

**opencube**  
TECHNOLOGIES

**YOUR WORKFLOW ENABLER**



**Guillaume NEVEUX**

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**Guillaume Neveux - [www.opencubetech.com](http://www.opencubetech.com)**

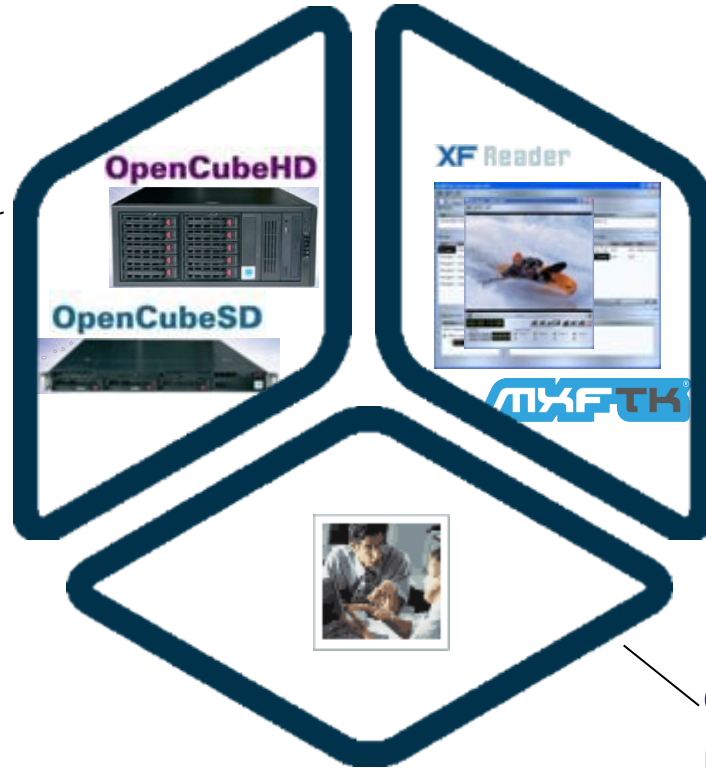


- **A Toulouse-based company founded in 2003**
- **About 12 people – most are video & software engineers**
- **A professional, reactive and flexible team**
- **We own world class expertise in MXF implementation and metadata management**
- **We invest heavily in R&D**
- **We answer the migration to full digital facilities and we define ourselves as Workflow Enabler**



# OpenCube's Solutions

**Ingest Server & DDR  
2K / HD 444 / SD / MXF**



**Toolkit, Player, MXF &  
GXF tools**

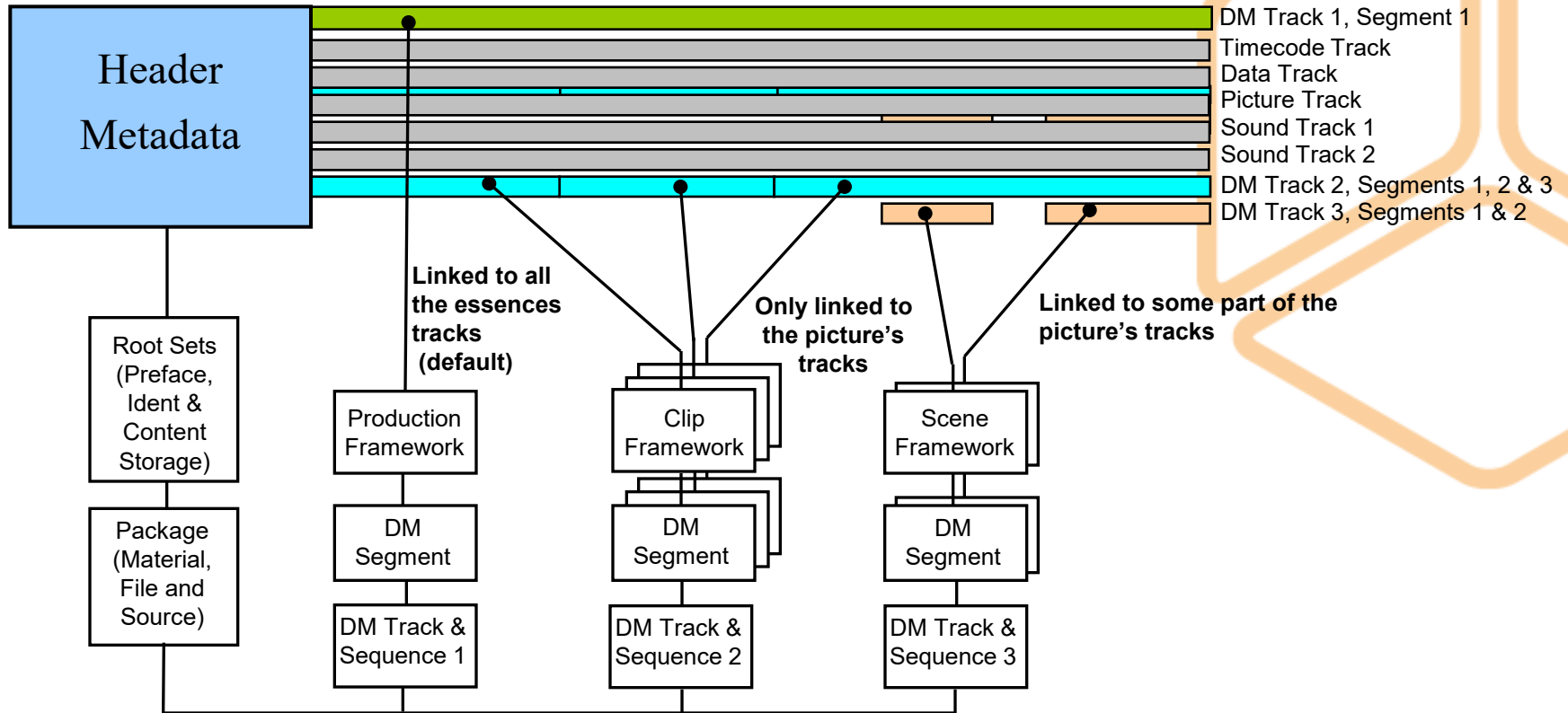
**Consulting, Services and  
MXF Training**

# Jpeg2K and MXF



- **Transport & Exchange**
- **Audio/Video synchronisation**
- **Metadata (Descriptive or structural)**
- **Index table (Direct access to frames, seeking, ...)**
- **File names (avoid still frame naming complexity)**
- **Timecode**

# Descriptives Metadata



**This figure illustrates the structure of the Descriptive Metadata frameworks contained in the header metadata and how it relates to the content of the MXF file body.**

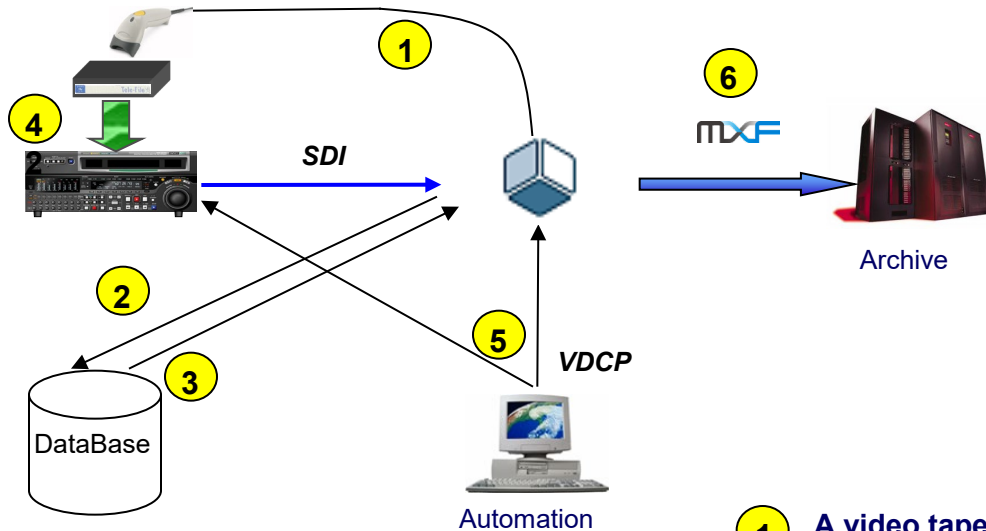
# Where can it be used?

## TV Channel & Broadcast industry

- Archive
- Camcorders
- Editing



# Archive Migration: Case Study

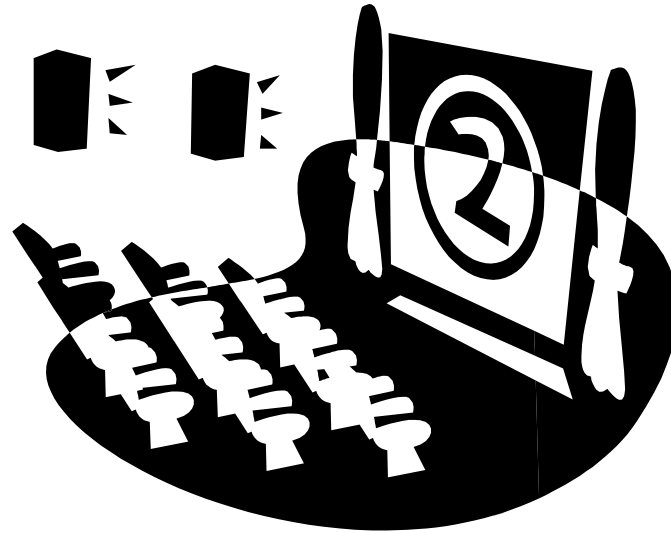


- 1 A video tape is manually scanned by an Operator
- 2 A request is sent to the Database
- 3 The TimeCode and Metadata are retrieved from the Database
- 4 The tape is inputted in the VTR by an Operator
- 5 The Ingest process is launched by the Automation via VDCP
- 6 The MXF (Jpeg2k) file is encoded, wrapped in MXF and stored on a distant storage with the Metadata.

# Where it is in used?

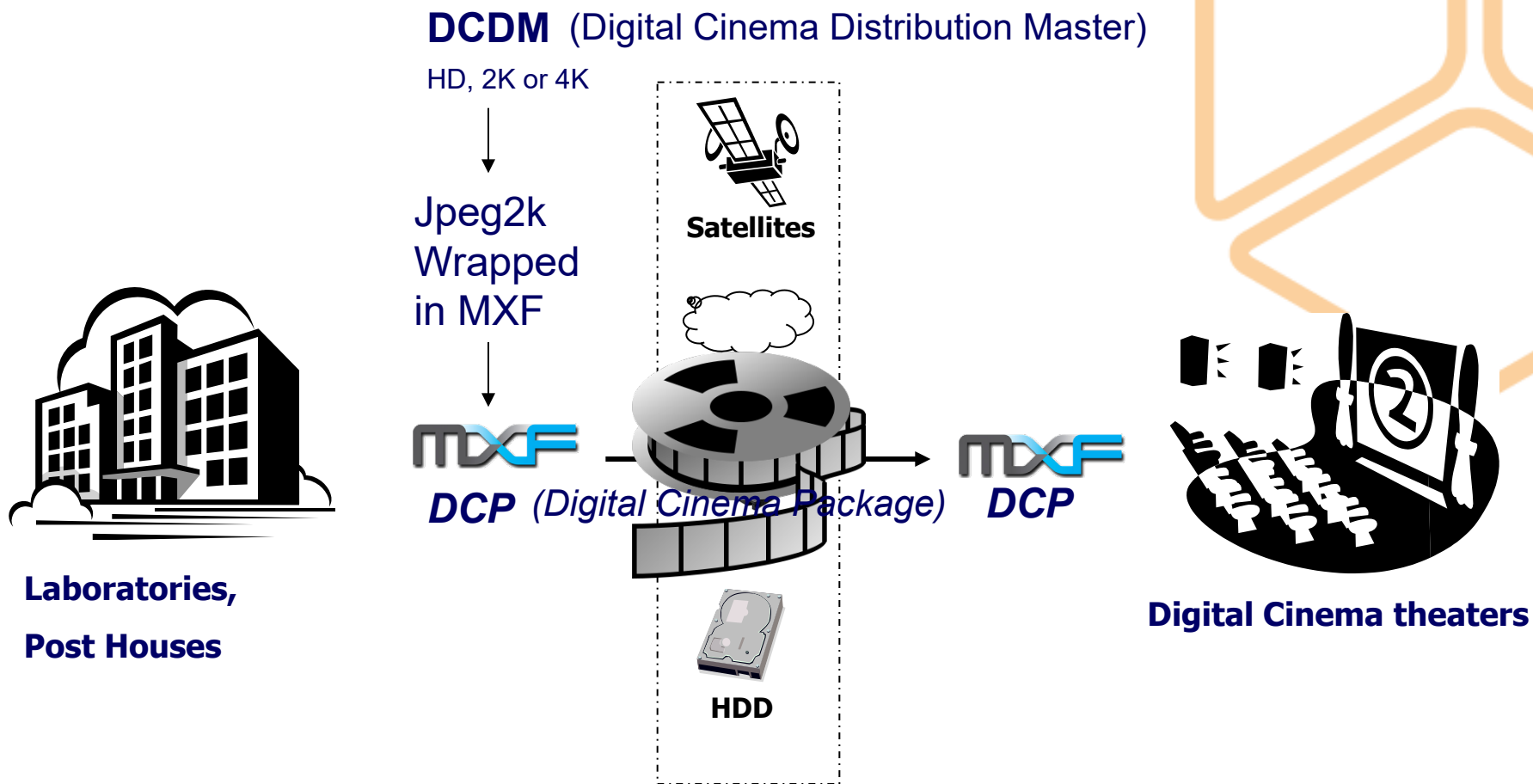
## Digital Cinema (DCI)

- Exchange
- Display on theaters

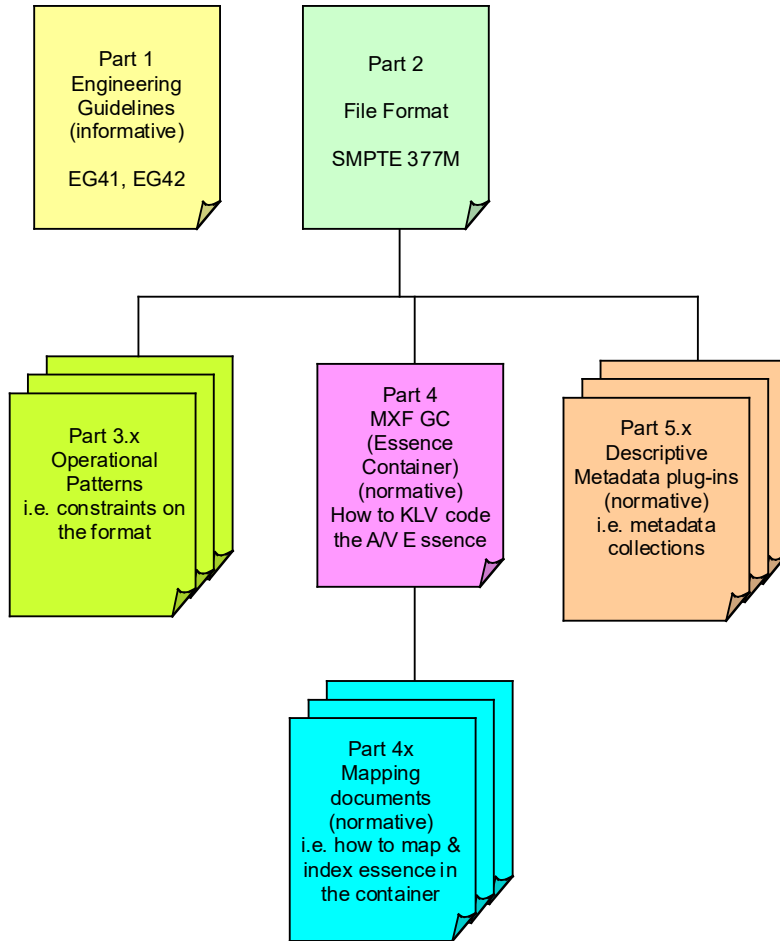




# DCI and MXF Jpeg2K



# MXF Standards



- 1 **SMPTE 377 M (MXF Format)**
- 2 **SMPTE 378 M (OP1a)**
- 3 **SMPTE 379 M (Generic Container)**
- 4 **SMPTE 380 M (DMS-1)**
- 5 **SMPTE 382 M (GC AES-Bwf)**
- 6 **SMPTE 381 M (GC MPEG)**
- 7 **SMPTE 383 M (GC DV)**
- 8 **SMPTE 384 M (GC Uncompressed)**
- 9 **SMPTE 385 M (GC SDTI)**
- 10 **SMPTE 386 M (GC D10)**
- 11 **SMPTE 387 M (GC D11)**
- 12 **SMPTE 388 M (ALaw)**
- 13 **SMPTE 389 M (System Item – Reverse Play)**
- 14 **SMPTE 390 M (OPAtom)**
- 15 **SMPTE 391 M (OP1b)**
- 16 **SMPTE 392 M (OP2a)**
- 17 **SMPTE 393 M (OP2b)**
- 18 **SMPTE 422 M (GC Jpeg2000)**
- 19 **SMPTE EG41 M (MXF Engineering guideline)**
- 20 **SMPTE EG42 M (DMS1 Engineering guideline)**

# OpenCube's MXF software



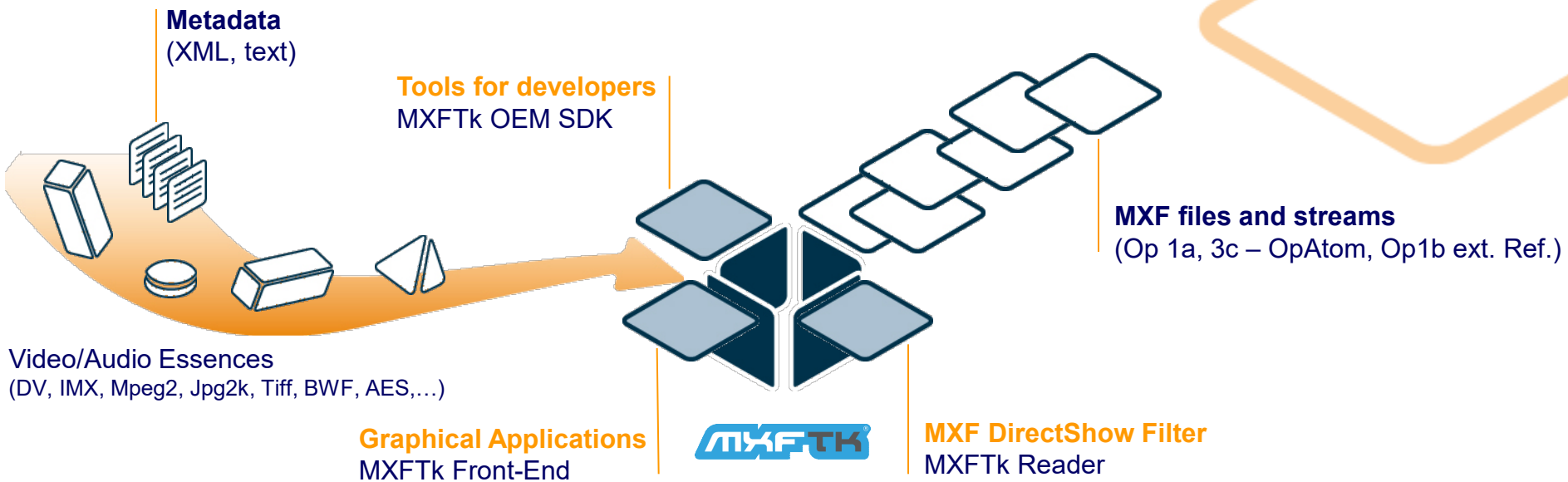
- **MXFTk Advanced v2.1 (SDK)**
- **MXFTk Front-End v2.1**
- **XF Reader v2.1**



OEM C++ SDK v2.1



## A toolkit to implement MXF





## OEM C++ SDK v2.1

- Multi-platform C++ API (Windows, Mac, Linux, Unix)
- Support for all Operational Patterns (OP) : from Op1a to Op3c, OpAtom, Op1b ext. ref.
- Essences Handled : IMX 30, 40, 50, Mpeg2, Mpeg2 HD, Mpeg4 AVC, DV, DVCPRO, Jpeg2K,...
- D-Cinema (DCI) support - DCP creation
- Essence encryption
- DMS-1 - XML Interface Management
- Metadata updating
- MXF Partial Restore and sub-clip creation
- MXF interoperability with Cameras, NLE, Broadcast



# XF Reader

A simple tool to play & browse MXF files



## Version 2.1 :

- Viewing of all MXF SD & HD Media
- Viewing of MXF Jpeg2k files
- Support of Op1a, OpAtom, Op1b ext. ref.
- Advanced audio tracks selection and management
- MXF sub-clip creation
- Timecode display
- Browsing
- Essence encryption management

# OpenCube's SD & HDTV servers

**OpenCubeSD**

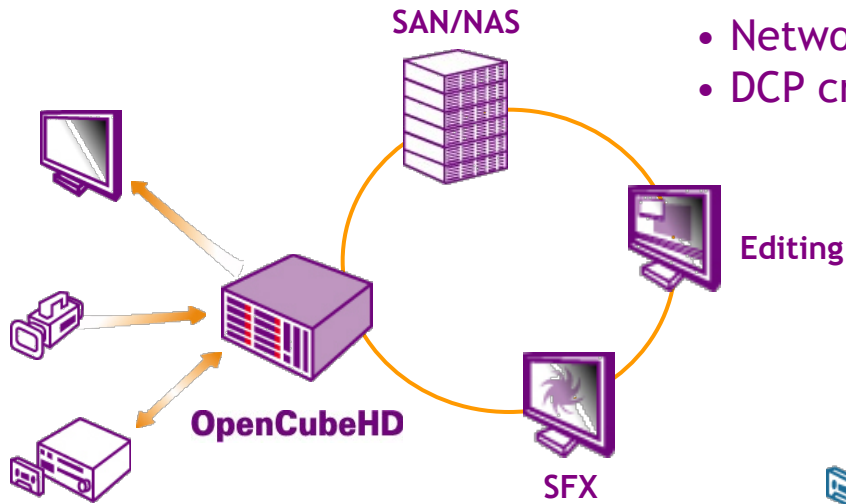
**OpenCubeHD**



**SD/HD DDR for seamless production workflows:**

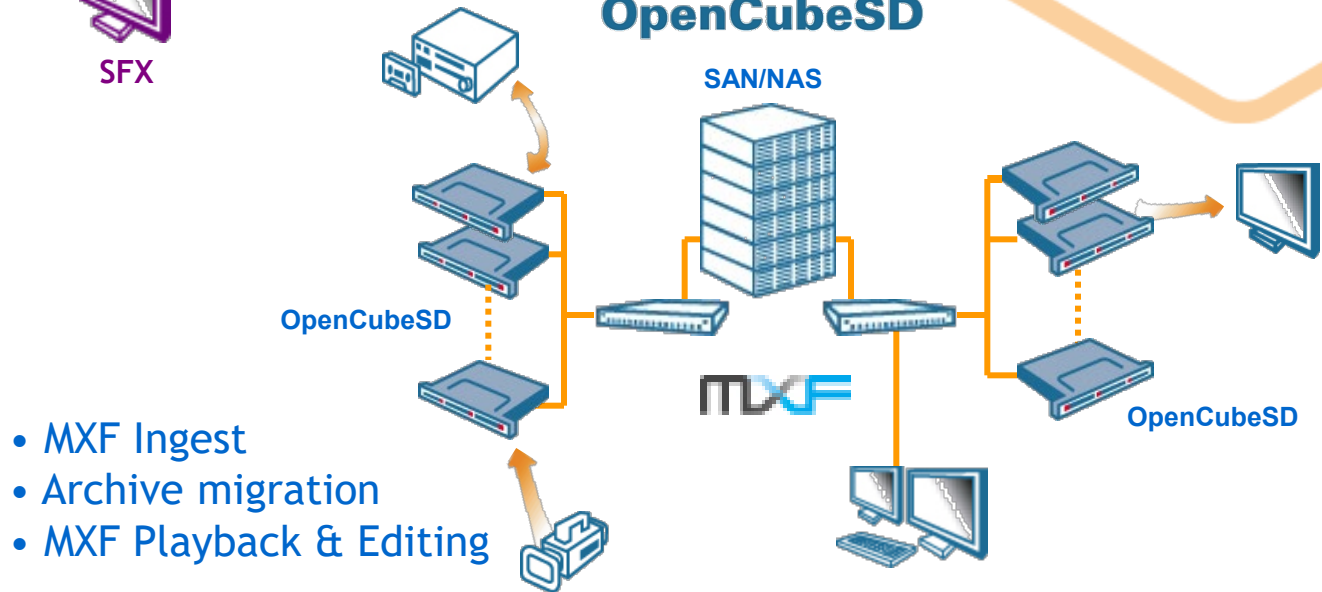
- Ingest server
- Digital Disk Recorder (RS422 & VDCP)
- Digital Cinema DCPs creation

# OpenCubeHD



- DDR HD & 2 K
- VTR Emulation
- Powerful and easy to use GUI
- Network Sharing
- DCP creation (Jpeg2k encoding)

# OpenCubeSD



- MXF Ingest
- Archive migration
- MXF Playback & Editing



# More information

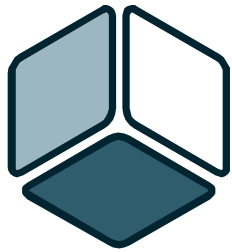
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Eval versions available on [www.mxftk.com](http://www.mxftk.com)



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**Thank you**

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