



**High-Performance Single Layer High Dynamic Range (HDR)  
System for use in Consumer Electronics devices;  
Part 2: Enhancements for Perceptual Quantization (PQ)  
transfer function based High Dynamic Range (HDR)  
Systems (SL-HDR2)**

**EBU**

OPERATING EUROVISION

---

**Reference**

DTS/JTC-040-2

---

**Keywords**broadcasting, content, digital, distribution, HDR,  
HDTV, UHDTV, video**ETSI**650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° 7803/88

---

**Important notice**

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:

<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

---

**Copyright Notification**

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2018.

© European Broadcasting Union 2018.

All rights reserved.

**DECT™**, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members.

**3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

**oneM2M** logo is protected for the benefit of its Members.

**GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

# Contents

Intellectual Property Rights .....	5
Foreword.....	5
Modal verbs terminology.....	5
Introduction .....	5
1 Scope .....	8
2 References .....	8
2.1 Normative references .....	8
2.2 Informative references.....	8
3 Definitions, symbols, abbreviations and conventions .....	9
3.1 Definitions .....	9
3.2 Symbols.....	10
3.2.1 Arithmetic operators .....	10
3.2.2 Mathematical functions.....	11
3.3 Abbreviations .....	11
3.4 Conventions.....	12
4 End-to-end system.....	12
5 HDR system architecture.....	13
6 Dynamic metadata format for HDR-to-HDR/SDR adaptation .....	13
7 HDR-to-HDR/SDR signal reconstruction process .....	15
7.1 Input streams .....	15
7.2 Reconstruction process of an SDR or HDR stream .....	15
7.2.1 Introduction.....	15
7.2.2 Selecting a reconstruction mode .....	16
7.2.3 Luminance mapping and colour correction tables construction.....	17
7.2.3.1 Luminance mapping table construction from variables (payloadMode 0).....	17
7.2.3.1.1 Introduction .....	17
7.2.3.1.2 Overview of the computation of lutMapY.....	17
7.2.3.1.3 Block "To perceptual uniform signal" .....	18
7.2.3.1.4 Block "Black/white level adaptation" .....	18
7.2.3.1.5 Block "Tone mapping curve" .....	19
7.2.3.1.6 Block "Adjustment curve" .....	21
7.2.3.1.7 Block "Gain limiter" .....	22
7.2.3.1.8 Block "To linear signal" .....	23
7.2.3.1.9 Block "Inverse EOTF" .....	23
7.2.3.2 Colour correction table construction from parameter-based mode (payloadMode 0).....	23
7.2.3.3 Luminance mapping table retrieval (payloadMode 1) .....	24
7.2.3.4 Colour correction table retrieval (payloadMode 1) .....	25
7.2.4 HDR/SDR picture reconstruction from look-up tables and HDR picture .....	25
7.3 Metadata recomputation for presentation display adaptation .....	27
7.3.1 Introduction.....	27
7.3.2 Scaling factor computation .....	27
7.3.3 Recomputation for "Black/white level adaptation" parameters .....	28
7.3.4 Recomputation for "Tone mapping curve" parameters.....	28
7.3.5 Recomputation for "Adjustment curve" parameters .....	29
<b>Annex A (normative): SL-HDR reconstruction metadata using HEVC.....</b>	<b>31</b>
<b>Annex B (normative): SL-HDR reconstruction metadata using AVC.....</b>	<b>32</b>
<b>Annex C (informative): HDR-to-SDR decomposition principles and considerations .....</b>	<b>33</b>
<b>Annex D (informative): Gamut mapping .....</b>	<b>34</b>

<b>Annex E (informative):</b>	<b>Embedded data on CE digital video interfaces .....</b>	<b>35</b>
E.1	Introduction .....	35
E.2	Supported video formats .....	35
E.3	Metadata packets .....	35
E.3.1	Introduction .....	35
E.3.2	Metadata packet syntax .....	35
E.3.3	Metadata packet semantics .....	36
E.3.4	Metadata packet embedding .....	37
E.4	Graphics Indicator bit .....	37
E.5	Signalling SL-HDR Dynamic Metadata .....	38
E.5.1	Introduction .....	38
E.5.2	VSVDB to signal SL-HDR support .....	38
E.5.3	SL-HDR Dynamic Metadata InfoFrame .....	38
<b>Annex F (informative):</b>	<b>Error-concealment: recovery in post-processor from metadata loss or corruption .....</b>	<b>40</b>
F.1	Introduction .....	40
F.2	Metadata values for recovery mode .....	40
F.3	Recovery of shadow_gain_control with MDCV SEI message .....	41
F.4	Recovery of shadow_gain_control without MDCV SEI message .....	41
<b>Annex G (informative):</b>	<b>ETSI TS 103 433 signalling in CTA-861-G .....</b>	<b>42</b>
<b>Annex H (informative):</b>	<b>Minimum and maximum value of <math>L_{pdisp}</math> for display adaptation .....</b>	<b>43</b>
<b>Annex I (informative):</b>	<b>Change History .....</b>	<b>44</b>
History	.....	45

---

# Intellectual Property Rights

## Essential patents

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

## Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

---

# Foreword

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document is part 2 of a multi-part deliverable. Full details of the entire series can be found in part 1 [1].

NOTE: The EBU/ETSI JTC Broadcast was established in 1990 to co-ordinate the drafting of standards in the specific field of broadcasting and related fields. Since 1995 the JTC Broadcast became a tripartite body by including in the Memorandum of Understanding also CENELEC, which is responsible for the standardization of radio and television receivers. The EBU is a professional association of broadcasting organizations whose work includes the co-ordination of its members' activities in the technical, legal, programme-making and programme-exchange domains. The EBU has active members in about 60 countries in the European broadcasting area; its headquarters is in Geneva.

European Broadcasting Union  
CH-1218 GRAND SACONNEX (Geneva)  
Switzerland  
Tel: +41 22 717 21 11  
Fax: +41 22 717 24 81

---

# Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

---

# Introduction

## Motivation

Today High Efficiency Video Coding (HEVC) enables first Ultra HD broadcast services (also referred as "4K" resolution) via existing DVB specifications.

The goal of ETSI TS 103 433-1 [1] V1.2.1, SL-HDR1, was to standardize a single layer HDR system addressing direct backwards compatibility i.e. a system leveraging SDR distribution networks and services already in place and that enables high quality HDR rendering on HDR-enabled CE devices including high quality SDR rendering on SDR CE devices.

The goal of the present document is to specify enhancements for single layer Perceptual Quantization (PQ) transfer function based HDR systems, enabled by signal processing blocks that are similar/the same to those in SL-HDR1. Similar to SL-HDR1, these enhancements will be enabled by use of dynamic metadata and a post processor in the Consumer Electronics device.

### Pre-processing

At the distribution stage, an incoming HDR signal is analysed and content-dependent dynamic metadata is produced. This dynamic metadata can be produced in an automatic process or in a manual process where the image quality resulting of the metadata that has been set manually is judged on an SDR grading monitor. This dynamic metadata can be used to create an optimal picture for a display that has different characteristics, most noticeably a different maximum luminance, than the display used when grading the HDR content. The HDR signal is encoded with any distribution codec (e.g. HEVC as specified in part 1 [1], Annex A) and carried throughout an HDR distribution network with accompanying metadata conveyed on a specific channel or embedded in an HDR bitstream. The dynamic metadata can for instance be carried in an SEI message when used in conjunction with an HEVC codec. The pre-processor that produces dynamic metadata is not a normative requirement of the present document. Nonetheless, the pre-processor is expected to produce a dynamic metadata stream matching the syntax specified in Annex A and Annex B.

### Post-processing

The post-processing stage occurs just after HDR bitstream decoding. The post-processing takes as input an HDR video frame and associated dynamic metadata and the characteristic of the attached HDR compliant rendering device in order to optimize the HDR picture for the rendering device as specified in clause 7.

### Structure of the present document

The present document is structured as follows. Clause 1 provides the scope of the current document. Clause 2 provides references used in the present document. Clause 3 gives essential definitions, symbols and abbreviations used in the present document. Clause 4 provides information on the end to end system. Clause 5 details the architecture of the HDR system. Clause 6 specifies the format of the content-based dynamic metadata common to systems based on ETSI TS 103 433 multi-part documents. Specifically to the present document, the metadata are produced during the HDR-to-SDR decomposition stage and they enable reconstruction of the SDR signal from the decoded HDR signal using those metadata. Clause 7 specifies the reconstruction process of the SDR signal and an HDR signal that is adapted to the maximum luminance of the presentation display. The dynamic metadata format specified in clause 6 is normatively mapped from SEI messages representative of SL-HDR system that are specified for HEVC and AVC respectively in Annex A and Annex B. Informative Annex C and Annex D provide information on an HDR-to-SDR decomposition process, and a gamut mapping process. Informative Annex E describes a way to transfer dynamic metadata by embedding it in the video transferred over a CE digital video interface. Informative Annex F proposes a recovery procedure when dynamic metadata are detected as missing by the post-processor during the HDR signal reconstruction. The recovery procedure may also be applied in case it is desirable to replace the original metadata by a fixed tone mapping function, e.g. when graphics overlays are inserted on the decoded video by a mid-device (e.g. STB) which transmits SL-HDR reconstruction metadata as well as the mixed video to an SL-HDR capable TV. Eventually, informative Annex G gives reference to a standard mechanism to carry SL-HDR reconstruction metadata through interfaces and Annex H provides a recommendation on the maximum presentation display luminance that display adaptation can be used with.

The structure of the present document is summarized in Table 1.

Table 1: Structure of the present document

Clause/Annex #	Descriptionfigure	Normative/Informative (in the present document)
Clause 1	Scope of the document	Informative
Clause 2	References used in the document	Normative/Informative
Clause 3	Definitions, symbols, abbreviations	Informative
Clause 4	End-to-end system	Informative
Clause 5	Architecture of the HDR system	Informative
Clause 6	Metadata format abstraction layer (agnostic to the distribution format)	Normative
Clause 7	HDR-to-HDR/SDR reconstruction process	Normative
Annex A	SL-HDR reconstruction metadata using HEVC	Normative
Annex B	SL-HDR reconstruction metadata using AVC	Normative
Annex C	HDR-to-SDR decomposition principles and considerations	Informative
Annex D	Gamut mapping	Informative
Annex E	Embedded data on CE digital video interfaces	Informative
Annex F	Error-concealment and recovery procedure	Informative
Annex G	ETSI TS 103 433 signalling in CTA-861-G	Informative
Annex H	Minimum and maximum value of $L_{pdisp}$ for display adaptation	Informative

**ITeH STANDARD PREVIEW**  
(standards.iteh.ai)

Full standard d:  
<https://standards.iteh.ai/catalog/standards/sist/5451e528-d0a6-4d73-b476-3a79de06e66e/etsi-ts-103-433-2-v1.1.1-2018-01>

---

# 1 Scope

The present document specifies the HDR-to-HDR/SDR content-based dynamic metadata and the post-decoding process enabling reconstruction from the specified metadata and an HDR signal of an SDR signal (100 cd/m<sup>2</sup> or less) or an HDR signal with a maximum luminance ranging from 100 cd/m<sup>2</sup> to a maximum luminance that is higher than that of the original HDR signal. This reconstruction process is typically invoked in a Consumer Electronics device such as a TV set, a smartphone, a tablet, or a Set Top Box. Besides, it provides information and recommendations on the usage of the described HDR system.

---

## 2 References

### 2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://docbox.etsi.org/Reference/>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

- [1] ETSI TS 103 433-1 (08-2017): "High-Performance Single Layer High Dynamic Range (HDR) System for use in Consumer Electronics devices; Part 1: Directly Standard Dynamic Range (SDR) Compatible HDR System (SL-HDR1)".
- [2] Recommendation ITU-R BT.709-6 (06-2015): "Parameter values for HDTV standards for production and international programme exchange".
- [3] Recommendation ITU-R BT.2020-2 (10-2015): "Parameter values for ultra-high definition television systems for production and international programme exchange".
- [4] Recommendation ITU-T H.264 (04-2017): "Advanced video coding for generic audiovisual services".
- [5] Recommendation ITU-T H.265 (12-2016): "High efficiency video coding".
- [6] SMPTE ST 2084:2014: "High Dynamic Range Electro-Optical Transfer Function of Mastering Reference Displays".
- [7] SMPTE ST 2086:2014: "Mastering Display Color Volume Metadata Supporting High Luminance and Wide Color Gamut Images".

### 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.



The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] CTA Standard CTA-861.3, January 2015: "HDR Static Metadata extensions".
- [i.2] CTA Standard CTA-861-G, November 2016: "A DTV Profile for Uncompressed High Speed Digital Interfaces".
- [i.3] Recommendation ITU-R BT.2035: "A reference environment for evaluation of HDTV program material or completed programmes".
- [i.4] Ross N. Williams: "A Painless Guide to CRC Error Detection Algorithms," Version 3, 19 August 1993.

NOTE: Available at <http://www.ross.net/crc/crcpaper.html>.

- [i.5] SMPTE Engineering Guideline EG 28-1993: "Annotated Glossary of Essential Terms for Electronic Production".
- [i.6] SMPTE ST 2094-20:2016: "Dynamic Metadata for Color Volume Transform - Application #2".
- [i.7] SMPTE ST 2094-30:2016: "Dynamic Metadata for Color Volume Transform - Application #3".
- [i.8] ETSI TS 103 433 (all parts): "High-Performance Single Layer High Dynamic Range (HDR) System for use in Consumer Electronics devices".

---

## 3 Definitions, symbols, abbreviations and conventions

### 3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

**colour correction:** adjustment of the luma and chroma components of a signal derived from the HDR signal in order to avoid hue shift and preserve the colour look of the HDR signal in the SDR signal

**colour volume:** solid in colorimetric space containing all possible colours a display can produce

**decomposed picture:** SDR picture derived from the HDR-to-SDR pre-processing stage

NOTE: Type of pre-processed picture.

**display adaptation:** adaptation of a video signal to the characteristics of the targeted Consumer Electronics display (e.g. maximum luminance of the CE display)

**dynamic metadata:** metadata that can be different for different portions of the video and can change at each associated picture

**gamut:** complete subset of colours which can be represented within a given colour space or by a certain output device

NOTE: Also known as colour gamut.

**gamut mapping:** mapping of the colour space coordinates of the elements of a source image to colour space coordinates of the elements of a reproduction

NOTE: Gamut mapping intent is not to change the dynamic range of the source but to compensate for differences in the source and output medium colour gamut capability.

**High Dynamic Range (HDR) system:** system specified and designed for capturing, processing, and reproducing a scene, conveying the full range of perceptible shadow and highlight detail, with sufficient precision and acceptable artefacts, including sufficient separation of diffuse white and specular highlights

**luma:** linear combination of non-linear-light (gamma-corrected) primary colour signals

**luminance:** objective measure of the visible radiant flux weighted for colour by the CIE Photopic Spectral Luminous Efficiency Function [i.5]

**luminance mapping:** adjustment of the luminance representative of a source signal to the luminance of a targeted system

**post-production:** part of the process of filmmaking and video production gathering many different processes such as video editing, adding visual special effects, transfer of colour motion picture film to video

NOTE: The pre-processed picture is generated during the post-production stage at the encoding site.

**pre-processed picture:** output picture of SL-HDR pre-processing stage

**presentation display:** display that the IRD outputs to

**reconstructed picture:** output picture of SL-HDR post-processing stage

**Single Layer High Dynamic Range (SL-HDR) system:** system implementing at least one of the parts of the ETSI TS 103 433 multi-part document [i.8]

**source picture:** input picture of SL-HDR pre-processing stage

NOTE: Typically an HDR picture coming from post-production facilities.

**Standard Colour Gamut (SCG):** chromaticity gamut equal to the chromaticity gamut defined by Recommendation ITU-R BT.709-6 [2]

**Standard Dynamic Range (SDR) system:** system having a reference reproduction using a luminance range constrained by Recommendation ITU-R BT.2035 [i.3], section 3.2

NOTE: Typically no more than 10 stops.

**Supplemental Enhancement Information (SEI) message:** carriage mechanism defined in Recommendation ITU-T H.264 [4] and Recommendation ITU-T H.265 [5] that is intended to assist in processes related to decoding, display or other purposes

**target picture:** picture graded on an SDR mastering display

**Wide Colour Gamut (WCG):** chromaticity gamut larger than the chromaticity gamut defined by Recommendation ITU-R BT.709-6 [2]

## 3.2 Symbols

### 3.2.1 Arithmetic operators

For the purposes of the present document, the following arithmetic operators apply:

+	Addition
−	Subtraction (as a two-argument operator) or negation (as a unary prefix operator)
×	Multiplication, including matrix multiplication
$x^y$	Exponentiation. Specifies $x$ to the power of $y$ . In other contexts, such notation is used for superscripting not intended for interpretation as exponentiation
/	Integer division with truncation of the result toward zero. For example, $7/4$ and $-7/4$ are truncated to 1 and $-7/4$ and $7/-4$ are truncated to -1
÷	Used to denote division in mathematical equations where no truncation or rounding is intended
$\frac{x}{y}$	Used to denote division in mathematical equations where no truncation or rounding is intended

### 3.2.2 Mathematical functions

For the purposes of the present document, the following mathematical functions apply:

$$\text{Abs}(x) \begin{cases} x & , \quad x \geq 0 \\ -x & , \quad x < 0 \end{cases}$$

$$\text{Clip3}(x; y; z) \begin{cases} x & , \quad z < x \\ y & , \quad z > y \\ z & , \quad \text{otherwise} \end{cases}$$

$\text{Floor}(x)$  the largest integer less than or equal to  $x$ .  $\ln(x)$  natural logarithm of  $x$   
 $\log_{10}(x)$  the base-10 logarithm of  $x$

$$\text{Min}(x; y) \begin{cases} x & , \quad x \leq y \\ y & , \quad x > y \end{cases}$$

$$\text{Max}(x; y) \begin{cases} x & , \quad x \geq y \\ y & , \quad x < y \end{cases}$$

$x = y..z$   $x$  takes on integer values starting from  $y$  to  $z$ , inclusive, with  $x$ ,  $y$ , and  $z$  being integer numbers and  $z$  being greater than  $y$

### 3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AVC	Advanced Video Coding
CE	Consumer Electronics
CIE	Commission Internationale de l'Éclairage
CRC	Cyclic Redundancy Check
EDID	Extended Display Identification Data
EOTF	Electro-Optical Transfer Function
HDMI	High-Definition Multimedia Interface
HDR	High Dynamic Range
HEVC	High Efficiency Video Coding
IRD	Integrated Receiver Decoder
LSB	Least Significant Bit
LUT	Look-Up Table
MDCV	Mastering Display Colour Volume
MSB	Most Significant Bit
PQ	Perceptual Quantization
RGB	Red Green Blue colour model
SCG	Standard Colour Gamut
SDRLUT	Standard Dynamic Range Look-Up Table
SEI	Supplemental Enhancement Information (as in AVC and HEVC)
SL-HDR	Single Layer High Dynamic Range
SL-HDRI	Single Layer High Dynamic Range Information
SMPTE	Society of Motion Picture and Television Engineers
STB	Set Top Box
VSVDB	Vendor-Specific Video Data Block
WCG	Wide Colour Gamut

## 3.4 Conventions

Unless otherwise stated, the following convention regarding the notation is used:

- Variables specified in the present document are indicated by bold Arial font 9 points lower camel case style e.g. **camelCase**. All those variables are described in clause 6.
- Internal variables of the present document are indicated by italic Cambria math font 10 points style e.g. *variable*.
- Structures of syntactic elements or structures of variables are indicated by Arial font 9 points C-style with parentheses e.g. `structure_of_variables( )`. Those structures are defined in clause 6 of part 1 [1], Annex A of part 1 [1], and Annex B of part 1 [1].
- Bitstream syntactic elements are indicated by bold Arial font 9 points C-style e.g. **syntactic\_element**. All those variables are defined in Annex A of part 1 [1] and in Annex B of part 1 [1].
- Functions are indicated as *func*( *x* ).
- Tables are indicated as *table*[ *idx* ].

## 4 End-to-end system

Figure 1 shows an end-to-end workflow supporting content production and delivery to HDR and SDR displays and to displays with any maximum luminance level in-between SDR and HDR. The primary goal of this HDR workflow is to provide direct HDR backward compatible services i.e. services which associated streams are directly compatible with HDR Consumer Electronics devices. This workflow is based on technologies and standards that facilitate an open approach.

It includes a single-layer HDR encoding/decoding, and uses static and dynamic metadata:

- Mastering Display Colour Volume (MDCV) standardized in AVC [4], HEVC [5] and SMPTE ST 2086 [7] specifications; and
- SL-HDR Information (SL-HDRI) based on both SMPTE ST 2094-20 [i.6] and SMPTE ST 2094-30 [i.7] specifications.

Single-layer encoding/decoding requires only one encoder instance at HDR encoding side, and one decoder instance at player/display side. It supports the real-time workflow requirements of broadcast applications.

The elements specifically addressed in the present document are related to the HDR/SDR reconstruction process and the associated dynamic metadata format.

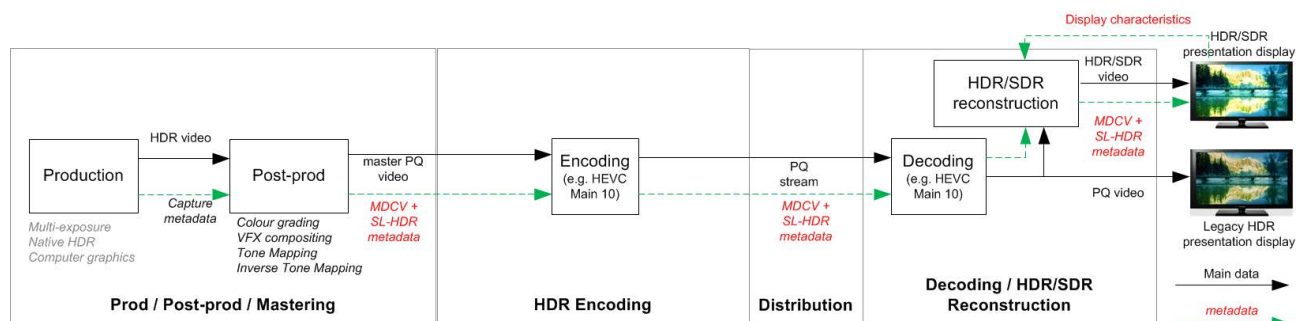


Figure 1: Example of an HDR end-to-end system