

Version 1.52

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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 german version
1.51	21.08.2017	Horbach	Diverse Korrekturen / Various corrections
1.52	07.08.2018	Stelzenmüller	Ergänzung Punkt 5.1. / Supplement Point 5.1.: LTO-6 and LTO-7 data cartridge

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 of 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*	1920 x 1080 (16:9 / FullFrame) 1920 x 1040 (16:9 / 1,85:1) 1920 x 816 (16:9 / 2,35:1)
*also as example for other resolutions	
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 and 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 royalty-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.mov
Textless in separate files	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 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, LTO-6, LTO-7
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	Name_FoXX_Bezeichnung_Generation.mxf Name = name of 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
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).	
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