



Technical standards for delivery of television programs to M6

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1 INTRODUCTION

1.1 OBJECT

This document is a complete guide concerning the delivery of High Definition television programs to M6 Group in file mode.

This document includes the technical specifications of the file format and the general rules adopted by the M6 Group.

This document is applied to all types of television programs to be delivered to M6 Group in file mode: promo, movies, series, documentaries, jingles, advertisements, etc.

The delivery of Standard Definition television programs to M6 Group is not accepted and not supported in file mode.

Important :
M6 group will perform technical on-boarding (interoperability tests on sample files) before authorizing file delivery from a given supplier.

No file delivery will be accepted without this authorization.

1.2 REFERENCES AND RECOMMENDATIONS OF STANDARDS USED IN THIS DOCUMENT

1.2.1 Video/Audio signals

- *CST - RT - 017 - TV - vX.Y*

1.2.2 MXF wrapper and Audio/Video codec

- AMWA AS-10 MXF for Production v1.1 with restriction of the Shim HIGH_HD_2014

1.2.3 Closed caption

- UER N19-2002 : Subtitling Data Exchange Format

1.3 CONTACT

The “management des medias” department is the main contact for all suppliers:
managementdesmedias@m6.fr.

2 TECHNICAL REQUIREMENTS FOR AUDIO/VIDEO SIGNALS

- The technical requirements for Audio/Video signals used by M6 Group are described in the document, edited by HD Forum, CST and FICAM groups, and validated by all french broadcasters : **CST - RT - 017 - TV - vX.Y**

This document defines all the technical requirements concerning audio and video signals.
The last version of this document can be found on the M6 group web site <http://www.groupem6.fr/normestechiques>.

This document and requirements can evolve. Suppliers are invited to verify they have the last version available.

Every program submitted for transmission must satisfy a Quality Control process specified by the broadcaster. Any program failing the QC process on file may be rejected and returned to the supplier for redelivery.

3 GENERAL INFORMATIONS ON DELIVERY

3.1 CONTENT ORGANISATION

The delivering of programs in file mode must include:

- One single MXF Op1A file containing the audio and video essence.
- One XML file respecting METAPADTV 1.0 schema containing the editorial and technical data of the program.

These other additional files may also be delivered with the program if necessary:

- One or more STL files containing subtitles associated with the programme.
- One single MXF Op1A file containing textless elements.

The program must be delivered **First frame/last frame** (that is Tc IN = SOM and TC Out = EOM of the program without any other calibration content (clock, Black, ec...)).

Calibration content may be requested by M6 group for specific deliveries.

The textless elements of the program, if existing, will be delivered in another MXF Op1A file according the same technical specification.

3.2 SPECIFICATIONS OF XML FILE (METAPADTV 1.1)

Each programme must have an XML file containing the editorial and technical data.

XML file must respect the METAPADTV v1.1 schema.

To generate the XML file, the supplier can use the tool « *METAPADTV generateur.xlsm* » manually or automatically with integration of XML specification.

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The tool « *METAPADTV generateur.xlsm* » can be requested by the supplier to M6 Group.

For a delivery to M6 Group, the supplier will choose “M6” for the broadcaster value. This selection will allow to display all the fields necessary for delivery to M6.

Before being able to deliver to M6, the supplier needs to receive from M6 the HouseID parameter for the program. **This value is mandatory.**

If this value is unknown, the supplier needs to request it to the “Management des media” department (managementdesmedias@m6.fr).

3.2.1 Naming convention

The different files delivered to M6 group will be named with the HouseID field. The filename must be in upper case, with filename extensions in lower case.

The different filenames must be:

- HOUSEID.mxf for the MXF Op1A file of the programme
- HOUSEID.xml for the XML file
- HOUSEID_VO.stl for french closed caption in original version
- HOUSEID_SM.stl for french closed caption for deaf/hard of hearing individuals

3.2.2 Delivery mode

The supplier must deliver to M6 Group by using M6 Aspera system.

All necessary information and procedure for delivery using M6 Aspera system are detailed in the “File delivery user guide” that can be found at <http://www.groupem6.fr/normestechiniques>.

4 MXF OP1A FILE TECHNICAL SPECIFICATION

4.1 WRAPPER (MXF OP1A)

Each high definition program must be delivered as a single MXF OP1a file which conforms to the AMWA specification **AS-10 v1.1 Shim HIGH_HD_2014**.

The table below describes the main restrictions over the **AMWA AS-10 v1.1** specifications:

Property	Value	Format, Bitrate, System frequency	Comment
Sample Rate	00 00 00 19 00 00 00 01	50i	
Essence Container	06 0e 2b 34 04 01 01 02 0d 01 03 01 02 04 60 01	GC MPEG ES FrameWrap	
SignalStandard	04	HD422 1920x1080, 50i	04: SMPTE 274M (1125 line)

FrameLayout	01	50i	01: SEPARATE_FIELDS (interlaced)
StoredWidth	00 00 07 80	HD422 1920x1080, 50i	1920
StoredHeight	00 00 02 20	HD422 1920x1080, 50i	544
SampledWidth	00 00 07 80	HD422 1920x1080, 50i	1920
SampledHeight	00 00 02 1c	HD422 1920x1080, 50i	540
DisplayHeight	00 00 02 1c	HD422 1920x1080, 50i	540
DisplayWidth	00 00 07 80	HD422 1920x1080, 50i	1920
VideoLineMap	00 00 00 02 00 00 00 04 00 00 00 15 00 00 02 48	HD422 1920x1080, 50i	(21, 584) : Interlace
Picture Essence Coding	06 0e 2b 34 04 01 01 03 04 01 02 02 01 04 03 00	HD422 1920x1080, 50M	422P@HL Long GOP
VerticalSubsampling	00 00 00 01	HD422	4:2:2
ColorSiting	00	HD422	4:2:2
CodedContentType	02	50i	02: Interlaced
ClosedGOP	01		Closed GOP
MaxGOP	00 0c	50i	
BitRate	02 fa f0 80	HD422 1920x1080, 50M	
ProfileAndLevel	82	HD422 1920x1080, 50M	422P@HL

The restrictions over the Shim **HIGH_HD_2014** are :

Shim parameter	Shim Value
format	HD422
video_coding	422P@HL
color_sample_ratio	4:2:2
frame_size	1920x1080
audio_coding	PCM 8 ch/24 bit/48 kHz
bit_rate	50_CBR
Shim Name	"HIGH_HD_2014"

4.2 VIDEO CODEC

As described in the AMWA specifications AS-10 shim HIGH_HD_2014, the video track must be encoded with the bitrate 50Mb/s using MPEG-2 codec. Video track must use profile 4:2:2 High level. The image format must be 1920x1080 pixels.

4.3 TIMECODES

To ensure compatibility with downstream systems it is very important that timecode is inserted in the file exactly as specified.

The different timecodes must be identical, contiguous and continuous.

Type de référence temporelle	Spécifications	
	Présence	Valeur
MXF : Timecode track of Material Package	Mandatory	TC IN = 01:00:00:00 for the first frame.
MXF : Timecode track of Source Package	Mandatory	TC IN = 01:00:00:00 for the first frame.
MXF : Timecode of System item	Mandatory	TC IN = 01:00:00:00 for the first frame.
MPEG2 : ATC VITC (SMPTE 328M)	Mandatory	TC IN = 01:00:00:00 (=3600000msec) for the first frame. Up to 3 discontinuities of 1 frame could be tolerated.
MXF : Start position / image in	Mandatory	Frame IN = 0
MXF : GOP Precharge	Accepted	
MPEG2 : GOP Timecode	Accepted	TC IN = 01:00:00:00 for the first frame.
First Key Frame (Omneon user metadata)	Not desired	Value equal 0 will be tolerated. Other values are forbidden.
TC OUT	Mandatory	The TC OUT is the last useful image.

4.4 AUDIO CODEC

4.4.1 Technical specification

The technical characteristics of the audio track must be:

Parameters	Values
Number of audio tracks in the MXF file	8 tracks
Container	AES
Wrapping in MXF	Frame wrapped
Formats	PCM

Bits per sample	24 bits
Sampling rate	48 kHz
Bit rate	1152 Kb/s
Bit rate mode	CBR

4.4.2 Track allocations

The track allocation must satisfy the following mapping (VF = French Version, VO = Original Version)

- French stereo Version

AES Track	1	2	3	4	5	6	7	8
Channel	1	2	3	4	5	6	7	8
Format	PCM							
Content	VF Stéréo	VF Stéréo	VF Stéréo	VF Stéréo				

- Original stereo version
(Case of videoclip for example)

AES Track	1	2	3	4	5	6	7	8
Channel	1	2	3	4	5	6	7	8
Format	PCM							
Content	VO Stéréo	VO Stéréo	VO Stéréo	VO Stéréo				

- French stereo Version
- Original stereo version

AES Track	1	2	3	4	5	6	7	8
Channel	1	2	3	4	5	6	7	8
Format	PCM							
Content	VF Stéréo	VO Stéréo	VF Stéréo	VF Stéréo				

In all cases :

If an Audio Description track is available, it must be located on AES track 4 (channels 7/8) :

AES Track	1	2	3	4	5	6	7	8	
Channel	1	2	3	4	5	6	7	8	
Format								PCM	
Content								AD Stéréo	

The Audio Description must be in PCM format and **Broadcast MIX.**

5 CLOSED CAPTIONS (SUBTITLES)

3 categories of closed captions exist :

- Closed caption written in french language which translate a foreign original version (VOSTF.)
- Closed caption for deaf and hard of hearing, written in french language, which retranscribes and condenses dialogs of the french version (SM.)

The external mode of the closed caption will be preferred (stl files).

- Open caption for karaoke programs.

5.1 CAPTIONS FOR DEAF AND HARD OF HEARING

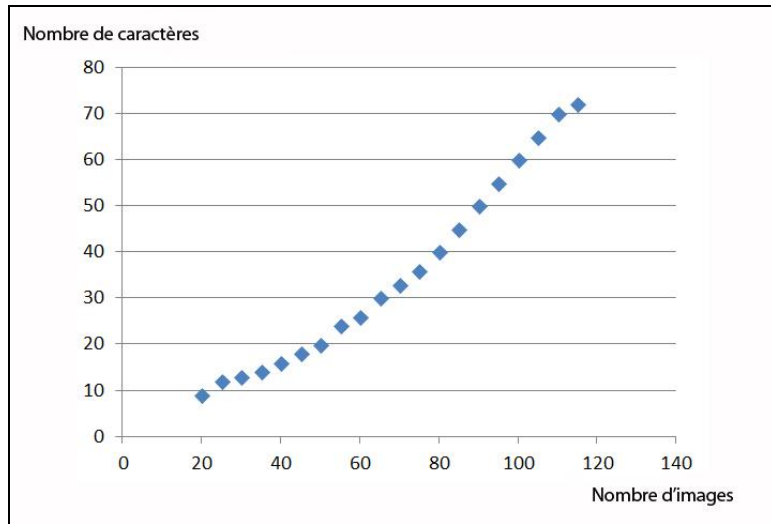
The closed captions will be done specifically for deaf and hard of hearing respecting the rules below:

5.1.1 For all type of programmes

- Respect the meanings of the speech.
- Respect the rules of French spelling, grammar and conjugation.
- Respect of the content: The closed caption, limited on two lines must not hide either text information burnt into the image, or important parts of the image.
- Closed caption broadcasting on DVB-T is done with the norm *DVB_Subtitling* (EN 300 743)
- Offer perfect readability. It is recommended that subtitles appear on a translucent black background and if possible with letters with a black outline.

5.1.2 For stock programmes

- Appropriate reading time: 12 characters by second, 20 characters by two seconds, 36 characters by three seconds, 60 characters by four seconds. The suppliers will be encouraged to respect these requirements with a 20 % tolerance.



Images	Caractères
20	9
25	12
30	13
35	14
40	16
45	18
50	20
55	24
60	26
65	30
70	33
75	36
80	40
85	45
90	50
95	55
100	60
105	65
110	70
115	72

1 second = 25 frames.

- '-' (a prefixed dash) indicates a change in single speaker
- Closed caption must be as near as possible to the audio source

- Respect text coloration defined for closed caption:
 - White : speaker visible in the image (same partially) ;
 - **Yellow** : speaker not visible in the image (outside the field) ;
 - **Red** : audible indications ;
 - **Magenta** : musical indications and song's lyrics ;
 - **Cyan** : the thoughts of individual persons or narrator in a fiction film, comments in voice-over stories or documentaries ;
 - **Green**: for indicating usage of a foreign language (if the restitution in the foreign language is not possible, we write 3 ' ' In the left side of the screen after to indicate which language is used)

Special feature: The TV show (excluding documentaries) fully dubbing (the voices of actors reading the translation of the remarks of the speakers is superimposed on the original voices) must be subtitled with the good text coloration and not in green.


- Indication of sound effect: Description of significant noise that are not induced by the image (it is unnecessary to specify "explosion" if the explosion is seen on the screen).
- Indication of music information: Transcript of French and foreign songs. By default, the name of the singer and the title.
- Use parentheses to indicate whispers or aside conversations
- Use uppercase when the text is said by several people (use of capital letters for any other reason is not recommended except for some acronyms).
- Cutting phrasal sense. When a sentence is repeated on several subtitles, its division must respect the meaning units in order to facilitate global understanding (excessive or improper cutting can seriously compromise the understanding of speech. Instead of "He hates young / girls", prefer "He hates / young girls").
- Respect of the scene change. Captioning should be discreet and respect at best the program editing pace.

5.2 FOR FOREIGN ORIGINAL VERSION

- Subtitles for Foreign original versions must conform to the rules for the deaf and hard of hearing subtitles
- The STL file deliver must be in teletext mode.
- The STL file must be in French code language

5.3 STL FILE

The files must be compliance with the UER norm N19-2002.

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The file must be send via our Aspera system (<https://aspera.m6.fr>).

If you do not have an Aspera account to deliver the subtitles, please contact the Accessibility department via the email address sous-titrage@m6.fr.