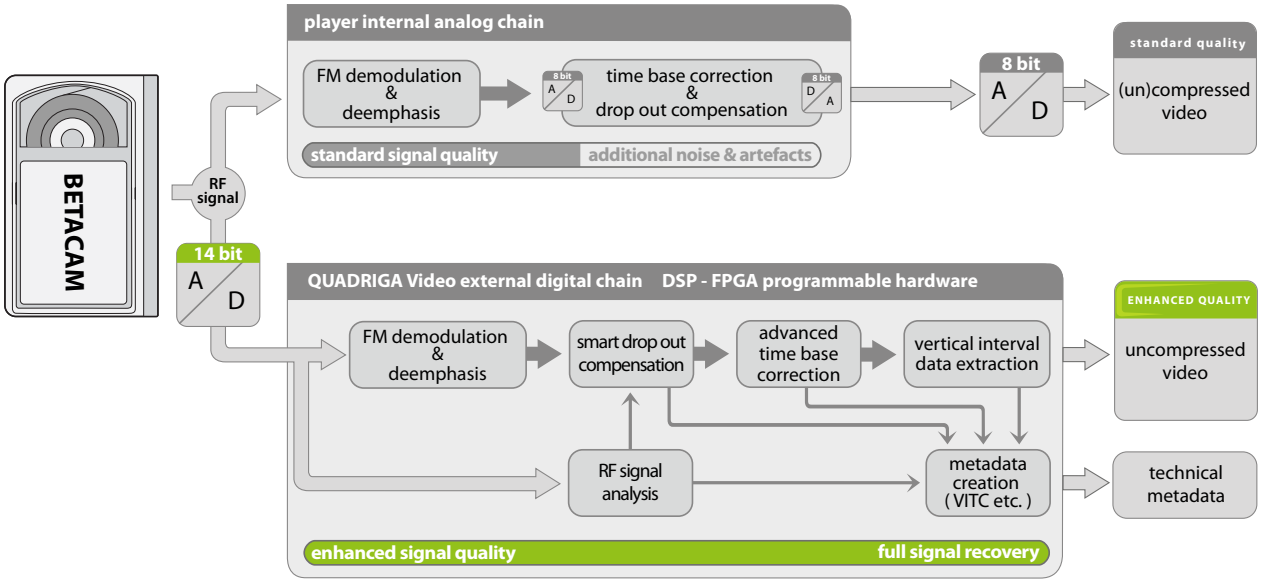
# Product News

## Analog video tape to file conversion without compromise!

**QUADRIGA Video is the next generation tool, to transfer analog video tapes e.g. Betacam SP into files for networked TV- or video-production and for archiving and preservation. It is scalable from manually controlled single channel ingest workstations up to a fully automated migration factory.**




## The technology behind QUADRIGA Video

The complete transfer path from off-tape RF to the target file format is digitally processed. By substituting the traditional analog video playback path with optimized software algorithms, ultimate assessment of signal quality, error reporting and error compensation is possible.

Quality assessment and control is an integral part of the system. Full confidence in the transfer process can be achieved. The ingest workflow is highly streamlined and insensitive for operational errors. Comprehensive sets of metadata are created for further processing, storage and retrieval in any content- or media asset management system.
All mainstream analog video recording formats are supported, e.g. component recording like Betacam® and BetacamSP® or color-under recording like U-matic® (low band, high band, SP).
Open industry-standard codec- and fileformats ensure best possible interoperability with other vendor´s systems and facilitates interchange and interoperability of formats. QUADRIGA Video´s open system concept allows full compatible integration with other Cube-Tec products like DOBBIN and CubeWorkflow 2.0.

### DOBBIN

DOBBIN is an automatic video/audio processing and rendering solution, used for archives, studios and large online media centers. The DOBBIN system is a distributed, fully scalable, high-availability AV-processing and -rendering engine, developed to fully automate file management and media processing functions. QUADRIGA Video output files can be systematically processed using DOBBIN - e.g. for re-encoding, automatic restoration or other post-processing requirements - which is a perfect companion to QUADRIGA Video.

### CubeWorkflow 2.0

CubeWorkflow 2.0 is a flexible archive management solution that supports the ingest team in organizing their daily tasks. It can be used as a standalone workgroup solution, or as the connecting link to existing asset management systems in order to exchange metadata with other Cube-Tec products. Designing workflows for efficient production chains is easy and integration into third party SOA-based production or MAM systems is naturally.

Intuitive and logical graphical interfaces are essential for efficient and user friendly operation. They provide all necessary information and alerts for easy supervision and control of all manual and automated workflow steps.

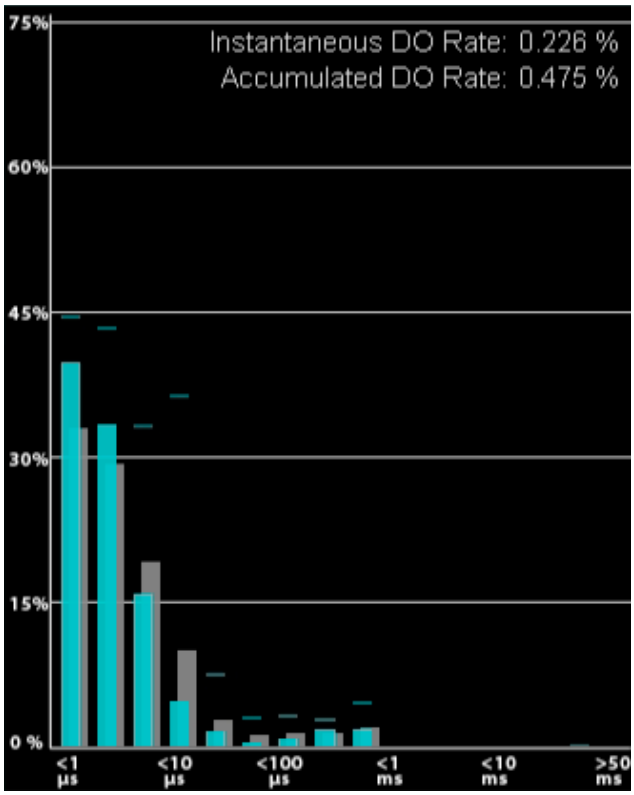
## Features and benefits

### Software based audio/video playback with radio frequency A/D conversion

By digitizing the off-tape RF signal, all further demodulation and playback signal processing is completely done in the digital domain. High density 14-bit A/D converters are used which allow digital in depth RF signal evaluation to detect electrical and mechanical misalignments of playback and recording parameters. These data form the basis for quality checks, error logging and compensation. Comprehensive video signal analysis for transfer quality assessment, signal quality evaluation and control can be implemented in the further processing.
Audio and LTC are captured using a high density 24-bit A/D converter. All of the Cube-Tec´s well established state of the art audio restoration tools can be used in the automated workflows. VITC as well as other vertical interval data are also captured as part of the video demodulation.

### Smart drop-out prevention

The software-based “smart drop-out prevention” allows dynamic setting of drop-out detection levels within the digital RF signal and enables proper signal demodulation superior to analog drop out detection used in conventional VTRs. In case of unrecoverable drop-outs, metadata documents the exact occurance and sophisticated concealment algorithms can be used to compensate signal degradation on a highly advanced level.



Drop-out statistics

### Industry standard video codec support

Commonly used video signal compressions like MPEG-2 Intra-frame (D-10) for 30, 40 or 50 Mbps and DVC-Pro 25/50 for SD-Video are supported by Cube-Tec systems as standard. Other open coding schemes, e.g. lossless JPEG 2000 are optional.

## Multiple metadata creation and support

A comprehensive set of metadata is essential for further storage and meaningful retrieval of archived content. A significant set of technical metadata is created during the signal processing, which is used to best describe the signal characteristics and improves the possibilities for preservation and successive restoration.
Technical and descriptive metadata can be formatted for use in any archive- or asset management system. Quality control is still in its infancy and industry initiatives are developing common guidelines. The system is already set up to implement data for next generation quality check and control.

## Loudness normalization

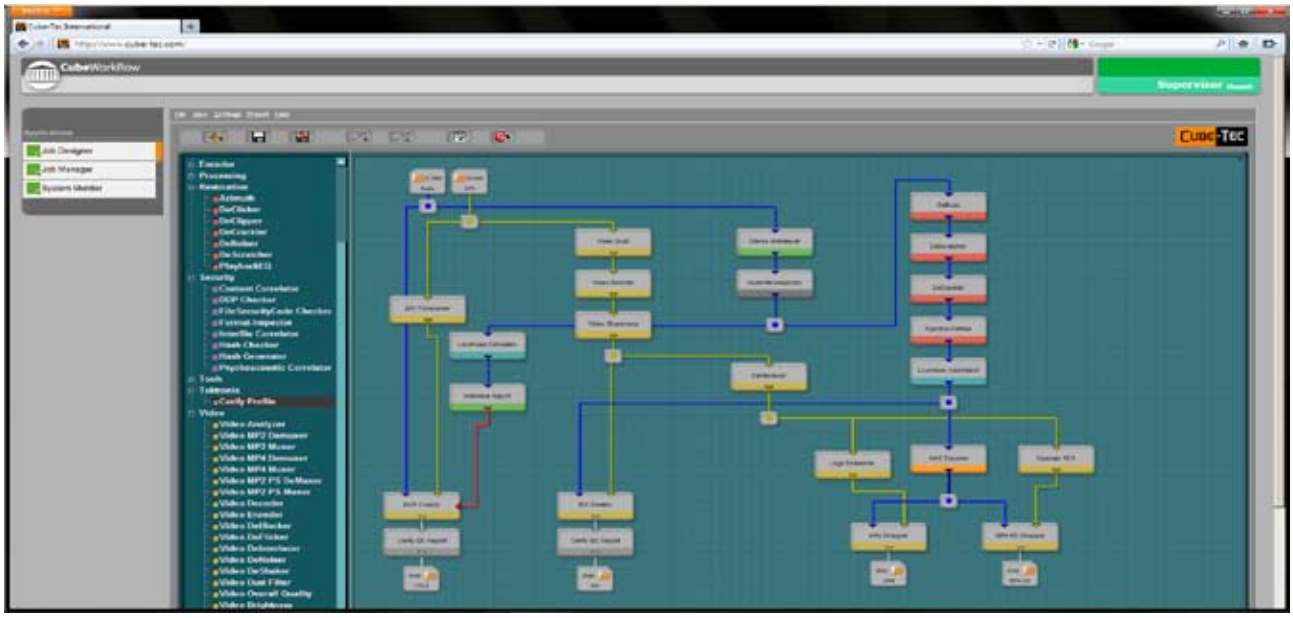
The EBU´s recommendation R128 is now widely accepted and describes methods for automatic loudness control for playout, ingest or transfer in TV production. Cube-Tec systems already support R128 (ITU-R BS.1770-2).
The implementation in QUADRIGA Video is optional, depending on the application and workflow design.

## Seamless integration with Cube-Tec´s DOBBIN and CubeWorkflow 2.0 systems

QUADRIGA Video generates all content and data for efficient further file-based batch processing in the DOBBIN rendering farm, where file conversion, transcoding, transformation, conformance checks and management of descriptive and technical metadata is handled. Each step in the workflow can be designed and controlled by the new CubeWorkflow 2.0, an easy to use VISIO-like web-access based graphical user interface for optimization of automated workflows.

## Industry standard file format support

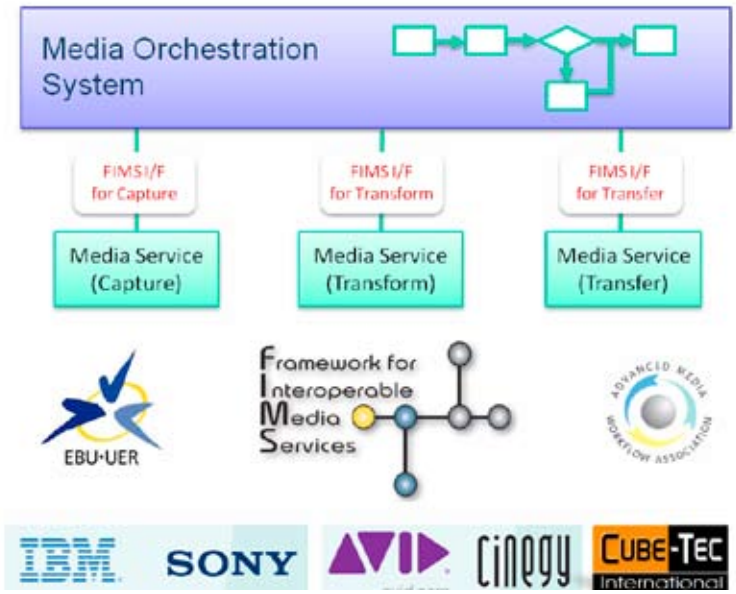
Various file wrapper formats are in use by the industry today, depending on the applications. The most common format used in TV-, video-production and archiving is MXF which is supported by QUADRIGA Video as standard. Special MXF flavor like Master Archive Package (MAP) are ready to use.



CubeWorkflow 2.0 with JobDesigner

### Easy SOA integration

Service oriented architectures are more and more used in modern networked and file-based TV- and video production installations. QUADRIGA Video and other Cube-Tec building blocks can easily be integrated into other vendor´s SOA-based infrastructures as essential part of ingest, transfer or archiving jobs. QUADRIGA Video already supports the open standard Framework for Interoperable Media Services developed in cooperation with the European Broadcasting Union and the Advanced Media Workflow Association.




FIMS demonstration partner

## Additional features and benefits of QUADRIGA Video Digital

### Full 10-bit Video support

High quality SDI inputs use 10-bit video quantization (e.g. Digital Betacam). MPEG-2 coding only supports 8-bit quantization which means a significant loss of quality due to 10/8-bit-rounding or cutoff. High end processing like color correction or color keying demand 10-bit resolutions to maintain signal quality. Coding schemes like AVC-Intra, or JPEG 2000 support 10-bit resolutions. Visually and mathematically lossless compression can be implemented.

### Native codec support

Open codecs, like DVC-Pro are directly processed and wrapped into files. Additional transcoding steps or DA/AD conversions used in VTRs can be avoided by transparent digital software processing.

### Multiple metadata creation and support

Creating a comprehensive set of metadata during the transfer process is essential for further storage and meaningful retrieval of archived content. In digital systems automatic generation of even more technical metadata is possible, like coding parameters, picture size, sampling structure, etc.

### Channel condition monitoring

Digital VTRs normally provide channel condition information which can be evaluated, logged and used for creation of quality control information. Channel condition indicators allow judgment of the playback quality and how much error correction and concealment schemes are active during playback.

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