Zweites Deutsches Fernsehen
Anstalt des öffentlichen Rechts

ZDF Specifications for File-Based Deliveries

Version: 3.0

Current as of October 06, 2023

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1. Overview

This document outlines the technical parameters to be complied with for the file-based delivery of deliverables to ZDF. These are intended to support the parameters defined within the “Technical Guidelines for the Production of Television Programs for ARD, ZDF and ORF” (TPRF).

For further technical standards and guidelines applicable to ZDF (e.g. guidelines and tools for HDR productions) see

Technical standards and guidelines

Technical parameters may differ depending on the type of deliverables. The following section outlines the types of deliverables.

2. Definition of types of deliverables

1) **Broadcast deliverables** are the current version of an edit with a video composition supposed to be released which either is ready for release or needs further editing such as text inserts, dubbing etc. Rough cuts as well as Director's Cuts should also be considered as Broadcast deliverables and are to be delivered with the same file specifications as for Broadcast deliverables. Broadcast deliverables have a predefined audio track allocation including only audio tracks which are intended for release. In case that the current version of an edit is at a very early stage and still requires extensive editing (e.g. rough cut) the audio track allocation may differ.

   ➔ **Examples of Broadcast deliverables**: Episodes of series and TV productions, TV movies, feature films, TV shows, documentaries, reports etc. which can be delivered ready for release as well as unfinished (e.g. rough cut).

2) **Clean Feed** is the current version of an edit with the same video composition as the broadcast version but with different presets in regards to the audio track allocation and is supposed to be used for production purposes such as re-editing, adapting etc. as well as archiving for later re-use.

   Additional audio tracks used for production purposes must always be delivered along with the Clean Feed. If no Clean Feed is available, audio track 15 and 16 may be used for delivering additional audio tracks after consultation with ZDF Production Management. Those exceptions are only admitted for program deliverables related to licensing and coproductions.

3) **Separate Clean Elements (NTH)** are sequences from the Broadcast deliverables without program-related graphics and inserts. NTH can also derive from the clean feed version with muted audio tracks.

4) **Proxy Files** are duplicates of Broadcast deliverables that are lower in resolution. Proxy files serve purely editorial viewing purposes on workstations and smart TVs, the support of subtitle or audio description creation (ZDF-S05) and, if necessary, promotion purposes.

5) **Videoclips** are the current version of an edit with a video composition supposed to be released which either is ready for release or needs further editing such as text inserts, dubbing etc. Videoclips are standalone pieces of content intended for use in a (live) broadcast or for release on an online platform.

6) **Social Media deliverables (Online content)** are materials with different resolution and aspect ratio which are produced for the distribution on social media channels.

   ➔ **Videoclips Social Media** are AV materials of the type Videoclips intended for distribution on social media channels which may have different resolution and aspect ratio.

   ➔ **Videoclips Social Media Clean Feed** are AV materials of the type Videoclips intended for distribution on social media channels which are free of any inserts (e.g. logos) and which may have different resolution and aspect ratio.

7) **Raw footage** includes any unprocessed video deliverables without a video composition (e.g. footage).

8) **Supplementary materials** are materials that provide additional information to Broadcast deliverables (e.g. graphics, documents etc.) and which are delivered together with the Broadcast deliverables.

3. General Information

The delivering party is required, to a reasonable extent, to support ZDF in resolving potential interoperability issues. ZDF reserves the right to request relevant test files from the delivering party in order to resolve any interoperability issues.

Only numerals, lowercase letters, uppercase letters, dashes and underscores are allowed. These include the following: 0 to 9, a to z, A to Z, - and _. File names may not contain special characters.

4. Data Storage Media / File-based deliveries / Metadata Sheet

Data Storage Media

Data storage media	HDD, SSD, USB-Stick
Interface	USB 3.0
File system	NTFS
USB stick requirements	Read speed of at least 200 Mbyte/second (200 MB/s)

Table 1: Data Storage Media

ZDF is responsible for deciding the type of delivery (data storage media or file transfer). If an appropriate file transfer system is used for delivery the section "Data Storage Media" is not applicable.

File-based deliveries

For file-based deliveries ZDF's **upload portal** should be preferably used. For file delivery e.g. via Faspex drop boxes, the following **title convention for the Faspex package name** must be followed:

PN_(ONL)_SF_(CF)_(NTH)-n_Title

PN = ProductionID (always eight-digit)
ONL = Online-only deliverables
SF = Broadcast deliverables
CF = Clean feed deliverables
NTH = Separate clean elements
n = Numbering

Only numerals, lowercase letters, uppercase letters, dashes and underscores are allowed. These include the following: 0 to 9, a to z, A to Z, - and _. File names may not contain special characters. Spaces in the title must be replaced by hyphens. In the case of **delivery of Online-only deliverables, "ONL"** should be placed between the production number and the type of deliverables (Broadcast deliverables, Clean Feed or NTH) in the Faspex package name.

The structure of the Faspex package name depends on the **content of the package**.

Examples:

12345678_SF_CF-1_Die-Schaetze-Afrikas (for delivery of SF and CF of "Die Schätze Afrikas" in one Faspex package)

12345678_SF_CF_NTH-2_Das-Elbsandsteingebirge (for delivery of SF, CF and NTH of "Das Elbsandsteingebirge" in one Faspex package)

12345678_ONL_SF_CF_represent-Brauchen-wir-Alternativen-zur-Ehe (for the delivery of SF and CF of "Brauchen wir Alternativen zur Ehe", an episode of the program "represent" for our online content network funk

Metadata Sheet

Every delivery of Broadcast deliverables and Clean Feed requires the delivery of metadata. A completed metadata sheet (MBK) must always be delivered on the hard disk drive or via Aspera Faspex along with the deliverables. **The MBK (an Excel-file) must have the same file name as the corresponding deliverable.**
When using **ZDF's upload portal** for delivery all required metadata can be submitted directly with a web form. For this type of delivery the MBK in Excel file format is not required.

The current and valid version of the MBK is version 2.0.

Example:

- Video file: 12345678_SF-1_Title.mxf
- Metadata Sheet: 12345678_SF-1_Title.xlsx

5. Program deliverables ZDF

The category "Program deliverables ZDF" comprises ZDF's main technical profiles for **Broadcast deliverables**, **Clean Feed**, **Separate Clean Elements** (**NTHs**) and **Proxy Files**. For the **definitions** of these types of deliverables, see section 2 of this document.

Materials of the type Separate Clean Elements are to be delivered in one file per production. For productions with multiple titled sequences (i.e., that go above and beyond credits and end credits), the delivery of a complete clean feed version is preferable to the delivery of separate clean elements.

For program deliverables intended for **release on the TV-on-demand platform "ZDF-Mediathek"** the code "**MT**" should be placed before the file extension in the file name (see examples in the technical profiles).

Technical profiles

5.1. HD (High Definition)

5.1.1. Broadcast deliverables HD

Identifier: ZDF-S01	
Container	*.MXF - MXF OP1a according to the SMPTE 377 Standard (Single Item Single Package)
Codec	AVCIntra100 (H.264 / MPEG-4 AVC High 422 Intra RP2027 Constrained Class 100)
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (1080p/25) / Interlaced (1080i/25)
Audio	Up to 16-channel (only even-numbered multiples) 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note	The file must always contain a minimum of 2 and a maximum of 16 audio tracks. Only an even number is allowed. The audio track allocation for audio 1-14 is predefined (see below). The audio tracks 15-16 may be assigned in agreement with ZDF Production Management. Audio tracks which are not required may remain unassigned (select "none / silent" in the metadata sheet). Additional audio tracks which are not intended for release but used for production purposes must be attached to the Clean Feed.
Multichannel Audio	Dolby E or discrete
Audio Track Assignment	Audio 1: German language full mix left
	Audio 2: German language full mix right
	Audio 3: Original language full mix left (if available)
	Audio 4: Original language full mix right (if available)
	Audio 5: Audio description left (if available)
	Audio 6: Audio description right (if available)

	Audio 7: Dolby E (if available)
	Audio 8: Dolby E (if available)
	Audio 9: Multichannel – German language L (if available)
	Audio 10: Multichannel – German language R (if available)
	Audio 11: Multichannel – German language C (if available)
	Audio 12: Multichannel – German language LFE (if available)
	Audio 13: Multichannel – German language LS (if available)
	Audio 14: Multichannel – German language RS (if available)
	Audio 15: In agreement with ZDF Production Management
	Audio 16: In agreement with ZDF Production Management
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"ProductionID"_SF-n_"Title".mxf Example: 12345678_SF-1_Title.mxf Note: "n" in the file name (..._SF-n_...) should be used for numbering the Broadcast deliverables (1, 2, 3 etc.) ----- "ProductionID"_SF-n_"Title"_MT.mxf (for program deliverables intended for release on the TV-on-demand platform "ZDF-Mediathek") Example: 12345678_SF-1_Title_MT.mxf Note: "n" in the file name (..._SF-n_...) should be used for numbering the Broadcast deliverables (1, 2, 3 etc.)

Table 2: Technical profile Broadcast deliverables HD

5.1.2. Separate Clean Elements HD

Identifier: ZDF-S02	
Container	*.MXF - MXF OP1a according to the SMPTE 377 Standard (Single Item Single Package)
Codec	AVCIntra (H.264 / MPEG-4 AVC High 422 Intra RP2027 Constrained Class 100)
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (1080p/25) / Interlaced (1080i/25)
Audio	2-channel 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
	Note: The file must always contain 2 audio tracks. Audio tracks must be muted.
Audio Track Assignment	Audio 1: none / silent
	Audio 2: none / silent
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"ProductionID"_NTH-n_"Title".mxf Example: 12345678_NTH-1_Title.mxf Note: "n" in the file name (..._NTH-n_...) should be used for numbering the Separate Clean Elements (1, 2, 3 etc.) -----

	"ProductionID"_NTH-n_"Title"_MT.mxf (for program deliverables intended for release on the TV-on-demand platform "ZDF-Mediathek") Example: 12345678_NTH-1_Title_MT.mxf Note: "n" in the file name (..._NTH-n_...) should be used for numbering the Separate Clean Elements (1, 2, 3 etc.)

Table 3: Technical profile Separate Clean Elements HD

5.1.3. Clean Feed HD

Identifier: ZDF-S03	
Container	*.MXF - MXF OP1a according to the SMPTE 377 Standard (Single Item Single Package)
Codec	AVCIntra (H.264 / MPEG-4 AVC High 422 Intra RP2027 Constrained Class 100)
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (1080p/25) / Interlaced (1080i/25)
Audio	Up to 16-channel (only even-numbered multiples) 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note	The file must always contain a minimum of 2 and a maximum of 16 audio tracks. Only an even number is allowed. The audio track allocation must be agreed with the responsible ZDF Production Management. The audio tracks should be assigned especially for the delivery of audios used for production purposes such as re-editing (e.g. Music & Effects (M&E), M&E without music, stems etc.)
Multichannel Audio	Dolby-E or discrete
Audio Track Assignment	Audio 1: In agreement with ZDF Production Management
	Audio 2: In agreement with ZDF Production Management
	Audio 3: In agreement with ZDF Production Management
	Audio 4: In agreement with ZDF Production Management
	Audio 5: In agreement with ZDF Production Management
	Audio 6: In agreement with ZDF Production Management
	Audio 7: In agreement with ZDF Production Management
	Audio 8: In agreement with ZDF Production Management
	Audio 9: In agreement with ZDF Production Management
	Audio 10: In agreement with ZDF Production Management
	Audio 11: In agreement with ZDF Production Management
	Audio 12: In agreement with ZDF Production Management
	Audio 13: In agreement with ZDF Production Management
	Audio 14: In agreement with ZDF Production Management
	Audio 15: In agreement with ZDF Production Management
	Audio 16: In agreement with ZDF Production Management
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"ProductionID"_CF-n_"Title".mxf

	Example: 12345678_CF-1_Title.mxf Note: "n" in the file name (..._CF-n_...) should be used for numbering the Clean Feeds (1, 2, 3 etc.) ----- "ProductionID"_CF-n_"Title"_MT.mxf (for program deliverables intended for release on the TV-on-demand platform "ZDF-Mediathek") Example: 12345678_CF-1_Title_MT.mxf Note: "n" in the file name (..._CF-n_...) should be used for numbering the Clean Feeds (1, 2, 3 etc.)

Table 4: Technical profile Clean Feed HD

5.2. HD/HDR (High Definition / High Dynamic Range)

Please note: The instructions and specifications for creating HD/HDR or UHD/HDR productions in the appendix must be observed!

5.2.1. Broadcast deliverables HD/HDR

Identifier: ZDF-S01-HD-HDR	
Container	*.MXF - MXF OP1a according to the SMPTE 377 Standard (Single Item Single Package)
Codec	XAVC HD Intra Class 100
Resolution	1920x1080
Frame Rate	50
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (1080p/50)
HDR Standard	Hybrid Log-Gamma (HLG) in accordance with ITU-R BT.2100
EOTF	HLG System Gamma: 1.2
Peak Luminance	1000 nits
Colour Space	ITU-R BT.2020
Audio	Up to 16-channel (only even-numbered multiples) 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note	The file must always contain a minimum of 2 and a maximum of 16 audio tracks. Only an even number is allowed. The audio track allocation for audio 1-14 is predefined (see below). The audio tracks 15-16 may be assigned in agreement with ZDF Production Management. Audio tracks which are not required may remain unassigned (select "none / silent" in the metadata sheet). Additional audio tracks which are not intended for release but used for production purposes must be attached to the Clean Feed.
Multichannel Audio	Dolby E or discrete
Audio Track Assignment	Audio 1: German language full mix left
	Audio 2: German language full mix right
	Audio 3: Original language full mix left (if available)
	Audio 4: Original language full mix right (if available)
	Audio 5: Audio description left (if available)
	Audio 6: Audio description right (if available)

	Audio 7: Dolby E (if available)
	Audio 8: Dolby E (if available)
	Audio 9: Multichannel – German language L (if available)
	Audio 10: Multichannel – German language R (if available)
	Audio 11: Multichannel – German language C (if available)
	Audio 12: Multichannel – German language LFE (if available)
	Audio 13: Multichannel – German language LS (if available)
	Audio 14: Multichannel – German language RS (if available)
	Audio 15: In agreement with ZDF Production Management
	Audio 16: In agreement with ZDF Production Management
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"ProductionID"_SF-HD-HDR-n_"Title".mxf Example: 12345678_SF-HD-HDR-1_Title.mxf Note: "n" in the file name (..._SF-HD-HDR-n_...) should be used for numbering the Broadcast deliverables (1, 2, 3 etc.) ----- "ProductionID"_SF-HD-HDR-n_"Title"_MT.mxf (for program deliverables intended for release on the TV-on-demand platform "ZDF-Mediathek") Example: 12345678_SF-HD-HDR-1_Title_MT.mxf Note: "n" in the file name (..._SF-HD-HDR-n_...) should be used for numbering the Broadcast deliverables (1, 2, 3 etc.)

Table 5: Technical profile Broadcast deliverables HD/HDR

5.2.2. Separate Clean Elements HD/HDR

Identifier: ZDF-S02-HD-HDR	
Container	*.MXF - MXF OP1a according to the SMPTE 377 Standard (Single Item Single Package)
Codec	XAVC HD Intra Class 100
Resolution	1920x1080
Frame Rate	50
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (1080p/50)
HDR Standard	Hybrid Log-Gamma (HLG) in accordance with ITU-R BT.2100
EOTF	HLG System Gamma: 1.2
Peak Luminance	1000 nits
Colour Space	ITU-R BT.2020
Audio	2-channel 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
	Note: The file must always contain 2 audio tracks. Audio tracks must be muted.
Audio Track Assignment	Audio 1: none / silent
	Audio 2: none / silent
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"ProductionID"_NTH-HD-HDR-n_"Title".mxf

	Example: 12345678_NTH-HD-HDR-1_Title.mxf Note: "n" in the file name (..._NTH-HD-HDR-n_...) should be used for numbering the Separate Clean Elements (1, 2, 3 etc.) ----- "ProductionID"_NTH-HD-HDR-n_"Title"_MT.mxf (for program deliverables intended for release on the TV-on-demand platform "ZDF-Mediathek") Example: 12345678_NTH-HD-HDR-1_Title_MT.mxf Note: "n" in the file name (..._NTH-HD-HDR-n_...) should be used for numbering the Separate Clean Elements (1, 2, 3 etc.)

Table 6: Technical profile Separate Clean Elements HD/HDR

5.2.3. Clean Feed HD/HDR

Identifier: ZDF-S03-HD-HDR	
Container	*.MXF - MXF OP1a according to the SMPTE 377 Standard (Single Item Single Package)
Codec	XAVC HD Intra Class 100
Resolution	1920x1080
Frame Rate	50
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (1080p/50)
HDR Standard	Hybrid Log-Gamma (HLG) in accordance with ITU-R BT.2100
EOTF	HLG System Gamma: 1.2
Peak Luminance	1000 nits
Colour Space	ITU-R BT.2020
Audio	Up to 16-channel (only even-numbered multiples) 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note:	The file must always contain a minimum of 2 and a maximum of 16 audio tracks. Only an even number is allowed. The audio track allocation must be agreed with the responsible ZDF Production Management. The audio tracks should be assigned especially for the delivery of audios used for production purposes such as re-editing (e.g. Music & Effects (M&E), M&E without music, stems etc.)
Multichannel Audio	Dolby-E or discrete
Audio Track Assignment	Audio 1: In agreement with ZDF Production Management
	Audio 2: In agreement with ZDF Production Management
	Audio 3: In agreement with ZDF Production Management
	Audio 4: In agreement with ZDF Production Management
	Audio 5: In agreement with ZDF Production Management
	Audio 6: In agreement with ZDF Production Management
	Audio 7: In agreement with ZDF Production Management
	Audio 8: In agreement with ZDF Production Management
	Audio 9: In agreement with ZDF Production Management
	Audio 10: In agreement with ZDF Production Management
	Audio 11: In agreement with ZDF Production Management

	Audio 12: In agreement with ZDF Production Management
	Audio 13: In agreement with ZDF Production Management
	Audio 14: In agreement with ZDF Production Management
	Audio 15: In agreement with ZDF Production Management
	Audio 16: In agreement with ZDF Production Management
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"ProductionID"_CF-HD-HDR-n_"Title".mxf Example: 12345678_CF-HD-HDR-1_Title.mxf Note: "n" in the file name (..._CF-HD-HDR-n_...) should be used for numbering the Clean Feeds (1, 2, 3 etc.) --- "ProductionID"_CF-HD-HDR-n_"Title"_MT.mxf (for program deliverables intended for release on the TV-on-demand platform "ZDF-Mediathek") Example: 12345678_CF-HD-HDR-1_Title_MT.mxf Note: "n" in the file name (..._CF-HD-HDR-n_...) should be used for numbering the Clean Feeds (1, 2, 3 etc.)

Table 7: Technical profile Clean Feed HD/HDR

5.3. UHD/HDR (Ultra High Definition / High Dynamic Range)

Please note: The instructions and specifications for creating HD/HDR or UHD/HDR productions in the appendix must be observed!

5.3.1. Broadcast deliverables UHD/HDR

Identifier: ZDF-S01-UHD-HDR	
Container	*.MXF - MXF OP1a according to the SMPTE 377 Standard (Single Item Single Package)
Codec	XAVC QFHD Intra Class 300 VBR
Resolution	3840x2160
Frame Rate	50
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (2160p/50)
HDR Standard	Hybrid Log-Gamma (HLG) in accordance with ITU-R BT.2100
EOTF	HLG System Gamma: 1.2
Peak Luminance	1000 nits
Colour Space	ITU-R BT.2020
Audio	Up to 16-channel (only even-numbered multiples) 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note	The file must always contain a minimum of 2 and a maximum of 16 audio tracks. Only an even number is allowed. The audio track allocation for audio 1-14 is predefined (see below). The audio tracks 15-16 may be assigned in agreement with ZDF Production Management. Audio tracks which are not required may remain unassigned (select "none / silent" in the metadata sheet). Additional audio tracks which are not intended for release but used for production purposes must be attached to the Clean Feed.

Multichannel Audio	Dolby E or discrete
Audio Track Assignment	Audio 1: German language full mix left
	Audio 2: German language full mix right
	Audio 3: Original language full mix left (if available)
	Audio 4: Original language full mix right (if available)
	Audio 5: Audio description left (if available)
	Audio 6: Audio description right (if available)
	Audio 7: Dolby E (if available)
	Audio 8: Dolby E (if available)
	Audio 9: Multichannel – German language L (if available)
	Audio 10: Multichannel – German language R (if available)
	Audio 11: Multichannel – German language C (if available)
	Audio 12: Multichannel – German language LFE (if available)
	Audio 13: Multichannel – German language LS (if available)
	Audio 14: Multichannel – German language RS (if available)
	Audio 15: In agreement with ZDF Production Management
	Audio 16: In agreement with ZDF Production Management
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"ProductionID"_SF-UHD-HDR-n_"Title".mxf Example: 12345678_SF-UHD-HDR-1_Title.mxf Note: "n" in the file name (..._SF-UHD-HDR-n_...) should be used for numbering the Broadcast deliverables (1, 2, 3 etc.) ----- "ProductionID"_SF-UHD-HDR -n_"Title"_MT.mxf (for program deliverables intended for release on the TV-on-demand platform "ZDF-Mediathek") Example: 12345678_SF-UHD-HDR-1_Title_MT.mxf Note: "n" in the file name (..._SF-UHD-HDR-n_...) should be used for numbering the Broadcast deliverables (1, 2, 3 etc.)

Table 8: Technical profile Broadcast deliverables UHD/HDR

5.3.2. Separate Clean Elements UHD/HDR

Identifier: ZDF-S02-UHD-HDR	
Container	*.MXF - MXF OP1a according to the SMPTE 377 Standard (Single Item Single Package)
Codec	XAVC QFHD Intra Class 300 VBR
Resolution	3840x2160
Frame Rate	50
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (2160p/50)
HDR Standard	Hybrid Log-Gamma (HLG) in accordance with ITU-R BT.2100
EOTF	HLG System Gamma: 1.2
Peak Luminance	1000 nits

Colour Space	ITU-R BT.2020
Audio	2-channel 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
	Note: The file must always contain 2 audio tracks. Audio tracks must be muted.
Audio Track Assignment	Audio 1: none / silent
	Audio 2: none / silent
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"ProductionID"_NTH-UHD-HDR-n_"Title".mxf Example: 12345678_NTH-UHD-HDR-1_Title.mxf Note: "n" in the file name (..._NTH-UHD-HDR-n_...) should be used for numbering the Separate Clean Elements (1, 2, 3 etc.) --- "ProductionID"_NTH-UHD-HDR-n_"Title"_MT.mxf (for program deliverables intended for release on the TV-on-demand platform "ZDF-Mediathek") Example: 12345678_NTH-UHD-HDR-1_Title_MT.mxf Note: "n" in the file name (...-HDR-n_...) should be used for numbering the Separate Clean Elements (1, 2, 3 etc.)

Table 9: Technical profile Separate Clean Elements UHD/HDR

5.3.3. Clean Feed UHD/HDR

Identifier: ZDF-S03-UHD-HDR	
Container	*.MXF - MXF OP1a according to the SMPTE 377 Standard (Single Item Single Package)
Codec	XAVC QFHD Intra Class 300 VBR
Resolution	3840x2160
Frame Rate	50
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (2160p/50)
HDR Standard	Hybrid Log-Gamma (HLG) in accordance with ITU-R BT.2100
EOTF	HLG System Gamma: 1.2
Peak Luminance	1000 nits
Colour Space	ITU-R BT.2020
Audio	Up to 16-channel (only even-numbered multiples) 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note	The file must always contain a minimum of 2 and a maximum of 16 audio tracks. Only an even number is allowed. The audio track allocation must be agreed with the responsible ZDF Production Management. The audio tracks should be assigned especially for the delivery of audios used for production purposes such as re-editing (e.g. Music & Effects (M&E), M&E without music, stems etc.)
Multichannel Audio	Dolby-E or discrete
Audio Track Assignment	Audio 1: In agreement with ZDF Production Management
	Audio 2: In agreement with ZDF Production Management

	Audio 3: In agreement with ZDF Production Management
	Audio 4: In agreement with ZDF Production Management
	Audio 5: In agreement with ZDF Production Management
	Audio 6: In agreement with ZDF Production Management
	Audio 7: In agreement with ZDF Production Management
	Audio 8: In agreement with ZDF Production Management
	Audio 9: In agreement with ZDF Production Management
	Audio 10: In agreement with ZDF Production Management
	Audio 11: In agreement with ZDF Production Management
	Audio 12: In agreement with ZDF Production Management
	Audio 13: In agreement with ZDF Production Management
	Audio 14: In agreement with ZDF Production Management
	Audio 15: In agreement with ZDF Production Management
	Audio 16: In agreement with ZDF Production Management
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"ProductionID"_CF-UHD-HDR-n_"Title".mxf Example: 12345678_CF-UHD-HDR-1_Title.mxf Note: "n" in the file name (...-HDR-n_...) should be used for numbering the Clean Feeds (1, 2, 3 etc.) ----- "ProductionID"_CF-UHD-HDR-n_"Title"_MT.mxf (for program deliverables intended for release on the TV-on-demand platform "ZDF-Mediathek") Example: 12345678_CF-UHD-HDR-1_Title_MT.mxf Note: "n" in the file name (...-HDR-n_...) should be used for numbering the Clean Feeds (1, 2, 3 etc.)

Table 10: Technical profile Clean Feed UHD/HDR

5.4. Proxy Files

For the **definition** of Proxy Files, see section 2 of this document.

Important advice: From now on the delivery of Proxy Files on DVD will no longer be accepted by ZDF! Proxy Files can only be delivered on USB sticks, hard drives and via file transfer systems!

5.4.1. Proxy File MidRes LQ TC

Identifier: ZDF-S05	
Container	*.MP4
Codec / Bit Rate	H.264/MPEG-4 AVC/Part 10 HighProfile@L4.0; 3 - 5 Mbit/s VBR (variable bitrate)
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:0
Bit Depth	8 bit
Scan Type	Progressive
Audio	2-channel 16Bit 48 KHz AAC 128 Kbit

	Note: The file must always contain 2 audio tracks (main language full mix left and right).
Audio Track Assignment	Audio 1: Main language full mix left
	Audio 2: Main language full mix right
Timecode	The broadcast version timecode must be burned in to the image (superimposed)
File Naming Convention	"ProductionID"_MRLQ_TC_"Title".mp4 Example: 12345678_MRLQ_TC_Title.mp4

Table 11: Technical profile MidRes LQ TC

5.4.2. Proxy File MidRes LQ

Identifier: ZDF-S06	
Container	*.MP4
Codec / Bit Rate	H.264/MPEG-4 AVC/Part 10 HighProfile@L4.0; 3 - 5 Mbit/s VBR (variable bitrate)
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:0
Bit Depth	8 bit
Scan Type	Progressive
Audio	2-channel 16Bit 48 KHz AAC 128 Kbit
	Note: The file must always contain 2 audio tracks (main language full mix left and right).
Audio Track Assignment	Audio 1: Main language full mix left
	Audio 2: Main language full mix right
File Naming Convention	"ProductionID"_MRLQ_"Title".mp4 Example: 12345678_MRLQ_Title.mp4

Table 12: Technical profile MidRes LQ

6. Program deliverables for third-party platforms

The category "Program deliverables for third-party platforms" comprises the technical profile for **Broadcast deliverables** which are distributed to third-party platforms (e.g. YouTube) and the technical profiles for **Social Media** deliverables (e.g. video content for Facebook) including both, **Videoclips** and **clean feed version of the Videoclips**. For the **definitions** of the mentioned types of deliverables, see section 2 of this document.

The deliverables from this category should be tagged with a code which indicates the corresponding third-party platform.

FB – for Facebook
YT – for YouTube

The appropriate code should always be placed before the file extension in the file name (see examples in the technical profiles).

Technical profiles

Important advice: The profile **ZDF-3P-S01** (see below) should only be used for deliverables which are supposed to be released in this format on YouTube. For deliverables intended for "ZDF-Mediathek", linear TV as well as archiving a technical profile for Broadcast deliverables listed in section 5 must be used by all means.

6.1. Broadcast deliverables HD (High Definition)

Identifier: ZDF-3P-S01	
Container	*.MP4
Codec	H.264 / 30 Mbit/s (Constant Bit Rate)
Resolution	1920x1080
Frame Rate	25 or 50
Chroma Subsampling	4:2:0
Bit Depth	8 bit
Scan Type	Progressive (1080p/25 or 50)
Audio	2-channel 16Bit 48 KHz AAC 128 Kbit
Note	The file must always contain 2 audio tracks (main language full mix left and right).
Audio Track Assignment	Audio 1: Main language full mix left
	Audio 2: Main language full mix right
Loudness third-party platforms	-14LKFS (YouTube)
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	ProductionID_SF-n_Code-of-the-broadcast_Title-of-the-broadcast_YT.mp4 Example: 79400382_SF-1_txy_Fluch-des-Pharao-Tutanchamun_YT.mp4 Note: "n" in the file name (…_SF-n_...) should be used for numbering the Broadcast deliverables (1, 2, 3 etc.)

Table 13: Technical profile Broadcast deliverables HD (third-party platforms)

6.2. Videoclips Social Media

Identifier: ZDF-SM01	
Container	*.MP4
Codec	H.264 / MPEG-4 AVC/Part 10 HighProfile@L4.0; 8 or 16 Mbit/s VBR (Variable Bit Rate)
Resolution	In agreement with ZDF Production Management
Frame Rate	In agreement with ZDF Production Management
Scan Type	Progressive
Audio	In agreement with ZDF Production Management
Audio Track Assignment	In agreement with ZDF Production Management
File Naming	In agreement with ZDF Production Management

Convention	ProductionID_SF-n_Code-of-the-broadcast_Title-of-the-broadcast_FB.mp4 Example: 79400382_SF-1_txy_Fluch-des-Pharao-Tutanchamun_FB.mp4 Note: "n" in the file name (..._SF-n_...) should be used for numbering the deliverables (1, 2, 3 etc.)

Table 14: Technical profile Videoclips Social Media

6.3. Videoclips Social Media Clean Feed

Identifier: ZDF-SM02	
Container	*.MP4
Codec	H.264/MPEG-4 AVC/Part 10 HighProfile@L4.0; 8 or 16 Mbit/s VBR (Variable Bit Rate)
Resolution	In agreement with ZDF Production Management
Frame Rate	In agreement with ZDF Production Management
Scan Type	Progressive
Audio	In agreement with ZDF Production Management
Audio Track Assignment	In agreement with ZDF Production Management
File Naming Convention	In agreement with ZDF Production Management ProductionID_CF-n_Code-of-the-broadcast_Title-of-the-broadcast_FB.mp4 Example: 79400382_CF-1_txy_Fluch-des-Pharao-Tutanchamun_FB.mp4 Note: "n" in the file name (..._SF-n_...) should be used for numbering the deliverables (1, 2, 3 etc.)

Table 15: Technical profile Videoclips Social Media Clean Feed

7. Program deliverables ZDF (licensed materials)

The category "Program deliverables ZDF (licensed materials)" comprises the technical profiles for **Broadcast deliverables**, **Clean Feed** and **NTH** with alternative file specifications. For the **definitions** of the mentioned types of deliverables, see section 2 of this document.

In principle, the specifications outlined in section 5 also apply for the delivery of licensed materials. If, in individual cases, it is not possible to deliver the desired codec or audio track assignment, the following *alternative delivery specifications* may be used instead. All other provisions (such as, for example, the requirement to submit accompanying metadata sheets) remain unchanged even when deliveries are made in accordance with the alternative specifications.

For program deliverables with alternative file specifications intended for **release on the TV-on-demand platform "ZDF-Mediathek"** the code "**MT**" should be placed before the file extension in the file name (see examples in the technical profiles).

Technical profiles

7.1. HD (High Definition)

7.1.1. Alternative file specification - Broadcast deliverables HD

Identifier: ZDF-S01-A	
Container	*.MOV (Quicktime)
Codec	Apple ProRes 422 HQ
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (1080p/25) / Interlaced (1080i/25)
Audio	Up to 16-channel (only even-numbered multiples) 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note	The file must always contain a minimum of 2 and a maximum of 16 audio tracks. Only an even number is allowed. The audio track allocation for audio 1-14 is predefined (see below). The audio tracks 15-16 may be assigned in agreement with ZDF Production Management. Audio tracks which are not required may remain unassigned (select "none / silent" in the metadata sheet). Additional audio tracks which are not intended for release but used for production purposes must be attached to the Clean Feed.
Multichannel Audio	Dolby-E or discrete
Audio Track Assignment	Audio 1: German language full mix left
	Audio 2: German language full mix right
	Audio 3: Original language full mix left (if available) / In agreement with ZDF Studios
	Audio 4: Original language full mix right (if available) / In agreement with ZDF Studios
	Audio 5: Audio description left / In agreement with ZDF Studios
	Audio 6: Audio description right / In agreement with ZDF Studios
	Audio 7: Dolby E / In agreement with ZDF Studios
	Audio 8: Dolby E / In agreement with ZDF Studios
	Audio 9: Multichannel – German language L / In agreement with ZDF Studios
	Audio 10: Multichannel – German language R / In agreement with ZDF Studios
	Audio 11: Multichannel – German language C / In agreement with ZDF Studios
	Audio 12: Multichannel – German language LFE / In agreement with ZDF Studios
	Audio 13: Multichannel – German language LS / In agreement with ZDF Studios
	Audio 14: Multichannel – German language RS / In agreement with ZDF Studios
	Audio 15: In agreement with ZDF Studios
	Audio 16: In agreement with ZDF Studios
Timecode	Start timecode (first frame): 10:00:00:00

File Naming Convention	"ProductionID"_SF-A-n_"Title".mov Example: 12345678_SF-A-1_Title.mov Note: "n" in the file name (..._SF-A-n_...) should be used for numbering the Broadcast deliverables (1, 2, 3 etc.) ----- "ProductionID"_SF-A-n_"Title"_MT.mov Example: 12345678_SF-A-1_Title_MT.mov Note: "n" in the file name (..._SF-A-n_...) should be used for numbering the Broadcast deliverables (1, 2, 3 etc.)

Table 16: Technical profile Alternative file specification - Broadcast deliverables HD

7.1.2. Alternative file specification - Separate Clean Elements HD

Identifier: ZDF-S02-A	
Container	*.MOV (Quicktime)
Codec	Apple ProRes 422 HQ
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (1080p/25) / Interlaced (1080i/25)
Audio	2-channel 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
	Note: The file must always contain 2 audio tracks. Audio tracks must be muted.
Audio Track Assignment	Audio 1: none / silent
	Audio 2: none / silent
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"ProductionID"_NTH-A-n_"Title".mov Example: 12345678_NTH-A-1_Title.mov Note: "n" in the file name (..._NTH-A-n_...) should be used for numbering the Separate Clean Elements (1, 2, 3 etc.) ----- "ProductionID"_NTH-A-n_"Title"_MT.mov Example: 12345678_NTH-A-1_Title_MT.mov Note: "n" in the file name (..._NTH-A-n_...) should be used for numbering the Separate Clean Elements (1, 2, 3 etc.)

Table 17: Technical profile Alternative file specification - Separate Clean Elements HD

7.1.3. Alternative file specification - Clean Feed HD

Identifier: ZDF-S03-A	
Container	*.MOV (Quicktime)
Codec	Apple ProRes 422 HQ
Resolution	1920x1080
Frame Rate	25

Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (1080p/25) / Interlaced (1080i/25)
Audio	Up to 16-channel (only even-numbered multiples) 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note	The file must always contain a minimum of 2 and a maximum of 16 audio tracks. Only an even number is allowed. The audio track allocation must be agreed with the responsible ZDF Production Management. The audio tracks should be assigned especially for the delivery of audios used for production purposes such as re-editing (e.g. Music & Effects (M&E), M&E without music, stems etc.).
Multichannel Audio	Dolby-E or discrete
Audio Track Assignment	Audio 1: In agreement with ZDF Studios
	Audio 2: In agreement with ZDF Studios
	Audio 3: In agreement with ZDF Studios
	Audio 4: In agreement with ZDF Studios
	Audio 5: In agreement with ZDF Studios
	Audio 6: In agreement with ZDF Studios
	Audio 7: In agreement with ZDF Studios
	Audio 8: In agreement with ZDF Studios
	Audio 9: In agreement with ZDF Studios
	Audio 10: In agreement with ZDF Studios
	Audio 11: In agreement with ZDF Studios
	Audio 12: In agreement with ZDF Studios
	Audio 13: In agreement with ZDF Studios
	Audio 14: In agreement with ZDF Studios
	Audio 15: In agreement with ZDF Studios
	Audio 16: In agreement with ZDF Studios
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"ProductionID"_CF-A-n_"Title".mov Example: 12345678_CF-A-1_Title.mov Note: "n" in the file name (..._CF-A-n_...) should be used for numbering the Clean Feeds (1, 2, 3 etc.) ----- "ProductionID"_CF-A-n_"Title"_MT.mov Example: 12345678_CF-A-1_Title_MT.mov Note: "n" in the file name (..._CF-A-n_...) should be used for numbering the Clean Feeds (1, 2, 3 etc.)

Table 18: Technical profile Alternative file specification - Clean Feed HD

8. Program deliverables ARTE

The category "Program deliverables ARTE" comprises the technical profiles for **Broadcast deliverables**, **Clean Feed** and **NTH** with two different file specifications. In contrast to the specifications outlined in Section 5, the following specifications apply for the delivery of ARTE broadcasts. If, in individual cases, it is not possible to deliver the desired codec, the alternative delivery specifications may be used if discussed in advance with ZDF. All other provisions (such as, for example, the requirement to submit accompanying metadata sheets) remain unchanged even when deliveries are made in accordance with the alternative specifications.

Technical profiles

8.1. HD (High Definition)

8.1.1. Broadcast deliverables HD ARTE

Identifier: ZDF-ARTE-S01	
Container	*.MXF - MXF OP1a according to the SMPTE 377 Standard (Single Item Single Package)
Codec	AVCIntra100 (H.264 / MPEG-4 AVC High 422 Intra RP2027 Constrained Class 100)
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (1080p/25) / Interlaced (1080i/25)
Audio	Up to 16-channel (only even-numbered multiples) 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note	The file must always contain a minimum of 8 and a maximum of 16 audio tracks. Audio tracks that are not required must be muted. Muted audio tracks must be flagged in the metadata sheet accordingly ("none / silent"). There is only an even number of audio tracks allowed.
Multichannel Audio	Discrete
Audio Track Assignment	Audio 1: Main language full mix left
	Audio 2: Main language full mix right
	Audio 3: M&E left
	Audio 4: M&E right
	Audio 5: Original track left
	Audio 6: Original track right
	Audio 7: Alternate language left / Audio description left
	Audio 8: Alternate language right / Audio description right
	Audio 9: Multichannel – Main language L
	Audio 10: Multichannel – Main language R
	Audio 11: Multichannel – Main language C
	Audio 12: Multichannel – Main language LFE
	Audio 13: Multichannel – Main language LS
	Audio 14: Multichannel – Main language RS

	Audio 15: none / silent / In agreement with ZDF Production Management
	Audio 16: none / silent / In agreement with ZDF Production Management
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"ProductionID"_SF-ARTE-n_"Title".mxf Example: 12345678_SF-ARTE-1_Title.mxf Note: "n" in the file name (..._SF-ARTE-n_...) should be used for numbering the Broadcast deliverables (1, 2, 3 etc.)

Table 19: Technical profile Broadcast deliverables HD ARTE

8.1.2. Alternative file specification - Broadcast deliverables HD ARTE

Identifier: ZDF-ARTE-S01-A	
Container	*.MOV (Quicktime)
Codec	Apple ProRes 422 HQ
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (1080p/25) / Interlaced (1080i/25)
Audio	Up to 16-channel (only even-numbered multiples) 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note	The file must always contain a minimum of 8 and a maximum of 16 audio tracks. Audio tracks that are not required must be muted. Muted audio tracks must be flagged in the metadata sheet accordingly ("none / silent"). There is only an even number of audio tracks allowed.
Multichannel Audio	Discrete
Audio Track Assignment	Audio 1: Main language full mix left
	Audio 2: Main language full mix right
	Audio 3: M&E left
	Audio 4: M&E right
	Audio 5: Original track left
	Audio 6: Original track right
	Audio 7: Alternate language left / Audio description left
	Audio 8: Alternate language right / Audio description right
	Audio 9: Multichannel – Main language L
	Audio 10: Multichannel – Main language R
	Audio 11: Multichannel – Main language C
	Audio 12: Multichannel – Main language LFE
	Audio 13: Multichannel – Main language LS
	Audio 14: Multichannel – Main language RS
	Audio 15: none / silent / In agreement with ZDF Production Management
	Audio 16: none / silent / In agreement with ZDF Production Management
Timecode	Start timecode (first frame): 10:00:00:00

File Naming Convention	"ProductionID"_SF-ARTE-A-n_"Title".mov Example: 12345678_SF-ARTE-A-1_Title.mov Note: "n" in the file name (..._SF-ARTE-A-n_...) should be used for numbering the Broadcast deliverables (1, 2, 3 etc.)

Table 20: Technical profile Alternative file specification - Broadcast deliverables HD ARTE

8.1.3. Separate Clean Elements HD ARTE

Identifier: ZDF-ARTE-S02	
Container	*.MXF - MXF OP1a according to the SMPTE 377 Standard (Single Item Single Package)
Codec	AVCIntra (H.264 / MPEG-4 AVC High 422 Intra RP2027 Constrained Class 100)
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (1080p/25) / Interlaced (1080i/25)
Audio	2-channel 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note	The file must always contain 2 audio tracks. Audio tracks must be muted.
Audio Track Assignment	Audio 1: none / silent
	Audio 2: none / silent
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"ProductionID"_NTH-ARTE-n_"Title“.mxf Example: 12345678_NTH-ARTE-1_Title.mxf Note: "n" in the file name (..._NTH-ARTE-n_...) should be used for numbering the Separate Clean Elements (1, 2, 3 etc.)

Table 21: Technical profile Separate Clean Elements HD ARTE

8.1.4. Alternative file specification - Separate Clean Elements HD ARTE

Identifier: ZDF-ARTE-S02-A	
Container	*.MOV (Quicktime)
Codec	Apple ProRes 422 HQ
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (1080p/25) / Interlaced (1080i/25)
Audio	2-channel 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
	Note: The file must always contain 2 audio tracks. Audio tracks must be muted.
Audio Track Assignment	Audio 1: none / silent
	Audio 2: none / silent

Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"ProductionID"_NTH-ARTE-A-n_"Title".mov Example: 12345678_NTH-ARTE-A-1_Title.mov Note: "n" in the file name (..._NTH-ARTE-A-n_...) should be used for numbering the Separate Clean Elements (1, 2, 3 etc.)

Table 22: Technical profile Alternative file specification - Separate Clean Elements HD ARTE

8.1.5. Clean Feed HD ARTE

Identifier: ZDF-ARTE-S03	
Container	*.MXF - MXF OP1a according to the SMPTE 377 Standard (Single Item Single Package)
Codec	AVCIntra100 (H.264 / MPEG-4 AVC High 422 Intra RP2027 Constrained Class 100)
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (1080p/25) / Interlaced (1080i/25)
Audio	Up to 16-channel (only even-numbered multiples) 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note	The content and audio track allocation must be agreed with the responsible ZDF Production Management. The audio tracks can be used for the delivery of discrete multi-channel sound, language versions, music, etc. There is only an even number of audio tracks allowed.
Multichannel Audio	Discrete
Audio Track Assignment	Audio 1: Foley left / In agreement with ZDF Production Management
	Audio 2: Foley right / In agreement with ZDF Production Management
	Audio 3: Music left / In agreement with ZDF Production Management
	Audio 4: Music right / In agreement with ZDF Production Management
	Audio 5: Original soundtrack left / In agreement with ZDF Production Management
	Audio 6: Original soundtrack right / In agreement with ZDF Production Management
	Audio 7: In agreement with ZDF Production Management
	Audio 8: In agreement with ZDF Production Management
	Audio 9: In agreement with ZDF Production Management
	Audio 10: In agreement with ZDF Production Management
	Audio 11: In agreement with ZDF Production Management
	Audio 12: In agreement with ZDF Production Management
	Audio 13: In agreement with ZDF Production Management
	Audio 14: In agreement with ZDF Production Management
	Audio 15: In agreement with ZDF Production Management
	Audio 16: In agreement with ZDF Production Management
Timecode	Start timecode (first frame): 10:00:00:00

File Naming Convention	"ProductionID"_CF-ARTE-n_"Title".mxf Example: 12345678_CF-ARTE-1_Title.mxf Note: "n" in the file name (..._CF-ARTE-n_...) should be used for numbering the Clean Feeds (1, 2, 3 etc.)

Table 23: Technical profile Clean Feed HD ARTE

8.1.6. Alternative file specification - Clean Feed HD ARTE

Identifier: ZDF-ARTE-S03-A	
Container	*.MOV (Quicktime)
Codec	Apple ProRes 422 HQ
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Progressive (1080p/25) / Interlaced (1080i/25)
Audio	Up to 16-channel (only even-numbered multiples) 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note	The content and audio track allocation must be agreed with the responsible ZDF Production Management. The audio tracks can be used for the delivery of discrete multi-channel sound, language versions, music, etc. There is only an even number of audio tracks allowed.
Multichannel Audio	Discrete
Audio Track Assignment	Audio 1: Foley left / In agreement with ZDF Production Management
	Audio 2: Foley right / In agreement with ZDF Production Management
	Audio 3: Music left / In agreement with ZDF Production Management
	Audio 4: Music right / In agreement with ZDF Production Management
	Audio 5: Original soundtrack left / In agreement with ZDF Production Management
	Audio 6: Original soundtrack right / In agreement with ZDF Production Management
	Audio 7: In agreement with ZDF Production Management
	Audio 8: In agreement with ZDF Production Management
	Audio 9: In agreement with ZDF Production Management
	Audio 10: In agreement with ZDF Production Management
	Audio 11: In agreement with ZDF Production Management
	Audio 12: In agreement with ZDF Production Management
	Audio 13: In agreement with ZDF Production Management
	Audio 14: In agreement with ZDF Production Management
	Audio 15: In agreement with ZDF Production Management
	Audio 16: In agreement with ZDF Production Management
Timecode	Start timecode (first frame): 10:00:00:00

File Naming Convention	"ProductionID"_CF-ARTE-A-n_"Title".mov Example: 12345678_CF-ARTE-A-1_Title.mov Note: "n" in the file name (..._CF-ARTE-A-n_...) should be used for numbering the Clean Feeds (1, 2, 3 etc.)

Table 24: Technical profile Alternative file specification - Clean Feed HD ARTE

9. Videoclips

The category "Videoclips" comprises ZDF's main technical profiles for **Videoclips** and **clean feed version of the Videoclips**. For the **definitions** of the mentioned types of deliverables, see section 2 of this document.

Technical profiles

9.1. Videoclip HD

Identifier: ZDF-B01	
Container	*.MXF - MXF OP1a according to the SMPTE 377 Standard (Single Item Single Package)
Codec	AVCIntra100 (H.264 / MPEG-4 AVC High 422 Intra RP2027 Constrained Class 100)
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Interlaced (1080i/25)
Audio	4-channel 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note	The file must always contain audio tracks 1+2 or 4 audio tracks.
Audio Track Assignment	Audio 1: Main language full mix left
	Audio 2: Main language full mix right
	Audio 3: Alternate language left (if available)
	Audio 4: Alternate language right (if available)
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"TitleNamingConvention-MINT-and-Edit".mxf
Note concerning the title	The title should be requested from ZDF Production Management.

Table 25: Technical profile Videoclip HD

9.2. Videoclip Clean Feed HD

Identifier: ZDF-B03	
Container	*.MXF - MXF OP1a according to the SMPTE 377 Standard (Single Item Single Package)
Codec	AVCIntra100 (H.264 / MPEG-4 AVC High 422 Intra RP2027 Constrained Class 100)
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:2

Bit Depth	10 bit
Scan Type	Interlaced (1080i/25)
Audio	4-channel 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note	The file must always contain audio tracks 1+2 or 4 audio tracks.
Audio Track Assignment	Audio 1: Main language full mix left
	Audio 2: Main language full mix right
	Audio 3: M&E left
	Audio 4: M&E right
Timecode	Start timecode (first frame): 10:00:00:00
File Naming Convention	"TitleNamingConvention-MINT-and-Edit".mxf
Note concerning the title	The title should be requested from ZDF Production Management.

Table 26: Technical profile Videoclip Clean Feed HD

9.3. Videoclip MidRes (8 or 16 Mbit/s)

Identifier: ZDF-B05	
Container	*.MP4
Codec	H.264/MPEG-4 AVC/Part 10 HighProfile@L4.0; 8 or 16 Mbit/s VBR (Variable Bit Rate)
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:0
Bit Depth	8 bit
Scan Type	Interlaced (1080i/25)
Audio	4-channel 16Bit 48 KHz AAC 128 Kbit
Note	The file must always contain audio tracks 1+2 or 4 audio tracks.
Audio Track Assignment	Audio 1: Main language full mix left
	Audio 2: Main language full mix right
	Audio 3: Alternate language left (if available)
	Audio 4: Alternate language right (if available)
File Naming Convention	"TitleNamingConvention-MINT-and-Edit".mp4
Note concerning the title	The title should be requested from ZDF Production Management.

Table 27: Technical profile Videoclip MidRes MQ

9.4. Videoclip Clean Feed MidRes (8 or 16 Mbit/s)

Identifier: ZDF-B06	
Container	*.MP4
Codec	H.264/MPEG-4 AVC/Part 10 HighProfile@L4.0; 8 or 16 Mbit/s VBR (Variable Bit Rate)
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:0
Bit Depth	8 bit

Scan Type	Interlaced (1080i/25)
Audio	4-channel 16Bit 48 KHz AAC 128 Kbit
	Note: The file must always contain audio tracks 1+2 or 4 audio tracks.
Audio Track Assignment	Audio 1: Main language full mix left
	Audio 2: Main language full mix right
	Audio 3: M&E left
	Audio 4: M&E right
File Naming Convention	"TitleNamingConvention-MINT-and-Edit".mp4
Note concerning the title	The title should be requested from ZDF Production Management.

Table 28: Technical profile Videoclip Clean Feed MidRes MQ

10. Raw Footage

The category "Raw Footage" comprises ZDF's main technical profiles for the delivery of Raw Footage / Footage. For the **definition** of the type of deliverables "Raw Footage", see section 2 of this document.

Raw Footage can be delivered in different technical iterations. In principle, the identifier ZDF-R01 should be used whenever possible. If this is not possible (e.g., in the case of low bandwidth for delivery via file transfer), the identifiers ZDF-R02 or ZDF-R03 may also be used in consultation with ZDF. If delivery in one of the aforementioned formats is not possible due to technical reasons (e.g., delivery of film material from certain camera types), in exceptional cases, the delivery of alternative formats can be arranged upon consultation with the responsible ZDF department.

Technical profiles

10.1. HD (High Definition)

10.1.1. Footage

Identifier: ZDF-R01	
Container	*.MXF - MXF OP1a according to the SMPTE 377 Standard (Single Item Single Package)
Codec	AVCIntra100 (H.264 / MPEG-4 AVC High 422 Intra RP2027 Constrained Class 100)
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:2
Bit Depth	10 bit
Scan Type	Interlaced (1080i/25)
Audio	4-channel 24 Bit 48KHz PCM (CHCOUNT=1) - Little Endian
Note	If required and in agreement with the responsible ZDF Production Management, the content and audio track allocation can be customised. Audio tracks that are not required must be muted.
Audio Track Assignment	Audio 1: Main language full mix left
	Audio 2: Main language full mix right

	Audio 3: M&E left / Alternate language left
	Audio 4: M&E right / Alternate language right
Timecode	Start timecode (first frame): 10:00:00:00 / Alternatively - in agreement with ZDF Production Management, the footage timecode may be used
File Naming Convention	"TitleNamingConvention-MINT-and-Edit".mxf
Note concerning the title	The title should be requested from ZDF Production Management.

Table 29: Technical profile Footage

10.1.2. Footage MidRes MQ (medium quality, 16 Mbit/s)

Identifier: ZDF-R02	
Container	*.MP4
Codec	H.264/MPEG-4 AVC/Part 10 HighProfile@L4.0; 16 Mbit/s VBR (Variable Bit Rate)
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:0
Bit Depth	8 bit
Scan Type	Interlaced (1080i/25)
Audio	4-channel 16Bit 48 KHz AAC 128 Kbit
Note	If required and in agreement with the responsible ZDF Production Management, the content and audio track allocation can be customised. Audio tracks that are not required must be muted.
Audio Track Assignment	Audio 1: Main language full mix left
	Audio 2: Main language full mix right
	Audio 3: M&E left / Alternate language left
	Audio 4: M&E right / Alternate language right
Timecode	Start timecode (first frame): 10:00:00:00 / Alternatively - in agreement with ZDF Production Management, the footage timecode may be used
File Naming Convention	"TitleNamingConvention-MINT-and-Edit".mp4
Note concerning the title	The title should be requested from ZDF Production Management.

Table 30: Technical profile Footage MidRes MQ

10.1.3. Footage MidRes LQ (low quality, 8 Mbit/s)

Identifier: ZDF-R03	
Container	*.MP4
Codec	H.264/MPEG-4 AVC/Part 10 HighProfile@L4.0; 8 Mbit/s VBR (Variable Bit Rate)
Resolution	1920x1080
Frame Rate	25
Chroma Subsampling	4:2:0

Bit Depth	8 bit
Scan Type	Interlaced (1080i/25)
Audio	4-channel 16Bit 48 KHz AAC 128 Kbit
Note	If required and in agreement with the responsible ZDF Production Management, the content and audio track allocation can be customised. Audio tracks that are not required must be muted.
Audio Track Assignment	Audio 1: Main language full mix left
	Audio 2: Main language full mix right
	Audio 3: M&E left / Alternate language left
	Audio 4: M&E right / Alternate language right
Timecode	Start timecode (first frame): 10:00:00:00 / Alternatively - in agreement with ZDF Production Management, the footage timecode may be used
File Naming Convention	"TitleNamingConvention-MINT-and-Edit".mp4
Note concerning the title	The title should be requested from ZDF Production Management.

Table 31: Technical profile Footage MidRes LQ

11. Supplementary Material

The category "Supplementary Material" comprises the technical requirements in regards to subtitles (in a file format) and other additional deliverables which are to be delivered and which are produced during the content creation (e.g. graphics, project data etc.). For the **definition** of the type of deliverables "Supplementary Material", see section 2 of this document.

11.1. Subtitles

Subtitles (UT) should be provided in stl file format (EBU-STL). The frame rate of the subtitles should match the frame rate of the corresponding Broadcast deliverables (please note the technical profiles for Broadcast deliverables in this document). The subtitle files must be created according to a 25-fps-timecode.

The structure of the file name for subtitles is as follows:

ProductionID_Type_Language-code_Title.stl

Type (column "Contents" within the subtitle section of the metadata sheet):

hoh = hard of hearing

omu = Original version with subtitles / German subtitles; foreign-language subtitles

ls = simplified (German) language

Language codes:

deu = German

eng = English

fra = French

ukr = Ukrainian

See the ISO 639-2/T standard for more language names and codes. For example, you may find the list of ISO 639-2/T codes with the following link: ISO-639-2-Codes – Wikipedia

Examples for the file naming of subtitle files:

12345678_hoh_deu_Aufgedeckt-Das-versunkene-Neapolis.stl
12345678_omu_eng_Suedamerika.stl

11.2. Other Supplementary Material

The following file formats are allowed for Other Supplementary Material:

- Audio files: **. wav**
- Project data: **. aaf**
- Documents: **. pdf**
- Graphics: **. mov** (ProRes HQ 422 in MOV container)

Supplementary Material in different file formats will not be accepted (e.g. Word/Excel files). The only exception is the metadata sheet (MBK) in Excel format, which should still be delivered in this format.

If there are several Supplementary Materials for one broadcast file, please number them after the ProductionID:

File naming for Other Supplementary Material:

ProductionID_Title_Description.File-Extension

Examples:

12345678_Energiewende_Stereomix.wav
12345678_Suedamerika_5.1-Mix.LFE.wav
12345678_Energiewende_Master.aaf

12. Appendix

12.1. Grading HD/HDR and UHD/HDR Productions

The following instructions and specifications are mandatory when creating HD/HDR or UHD/HDR productions for ZDF. Instructions and specifications for grading HD/HDR and UHD/HDR productions in the current version may be downloaded from the ZDF website:

https://www.zdf.de/zdfunternehmen/technik-normen-richtlinien-100.html

12.2. Delivery of HD and UHD material with high dynamic range (HDR)

For the delivery of HD and UHD material with high dynamic range (HDR)
the following technical specifications apply:

Container: MXF OP1a
Codec: XAVC Class 100 for HD, XAVC Class 300 for UHD
Resolution: 1920x1080 (HD) resp. 3840x2160 (UHD)
Frame Rate: 50p
Chroma Subsampling: 4:2:2
Bit Depth: 10bit
HDR-System: Hybrid Log-Gamma (HLG) in accordance with ITU-R BT.2100 / ITU-R BT.2390
EOTF: HLG Variable System Gamma 1.2 in accordance with ITU-R BT.2100
Peak Luminance: 1000 nits
Colour Space: ITU-R BT.2020