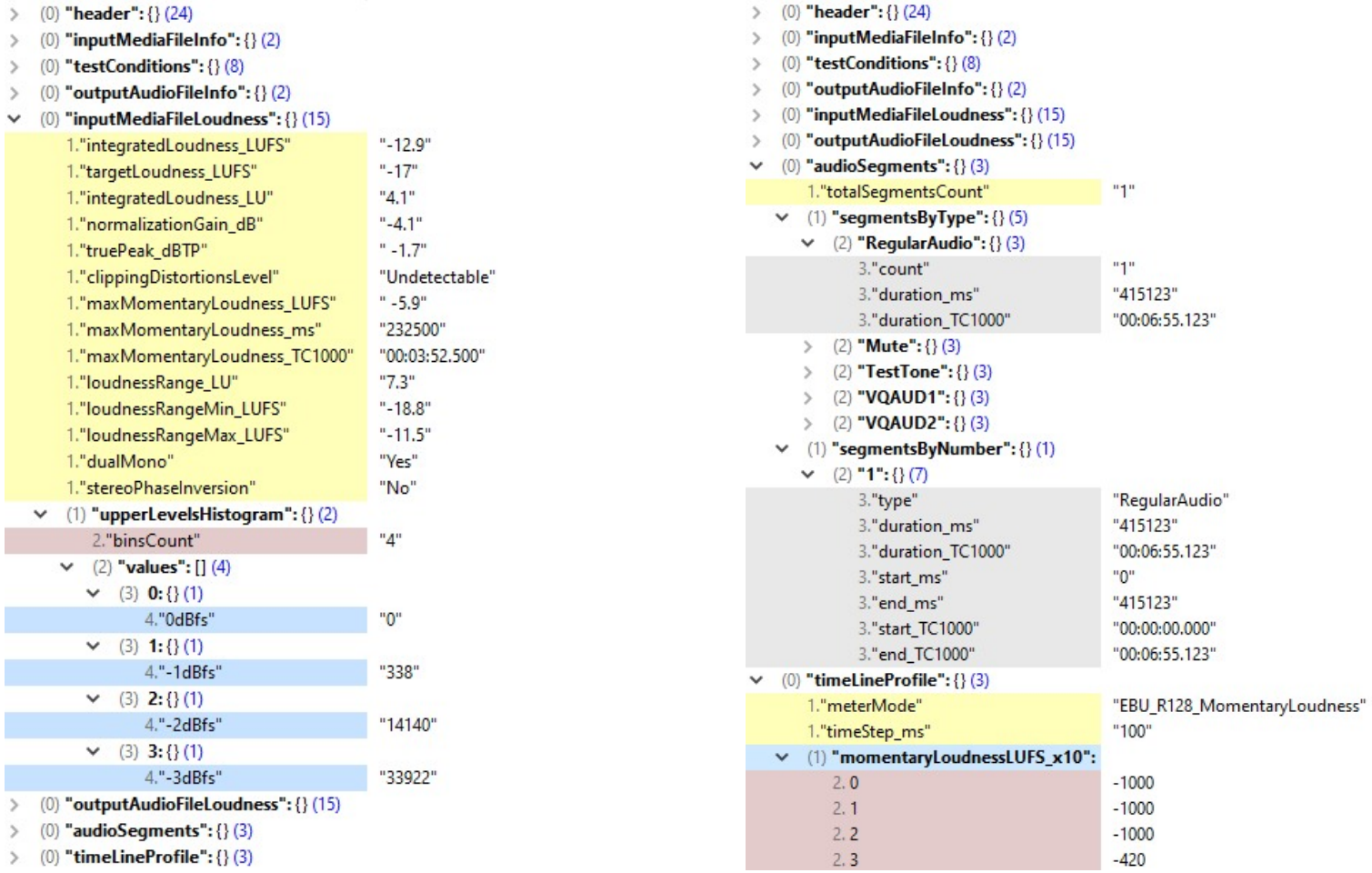
Operations

- Headquarters in CA, USA
- Software developers in Silicon Valley and worldwide
- Distributors and partners in several countries
- Sales & support offices in USA, UK

Video Ambit Data Acquisition Workflow Example



Audio Ambit Example – VQLPN JSON Report

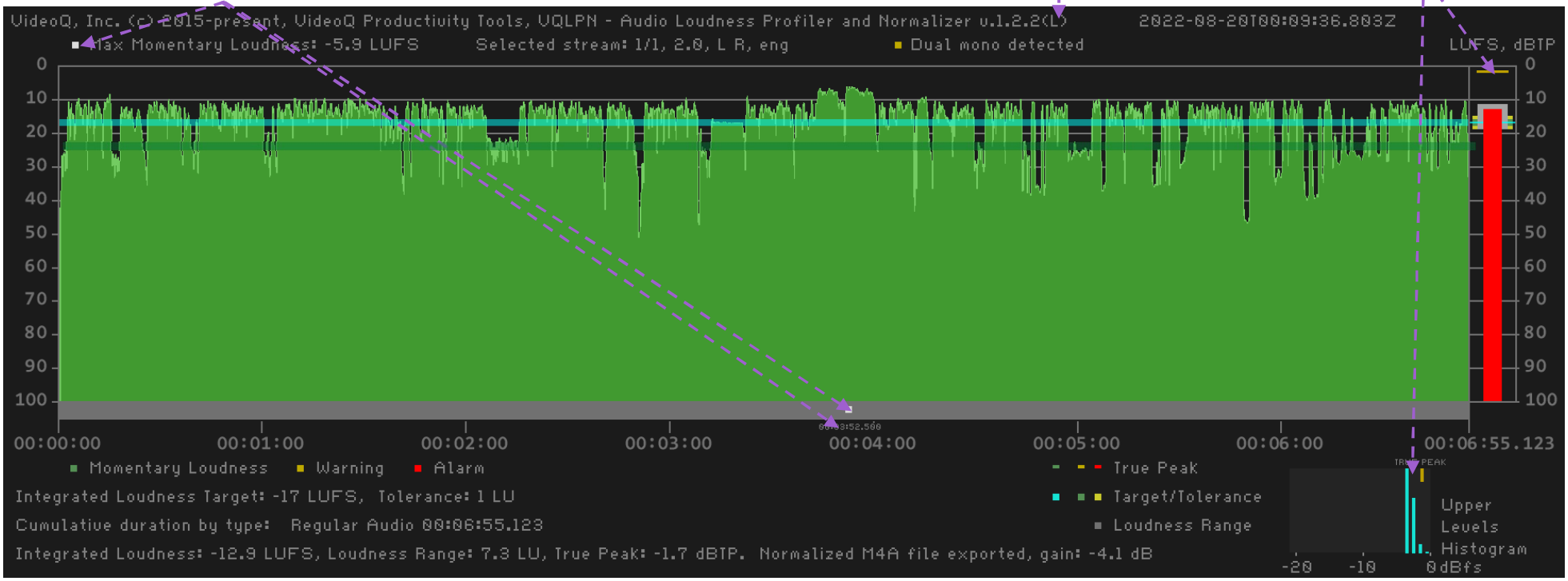


Audio Ambit Example – VQLPN Plot

- **Integrated Loudness** is **much higher** than **-23 LUFS** target value. IL = **-12.9 LUFS**, probably legacy content
- **True Peak** value is **relatively high: -1.7 dBTP**
- **Dual Mono** (L=R) stereo content detected, probably upconverted from mono original
- **Upper Levels Histogram** shows that minor **Clipping Distortions** are possible.

True Peak *level*
is ***relatively high****;*
Upper Levels Histogram
shows ***possible minor distortions***

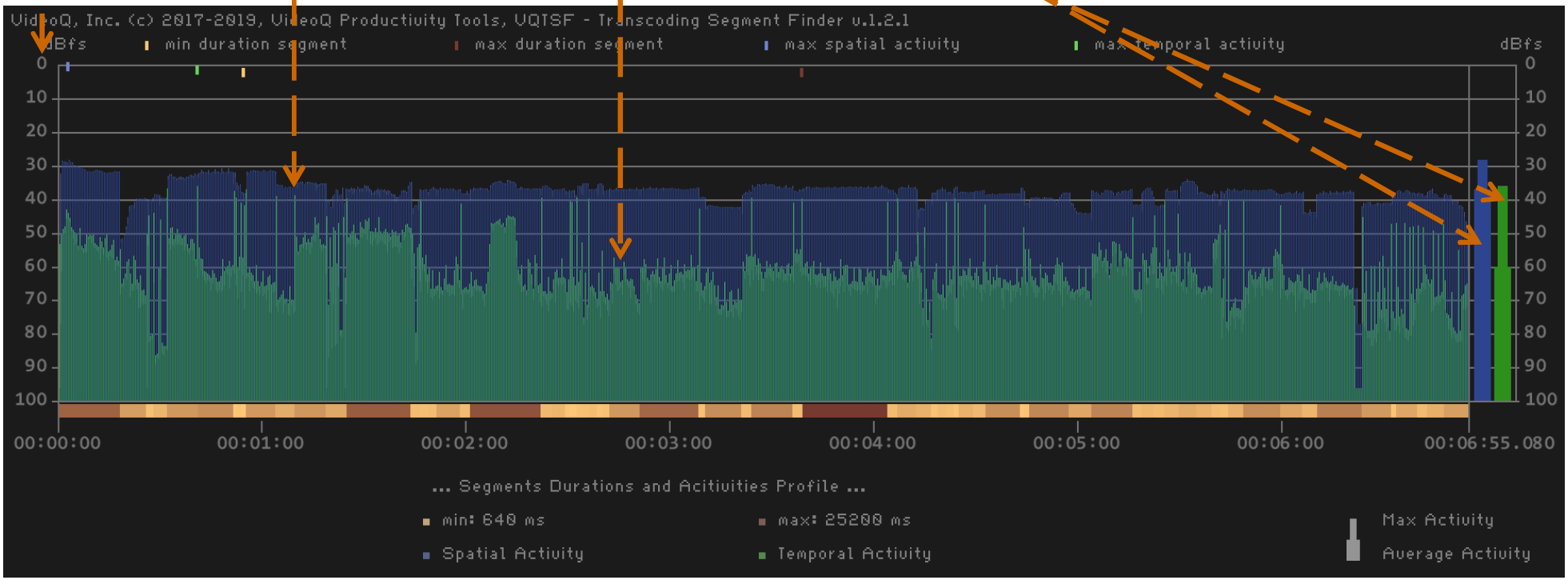
Small White square marks max Momentary Loudness time position



Video Ambit Example – VQTSF Plot

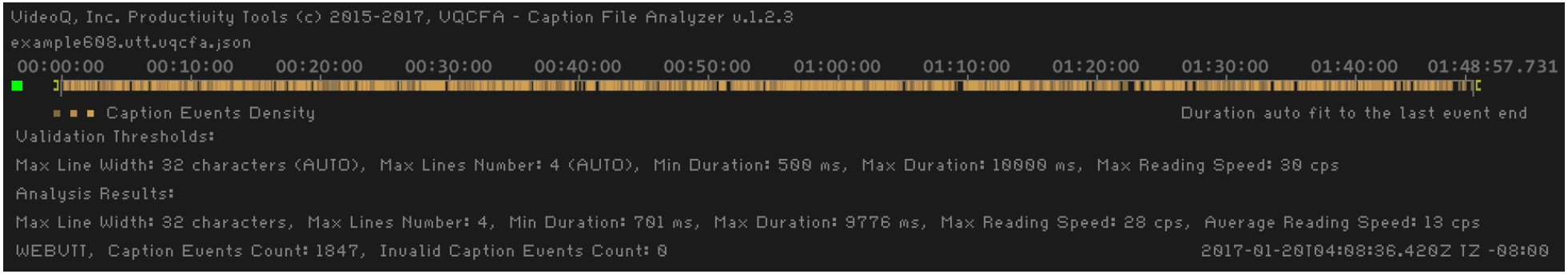
Media file duration: 6min 55s. ***74 video segments*** *found,* ***relatively easy*** ***segment durations*** *from 0.64s to 25.2s.*
Video Image Activity *profiles are of* ***medium*** *strength, so we can get relatively* ***good quality*** *at relatively* ***low bitrates****.*

Activity, % **Intra-frame Activity** (Static Details) **Inter-frame Activity** (Dynamic Details) **Activities Statistics Bargraphs**



Text Ambit Examples – VQCFA Plots

Normal Caption Events – **No problems found**



Multiple Caption Events are **Out of Specs:**
Reading Speed, Min Duration, Max Duration,
Overlapping Events, Max Lines Number, Max Chars Per Line