ARD Degeto

Version 1.51 21 August 2017

Guidelines

for file delivery on physical storage media

Degeto.de

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Document history			
Version	**Date**	**Editor**	**Notes**
1.50	15.08.2017	Stelzenmüller	Initiale Übersetzung der deutschen Fassung Initial translation of the german version
1.51	21.08.2017	Horbach	Diverse Korrekturen Various corrections

The following files in the items 1 to 4 are attached to physical storage media (according to Appendix A) with descriptive metadata (according to Appendix B):

1. All files oft the complete broadcast version as Degeto-Master

1. Specification of Degeto-Master (DI-Master)	
1.1 Delivery	
Picture broadcast version	A fully-edited **digital intermediate master** (DI master), color corrected, retouched, titled etc., in the original production format (OAR), which served as the starting material for the final and accepted Degeto broadcast version
Textless backgrounds	All necessary **textless backgrounds (NTH)** for titles, credits and subtitles **color-corrected** and in identical size and aspect ratio with the broadcast version
Sound	All existing **sound mixes** with all required audio files in the original format
Edit list	The complete edit list(s) in the format : - AAF (Avid) or - FCP-XML (Apple FinalCut)
1.2 Picture – Specification	
Format	**JPEG-2000** single frame sequence
Format profile	Lossless biorthogonal LeGall-5/3 wavelet transformation
Container	MXF-Op1a or MXF-OpAtom
Frame rate (fps)	25
Scan type	Progressiv
Aspect ratio	16 : 9
Resolution (Pixel)	1920 x 1080
Active Pixel* *also as example for other resolutions	1920 x 1080 (16:9 / FullFrame) 1920 x 1040 (16:9 / 1,85:1) 1920 x 816 (16:9 / 2,35:1)
Color space	4:2:2-YUV oder 4:4:4-RGB (corresponding to source color space)
Bit depth	10- oder 12-bit gamma coded (corresponding to source bit depth)
1.2.1 Picture – Structure of folders and naming	
Broadcast version	Folder: DI_Master_J2K Content: MovieTitle_CreationDate_YYYYMMDD.mxf Example: A_Degeto_Title_20160721.mxf
Textless backgrounds	Folder: DI_Master_J2K_NTH Content: MovieTitle_CreationDate_YYYYMMDD_NTH.mxf Beispiel: A_Degeto_Title_20160721_NTH.mxf
1.3 Sound – Specification	
Format	Broadcast Wave
Channel configuration	2 channels (for stereo) 1 channel (for multichannel audio)
Sampling rate (kHz)	48
Bit depth (Bit)	24
Audio loudness normalisation (only for complete mix)	According to EBU R128

1.3.1 Sound – Structure of folders an naming	
National version stereo (Lo/Ro)	Folder: Mix_stereo_national (Mix complete) Content: MovieTitle.wav Folder: ME_stereo_kombiniert_national (M&E combined)) Content: MovieTitle_ME_komb.wav Folder: ME_stereo_getrennt_national (M&E separated) Content: MovieTitle_Dialog.wav MovieTitle_FX.wav MovieTitle_Music.wav
International version*[1] stereo (Lo/Ro)	Folder: Mix_stereo_international (Mix complete) Content: MovieTitle_int.wav Folder: ME_stereo_kombiniert_international (M&E combined) Content: MovieTitle_ME_komb_int.wav Folder: ME_stereo_getrennt_international (M&E separated) Content: MovieTitle_Dialog_int.wav MovieTitle_FX_int.wav MovieTitle_Music_int.wav
National version Multichannel audio (i.e. 5.1)*[2]	Folder: Mix_MKTdiskret_national (Mix complete) Content: MovieTitle_x.wav (x = L/R/C/LFE/LS/RS) Folder: ME_MKTdiskret_kombiniert_national (M&E combined) Content: MovieTitle_ME_komb_x.wav (x = L/R/C/LFE/LS/RS) Folder: ME_MKTdiskret_getrennt_national (M&E separated) Content: MovieTitle_Dialog_x.wav (x = L/R/C/LFE/LS/RS) MovieTitle_FX_x.wav (x = L/R/C/LFE/LS/RS) MovieTitle_Music_x.wav (x = L/R/C/LFE/LS/RS)
International version*[1] Multichannel audio (i.e. 5.1)*[2]	Folder: Mix_MKTdiskret_international (Mix complete) Content: MovieTitle_int_x.wav (x = L/R/C/LFE/LS/RS) Folder: ME_MKTdiskret_kombiniert_international (M&E combined) Content: MovieTitle_ME_komb_int_x.wav (x = L/R/C/LFE/LS/RS) Folder: ME_MKTdiskret_getrennt_international (M&E separated) Content: MovieTitle_Dialog_int_x.wav (x = L/R/C/LFE/LS/RS) MovieTitle_FX_int_x.wav (x = L/R/C/LFE/LS/RS) MovieTitle_Music_int_x.wav (x = L/R/C/LFE/LS/RS)
Audiodescription national version*[2] stereo (Lo/Ro)	Folder: AD_stereo_national Content: MovieTitle_AD_nat.wav
Audiodescription international*[2] stereo (Lo/Ro)	Folder: AD_stereo_international Content: MovieTitle_AD_int.wav
Other Material (Dialogues, effects etc.) if clearly documented	Folder: Ton_Sonstiges Content: Original filename(s) as delivered Any additional documentation provided

*[1] Version with exchange music when using music without worldwide rights

*[2] if available

1.4 Timecode	
Format	MXF-TC
Start	10:00:00:00 (no leader or trailing)
Note	Clip starts on the first picture/sound Clip ends on the last picture/sound

2. One file of national broadcast version:

2. File specification of national broadcast version (SF)	
2.1 Structure of folders and naming	
Folder	ProRes_SF_national
Content	MovieTitle_SFnat.mov
2.2 Video	
Format	ProRes
Format profile	422 HQ (High Quality)
Bit rate (Mbit)	185 (206)
Bit rate mode	Constant
Width (Pixel)	1920
Height (Pixel)	1080
Aspect ratio	16 : 9
Color space	YUV
Chroma subsampling	4:2:2
Color bit depth (Bit)	10
Frame rate (fps)	25 (50i)
Scan type	Interlaced
Scan order	Upper field first
Color matrix coefficients	BT.709
2.3 Timecode	
Format	Quicktime-TC
Start	10:00:00:00 (no leader or trailing)
Note	Clip starts on the first picture/sound Clip ends on the last picture/sound
2.4 Audio	
Format	PCM
Channels	16/24
Sampling rate (kHz)	48
Bit depth (Bit)	24
Audio loudness normalisation (only for complete mix)	According to EBU R128

2.4.1 Audio track assignment (only national sound version SF)	
1	Broadcast audio stereo Lo (Left only)
2	Broadcast audio stereo Ro (Right only)
3	Broadcast multichannel FL (Front Left)*[1]
4	Broadcast multichannel FR (Front Right)*[1]
5	Broadcast multichannel C (Center)*[1]
6	Broadcast multichannel LFE (Low Frequency Effects)*[1]
7	Broadcast multichannel SL (Surround Left)*[1]
8	Broadcast multichannel SR (Surround Right)*[1]
9	Music and effects combined stereo Lo (Left only)
10	Music and effects combined stereo Ro (Right only)
11	Music and effects multichannel FL (Front Left)*[1]
12	Music and effects multichannel FR (Front Right)*[1]
13	Music and effects multichannel C (Center)*[1]
14	Music and effects multichannel LFE (Low Frequency Effects)*[1]
15	Music and effects multichannel SL (Surround Left)*[1]
16	Music and effects multichannel SR (Surround Right)*[1]
17	Audiodescription*[2] stereo Lo (Left only)
18	Audiodescription*[2] stereo Ro (Right only)

*[1] if available: Multichannel audio (i.e. 5.1) according to ITU-R BS.775-3

*[2] optional: Audiodescription

3. One file of international/internet usable version (optional):

If music-rights cannot be secured for worldwide usage it is necessary to provide a so called international/internet-version with matching royality-free music clips, only.

3. File specification of international/internet usable version (IF)	
3.1 Structure of folders and naming	
Folder	ProRes_SF_international
Content	MovieTitle_SFint.mov
3.2 Video	
Format	ProRes
Format profile	422 HQ (High Quality)
Bit rate (Mbit)	185 (206)
Bit rate mode	Constant
Width (Pixel)	1920
Height (Pixel)	1080
Aspect ratio	16 : 9
Color space	YUV
Chroma subsampling	4:2:2
Color bit depth (Bit)	10
Frame rate (fps)	25 (50i)
Scan type	Interlaced
Scan order	Upper field first
Color matrix coefficients	BT.709
3.3 Timecode	
Format	Quicktime-TC
Start	10:00:00:00 (no leader or trailing)
Anmerkung	Clip starts with first picture/sound Clip ends with last picture/sound
3.4 Audio	
Format	PCM
Channels	16/24
Sampling rate (kHz)	48
Bit depth (Bit)	24
Audio loudness normalisation (only for complete mix)	According to EBU R128

3.4.1 Audio track assignment (only international sound version IF)	
1	Broadcast audio stereo Lo (Left only)
2	Broadcast audio stereo Ro (Right only)
3	Broadcast multichannel FL (Front Left)*[1]
4	Broadcast multichannel FR (Front Right)*[1]
5	Broadcast multichannel C (Center)*[1]
6	Broadcast multichannel LFE (Low Frequency Effects)*[1]
7	Broadcast multichannel SL (Surround Left)*[1]
8	Broadcast multichannel SR (Surround Right)*[1]
9	Music and effects combined stereo Lo (Left only)
10	Music and effects combined stereo Ro (Right only)
11	Music and effects multichannel FL (Front Left)*[1]
12	Music and effects multichannel FR (Front Right)*[1]
13	Music and effects multichannel C (Center)*[1]
14	Music and effects multichannel LFE (Low Frequency Effects)*[1]
15	Music and effects multichannel SL (Surround Left)*[1]
16	Music and effects multichannel SR (Surround Right)*[1]
17	Audiodescription*[2] stereo Lo (Left only)
18	Audiodescription*[2] stereo Ro (Right only)

*[1] if available: Multichannel audio (i.e. 5.1) according to ITU-R BS.775-3

*[2] optional: Audiodescription

4. One file with textless backgrounds

4. File specification of textless backgrounds (NTH)	
4.1 Structure of folders and naming	
Folder	Prores_Textless
Content: All textless in one file Textless in separate files	 Textless.mov Textless01.mov - Textless99.mov
4.2 Video	
Format	ProRes
Format profile	422 HQ (High Quality)
Bit rate (Mbit)	185 (206)
Bit rate mode	Constant
Width (Pixel)	1920
Height (Pixel)	1080
Aspect ratio	16 : 9
Color space	YUV
Chroma subsampling	4:2:2
Color bit depth (Bit)	10
Frame rate (fps)	25 (50i)
Scan type	Interlaced
Scan order	Upper field first
Color matrix coefficients	BT.709
4.3 Timecode	
Format	Quicktime-TC
Start	10:00:00:00 or identical with source
4.4 Audio	
NOT USED / MUTE / MOS	

Appendix A: Specification of physical storage media

The delivery must preferably be carried out on LTO-5 data cartridges.
A delivery to hard disk or other physical storage media is only possible by prior arrangement.

5. Specification of physical storage media	
5.1 Data cartridge	
Format	LTO-5
Filesystem	Linear Tape File System (LTFS)
Coding	NO
Compression	NO
5.2 Harddisk	
Formatting	NTFS, ExFAT
Interface(s)	USB 2.0/3.0, FireWire 400/800

Appendix B: Specification of metadata

6. Metadata specification (to the file specifications listet under item 1. – 3., 7 and 8)	
Technical specifications (Medienbegleitkarte)	- as PDF file on the supplied carrier in the same folder as the media **AND** - as print attached to the data carrier according to ARD-/ZDF-TPRF in the valid version
Electronic version (Medienbegleitkarte)*[1]	- in XML format according to ARD-/ZDF-TPRF in the valid version

*[1] currently optional

Appendix C: Simplified profile

In cases where the delivery only serves the preliminary data exchange (for example, pre-provisioning, etc.), the delivery can be carried out according to the following specification, **preferably on a hard disk** (according to Appendix A, item 5.2).

7. File specification simplified profile (ProRes)	
7.1 Structure of folders and naming	
Ordner	ProRes_SF
Content	MovieTitle_SF.mov
7.2 Video	
Format	ProRes
Format profile	422 HQ (High Quality)
Bit rate (Mbit)	185 (206)
Bit rate mode	Constant
Width (Pixel)	1920
Height (Pixel)	1080
Aspect ratio	16 : 9
Color space	YUV
Chroma subsampling	4:2:2
Color bit depth (Bit)	10
Frame rate (fps)	25 (50i)
Scan type	Interlaced
Scan order	Upper field first
Color matrix coefficients	BT.709
7.3 Timecode	
Format	Quicktime-TC
Start	10:00:00:00 (no leader or trailing)
Note	Clip starts with first picture/sound Clip ends with last picture/sound
7.4 Audio	
Format	PCM
Channels	8 / 12
Sampling rate (kHz)	48
Bit depth (Bit)	24
Audio loudness normalisation (only for complete mix)	According to EBU R128

7.4.1 Audio track assignment – variant 1	
1	Broadcast audio stereo Lo (Left only)
2	Broadcast audio stereo Ro (Right only)
3	Broadcast multichannel FL (Front Left)*[1]
4	Broadcast multichannel FR (Front Right)*[1]
5	Broadcast multichannel C (Center)*[1]
6	Broadcast multichannel LFE (Low Frequency Effects)*[1]
7	Broadcast multichannel SL (Surround Left)*[1]
8	Broadcast multichannel SR (Surround Right)*[1]

*[1] if available: Multichannel audio (i.e. 5.1) according to ITU-R BS.775-3

Note:
The audio track assignment in variant 2 is mainly used for program exchange with international licensors and the corresponding original language version.
If the mixes of broadcast audio (track 1+2), the music and effects (track 9+10) or the original soundtrack (track 11 + 12) are in matrixed surround („Dolby surround") according to ITU-R BS.775-3, this format is also valid.

7.4.2 Audio track assignment – variant 2	
1	Broadcast audio **german** stereo Lo (Left only)
2	Broadcast audio **german** stereo Ro (Right only)
3	Broadcast audio **german** multichannel FL (Front Left)*[1]
4	Broadcast audio **german** multichannel FR (Front Right)*[1]
5	Broadcast audio **german** multichannel C (Center)*[1]
6	Broadcast audio **german** multichannel LFE (Low Frequency Effects)*[1]
7	Broadcast audio **german** multichannel SL (Surround Left)*[1]
8	Broadcast audio **german** multichannel SR (Surround Right)*[1]
9	Music and effects*[2] stereo Lo (Left only)
10	Music and effects*[2] stereo Ro (Right only)
11	Original language stereo Lo (Left only)
12	Original language stereo Ro (Right only)

*[1] if available: Multichannel audio (i.e. 5.1) according to ITU-R BS.775-3

*[2] optional

7.4.3 Audio track assignment – variant 3	
1	Broadcast audio stereo Lo (Left only)
2	Broadcast audio stereo Ro (Right only)
3	Not used
4	Not used
5	Audiodescription*[2] stereo Lo (Left only)
6	Audiodescription*[2] stereo Ro (Right only)
7	Multichannel encoded (Dolby-E 16Bit)*[1]
8	Multichannel encoded (Dolby-E 16Bit)*[1]

*[1] if available: Multichannel audio encoded in Dolby-E

*[2] optional

Appendix D: Serial formats (Series)

For serial formats, e.g. quiz shows or daily recurring fictional series, the delivery shall be made by **prior arrangement** in accordance with the following specification, **preferably on a hard disk** (according to Annex A, item 5.2).

8. File specification serial formats	
8.1 Structure of folder and naming	
Folder	Name of the series (also shorten)
Content **Important:** **Do not place the individual episodes of a series in separate folders!** When several episodes of a program are delivered, they must be stored in one folder of the hard disk together with the corresponding media accompanying card (see Appendix B, item 6).	**Name_FoXX_Bezeichner_Generation.mxf** Name = name oft the series (also shorten) FoXX = number of episode Identifier = *PGM* for broadcasting in the ARD first version *WDH* for repeat version without commercial break Generation = generation index starting at 00 Examples: - „Wer weiß denn sowas“, episode 80, broadcast in ARD first delivery **WWDS_Fo80_PGM_00.mxf** - „Wer weiß denn sowas“, Folge 91, re-run version without commercial break **WWDS_Fo90_WDH_00.mxf**
8.2 Container	
Format	MXF
Format profile	OP-1a
Format settings	Closed / Complete
8.3 Video	
Width (Pixel)	1920
Height (Pixel)	1080
Aspect ratio	16 : 9
Color space	YUV
Chroma subsampling	4:2:2
Frame rate (fps)	25 (50i)
Scan type	Interlaced
Scan order	Upper field first
Matrix coefficients	BT.709

8.3.1 Codec variant AVC-Intra	
Codec format	AVC (Advanced Video Codec)
Format profile	High 4:2:2 Intra@L4.1
Bit rate (Mbit)	112
Color bit depth (Bit)	10
Format standard	SMPTE RP 2017
MXF mapping*[2]	SMPTE RP 2027
8.3.2 Codec variant XDCAM-HD	
Codec format	XDCAM HD422
Format profile	4:2:2@High Long GOP
Bit rate (Mbit)	50
Color bit depth (Bit)	8
Format standard	SMPTE RDD-9
MXF mapping*[2]	SMPTE RDD-9
8.4 Timecode	
Format	MXF-TC
Format standard	EBU R122
Start	10:00:00:00 (no leader or trailing)
Note	Clip starts on the first picture/sound Clip ends on the last picture/sound
8.5 Audio	
Format	PCM
Format wrapping	AES
Channels	8
Sampling rate (kHz)	48
Bit depth (Bit)	24
Audio loudness normalisation	According to EBU R128
8.5.1 Audio track assignment	
1	Broadcast audio stereo Lo (Left only)
2	Broadcast audio stereo Ro (Right only)
3	Broadcast multichannel FL (Front Left)*[1]
4	Broadcast multichannel FR (Front Right)*[1]
5	Broadcast multichannel C (Center)*[1]
6	Broadcast multichannel LFE (Low Frequency Effects)*[1]
7	Broadcast multichannel SL (Surround Left)*[1]
8	Broadcast multichannel SR (Surround Right)*[1]

*[1] if available: Multichannel audio (i.e. 5.1) according to ITU-R BS.775-3

*[2] ARD-/ZDF-HDF file profiles in preparation