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Captioning and Video Files

Delivery of Closed Captioning in a File-Based Workflow

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Quality Control of CC Video File Data

- Where is the CEA-608 and CEA-708 caption data stored?
- Typical limitation of software verification
- Caption Workflow Summary
- Data that is stored alongside the closed captions
- Verifying formatting for internet CC
- Checking for common CC errors
- Emulating TV CC viewing experience

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Quality Control of CC Video File Data

Sample Video Formats that Contain Closed Caption Data

Video File Types with CC data

- **VBI Captioning**
- XDCAM Compatible
- SD 720x512
- MPEG-2 Codec
- 4:2:2
- CEA-608 only
- V-Chip/XDS support

MXF OP1a SD IMX 30

Video File Types with CC data

- **SMPTE 436M CC Track**
- XDCAM Compatible
- HD 1080i / 720P
- MPEG-2 Codec
- 4:2:2
- CEA-608 and 708
- V-chip / XDS support
- AFD support

MXF OP1a HD XDCAM

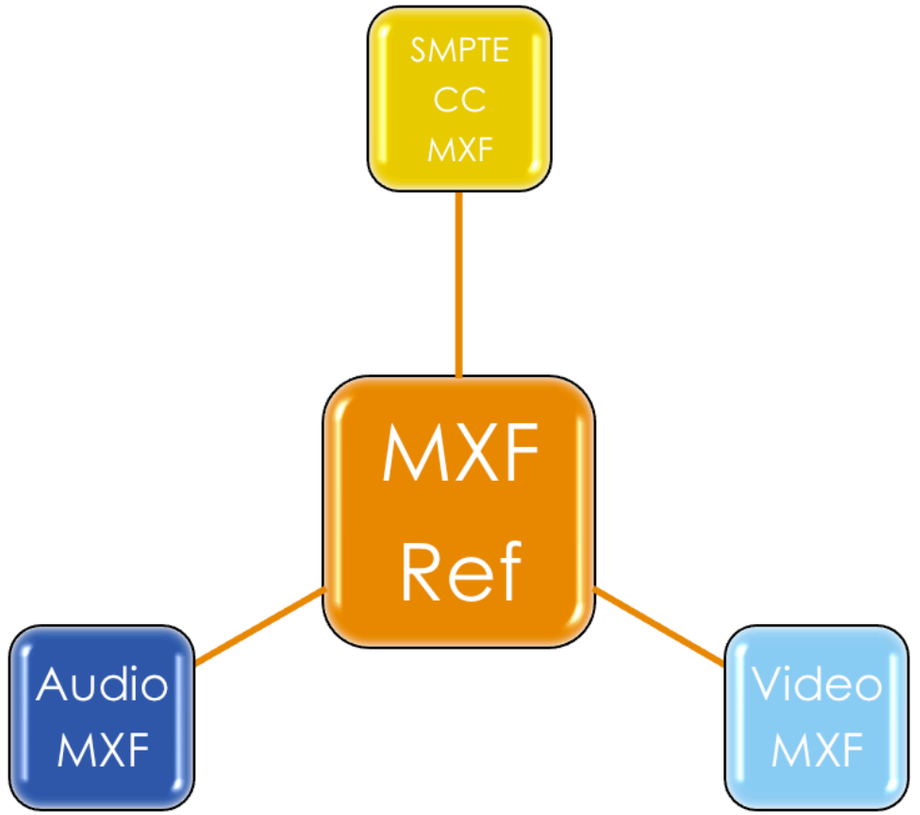
Video File Types with CC data

- **User Data CC**
- HD 1080i / 720P
- MPEG-2 Codec
- 4:2:2
- CEA-608 and 708
- V-chip / XDS support
- AFD support

MPEG-2 Transport Stream

Video File Types with CC data

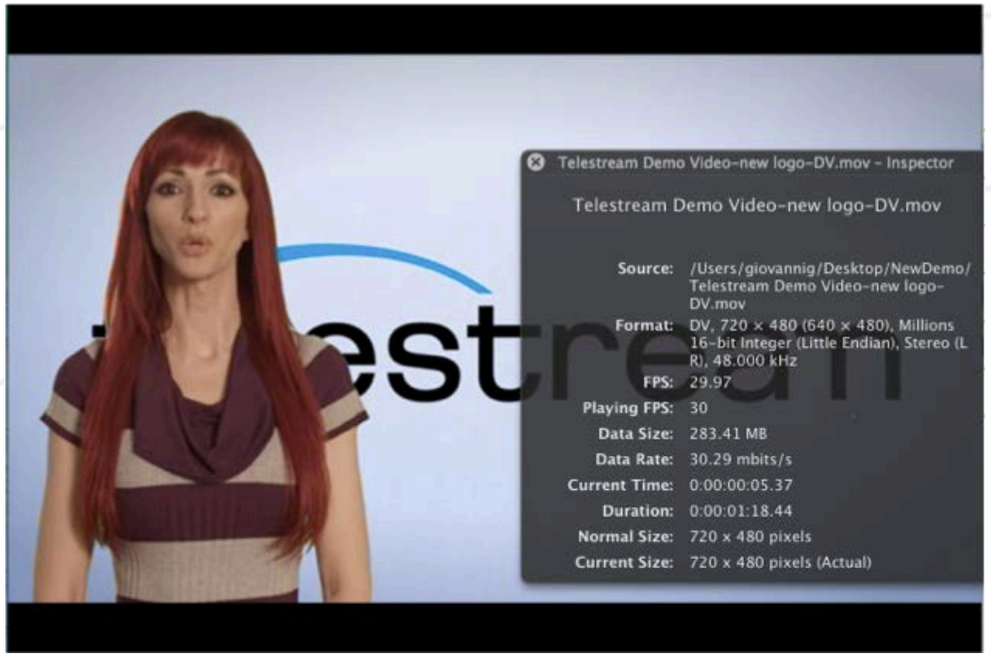
- **SMPTE 436M CC Track**
- HD 1080i / 720P
- J2K Codec
- 4:2:2
- MXF reference files
- CEA-608 and 708
- V-chip / XDS support
- AFD support



AS02 OP atom MXF HD

Video File Types with CC data

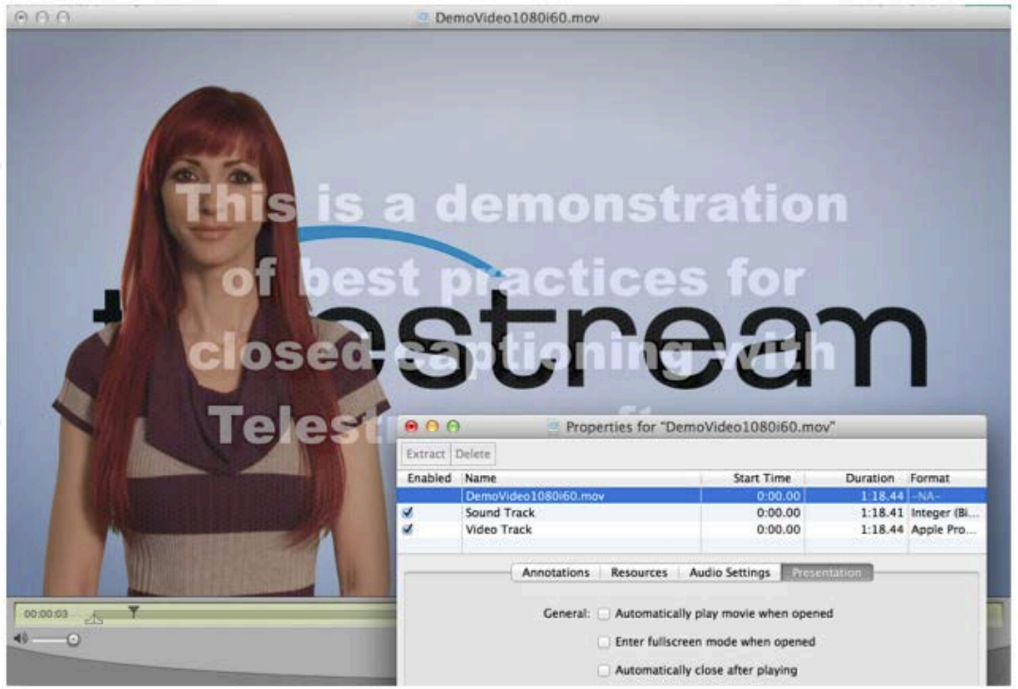
- **VAUX CC data**
- SD 720x480
- DV codec
- 4:2:0
- .DV, .AVI, MOV support
- CEA-608 only
- V-chip / XDS support



DV25 and DV50 SD

Video File Types with CC data

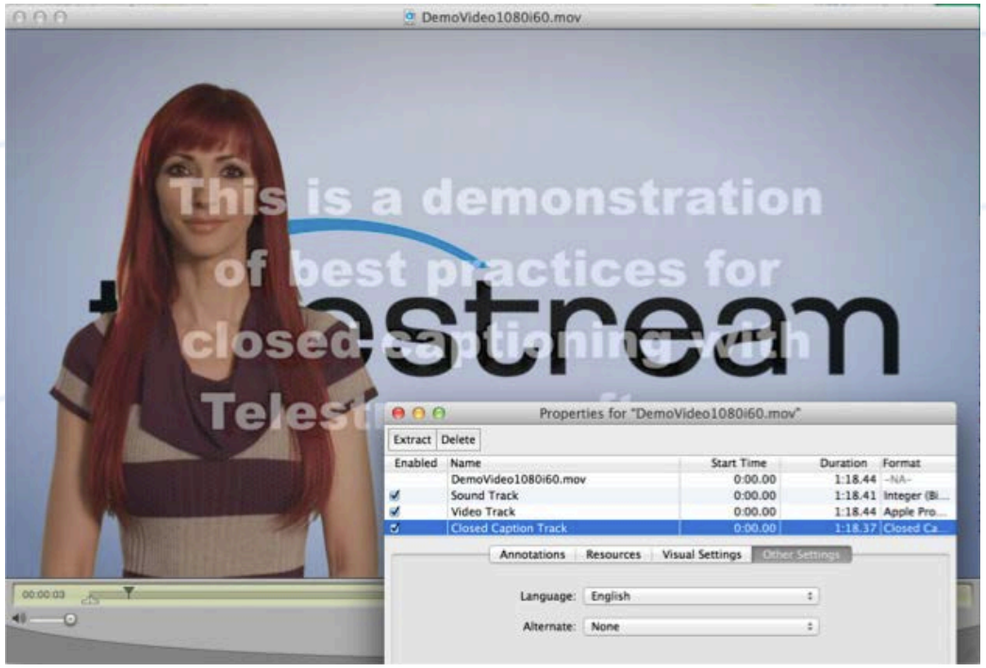
- **User data CC essence**
- HD 1080i / 720P
- ProRes HQ codec
- 4:2:2
- .MOV wrapper
- CEA-608 / CEA-708
- V-chip / XDS support



ProRes HD with Metadata

Video File Types with CC data

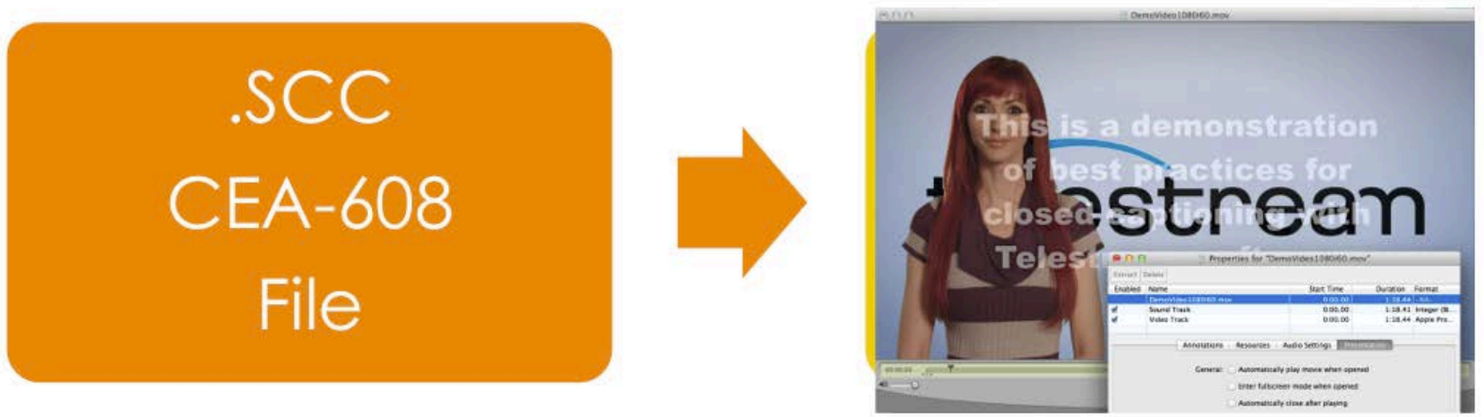
- **CC separate Track**
- HD 1080i / 720P
- ProRes HQ codec
- 4:2:2
- .MOV wrapper
- CEA-608 / CEA-708
- V-chip / XDS support



ProRes HD with CC Track in .MOV

Video File Types with CC data

- **.SCC separate file**
- HD 1080i / 720P
- ProRes HQ codec
- 4:2:2
- .MOV wrapper
- CEA-608 only



Verifying CC side car file matches video

Typical Limitations of Software Verification

- Does not detect multiple services (additional languages)
- Cannot detect captioning in VBI (line 21)
- Detects only presence of data which could be incomplete
- Not all codecs and caption protocols are supported
- Sync issues of captions may not be detected.
- Positioning of caption text on screen not verified
- Does not verify side car caption files for internet and TV transcoding

Captioning Workflow Summary

- Deliver proxy files to caption service department
- Link caption files with media
- Embed CC into Media
- Extract caption data for Internet captioning
- Transcode and delivery of closed and open captioned media
- Frame rate convert caption data
- Flip caption documents (CAP, SCC, SMPTE 2052, WebVTT)

Verifying Data Stored with Captioning

- Field 2 of CEA-608 can contain XDS and V-chip information
- AFD (Active Format Description) for specific aspect ratios
- Time code Track

Verifying Formatting for Internet CC

Conversion challenges for broadcasters

Checking for Common CC Errors

- Captioning Drifting out of sync
- Text formatting and positioning not following standards
- CEA-708 missing and only CEA-608 is found
- Syntax of caption file not compatible with Transcode
- Syntax of caption file not compatible with internet player
- Spelling and Transcription Mistakes
- Edited video clips do not match original captioning file

Emulating TV CC Viewing Experience

- Support for Advanced CEA-708
- V-chip / XDS viewing capabilities
- AFD Active format description
- Playback of distribution codecs such as MPEG-2 TS
- Captioning service selector

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Demo

File based CC Verification in Action

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Please hold…

We are experiencing technical difficulties. Please stand by.