

Digital Imaging and Communications in Medicine (DICOM)

Supplement 22: Presentation Look Up Table (LUT)

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DICOM Standards Committee, Working Group 6 Printer Ad Hoc

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Foreword

2 The American College of Radiology (ACR) and the National Electrical Manufacturers Association (NEMA)
4 formed a joint committee to develop a standard for Digital Imaging and Communications in Medicine
(DICOM). This DICOM Standard and the corresponding Supplements to the DICOM Standard were
developed according to the NEMA procedures.

6 This Supplement to the Standard is developed in liaison with other standardization organizations including
CEN TC251 in Europe and JIRA in Japan, with review also by other organizations including IEEE, HL7 and
8 ANSI in the USA. Furthermore this Supplement is also reviewed by the Ad Hoc Working Group for Display
Function Standard, ACR-NEMA Committee of the MED-PACS Section because the scope of this
10 Supplement falls in the Scope of this Ad Hoc Working Group.

The DICOM Standard is structured as a multi-part document using the guidelines established in the
12 following document:

- ISO/IEC Directives, 1989 Part 3 : Drafting and Presentation of International Standards.

14 This document is a Supplement to the DICOM Standard. It is an extension to PS 3.3, 3.4 and 3.6 of the
published DICOM Standard which consists of the following parts:

16	PS 3.1	- Introduction and Overview
	PS 3.2	- Conformance
18	PS 3.3	- Information Object Definitions
	PS 3.4	- Service Class Specifications
20	PS 3.5	- Data Structures and Encoding
	PS 3.6	- Data Dictionary
22	PS 3.7	- Message Exchange
	PS 3.8	- Network Communication Support for Message Exchange
24	PS 3.9	- Point-to-Point Communication Support for Message Exchange
	PS 3.10	Media Storage and File Format for Data Interchange
26	PS 3.11	Media Storage Application Profiles
	PS 3.12	Media Formats and Physical Media for Data Interchange
28	PS 3.13	Print Management Point-to-Point Communication Support

30 These parts are related but independent documents.

This Supplement includes the definition of the Presentation LUT Information Object and the Presentation
32 LUT SOP Class.

Scope and Field of Application

2 This supplement describes the Presentation LUT SOP Class and defines the extensions to the Print Management Service Class that supports the usage of this SOP Class.

4 The purpose of the Presentation LUT SOP Class is to allow a DICOM application entity to specify how pixel data values are to be translated to presentation values, called P-Values, that are independent of device or
6 manufacturer. The display device converts P-Values to luminance, in the case of a soft-copy display, or optical density, in the case of a hard-copy display. The contents of the Presentation LUT is user, modality
8 and application specific.

10 Support of the Presentation LUT requires that the display device support a specified standard display function that defines a linearly perceived response.

12 Supplement 28 describes the Grayscale Standard Display Function. It is being letter balloted at the same time as this Supplement. All references to PS 3.14 in this Supplement refer to Supplement 28.

14 Since this document proposes changes to existing Parts of DICOM the reader should have a working understanding of the Standard. This proposed Supplement includes a number of Addenda to existing Parts of DICOM :

16 - PS 3.3 Addendum : Presentation LUT Information Object Definitions

- PS 3.4 Addendum : Presentation LUT SOP Class

18 - PS 3.6 Addendum : Presentation LUT Data Dictionary

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Digital Imaging and Communications in Medicine (DICOM)

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PART 3 Addendum

10

Presentation LUT Information Object Definition

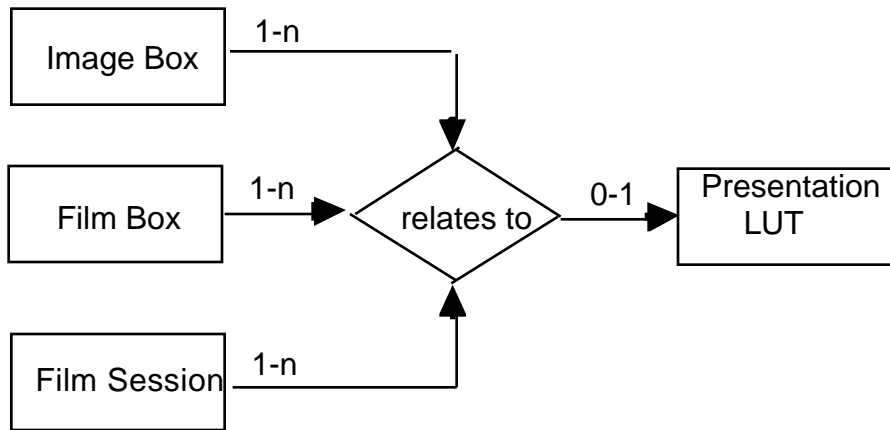
12

14

Part 3 Addendum : Presentation LUT Information Object Definitions

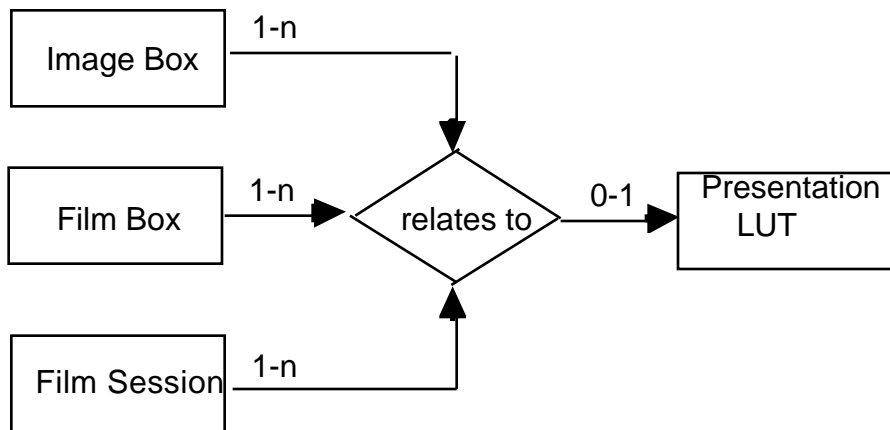
Extend figure 7-1 - DICOM Model of the Real World

2 7.1 DICOM MODEL OF THE REAL WORLD



4

Extend figure 7-2 - DICOM Information Model



6

Add section B.16 : Presentation LUT Information Object Definition

2

B.16 PRESENTATION LUT INFORMATION OBJECT DEFINITION

4 **B.16.1 IOD Description**

6 The Presentation LUT Information Object is an abstraction of a Presentation LUT. The objective of the
 6 Presentation LUT is to realize image display tailored for specific modalities, applications, and user
 8 preferences. It is used to prepare image pixel data for display on devices that conform to the Grayscale
 8 Standard Display Function defined in PS 3.14.

10 The output of the Presentation LUT is Presentation Values (P-Values). P-Values are approximately related
 10 to human perceptual response. They are intended to facilitate common input for both hardcopy and
 12 softcopy display devices. P-Values are intended to be independent of the specific class or characteristics
 12 of the display device.

14 **B.16.2 IOD Modules**

Module	Reference
SOP Common Information	C.12.1
Presentation LUT Module	C.11.3

Add section C.11.3 : Presentation LUT Module

16

C.11.3 Presentation LUT Module

18

Table C.11.3-1: Presentation LUT Module

20

Attribute name	Tag	Description
Presentation LUT Sequence	(2050,0010)	Defines a sequence of Presentation LUTs. Only a single item shall be included in this sequence.
>LUT Descriptor	(0028,3002)	Specifies the format of the LUT Data in this Sequence.
>LUT Explanation	(0028,3003)	Free form text explanation of the meaning of the LUT.
>LUT Data	(0028,3006)	LUT Data in this Sequence

Presentation LUT Shape	(2050,0020)	<p>Specifies pre-defined Presentation LUT shapes.</p> <p>Enumerated Values :</p> <p>IDENTITY = input to the Presentation LUT is in P-Values, no further translation is necessary.</p> <p>LIN OD = input to Presentation LUT is in linear optical density over the range of Min Density (2010,0120) and Max Density (2010,1030).</p> <p>Note: LIN OD is only defined for hardcopy devices and is not applicable to softcopy devices.</p>
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Append the following entries to Table C.13.2-1 : Basic Film Session Relationship Module

2

C.13.2 : Basic Film Session Relationship Module

4

Table C.13.2-1 : Basic Film Session Relationship Module

6

Attribute name	Tag	Description
Referenced Presentation LUT Sequence	(2050,0500)	A sequence that provides references to a Presentation LUT related SOP Class/Instance pairs. Only a single Item shall be included in this sequence. Encoded as a sequence of items : (0008, 1150) and (0008, 1155)
>Referenced SOP Class UID	(0008, 1150)	Uniquely identifies the referenced SOP Class.
>Referenced SOP Instance UID	(0008, 1155)	Uniquely identifies the referenced SOP Instance.

Append the following entries to Table C.13-3 : Basic Film Box Presentation Module

8

C.13.3 Basic Film Box Presentation Module

10

Table C.13-3: Basic Film Box Presentation Module

12

Attribute name	Tag	Description
Illumination	(2010,015E)	Luminance of lightbox illuminating a piece of transmissive film, or for the case of reflective media, luminance obtainable from diffuse reflection of the illumination present. Expressed as L_0 , in candelas per square meter (cd/m^2).
Reflected Ambient Light	(2010,0160)	For transmissive film, luminance contribution due to reflected ambient light. Expressed as L_a , in candelas per square meter (cd/m^2).

Append the following entries to Table C.13-4 : Basic Film Box Relationship Module

2

C.13.4 Basic Film Box Relationship Module

4

C.13-4: Basic Film Box Relationship Module

Attribute name	Tag	Description
Referenced Presentation LUT Sequence	(2050,0500)	A sequence which provides references to a Presentation LUT related SOP Class/Instance pairs. Only a single Item shall be included in this sequence. Encoded as a sequence of items : (0008, 1150) and (0008, 1155)
>Referenced SOP Class UID	(0008, 1150)	Uniquely identifies the referenced SOP Class.
>Referenced SOP Instance UID	(0008, 1155)	Uniquely identifies the referenced SOP Instance.

6

Append the following entries to Table C.13.6-1 Image Box Relationship Module

C.13.6 Image Box Relationship Module

10

Table C.13.6-1 Image Box Relationship Module

Attribute name	Tag	Description
Referenced Presentation LUT Sequence	(2050,0500)	A sequence which provides references to a Presentation LUT related SOP Class/Instance pairs. Only a single Item shall be included in this sequence. Encoded as a sequence of items : (0008, 1150) and (0008, 1155)
>Referenced SOP Class UID	(0008, 1150)	Uniquely identifies the referenced SOP Class.
>Referenced SOP Instance UID	(0008, 1155)	Uniquely identifies the referenced SOP Instance.

2 **Digital Imaging and Communications in Medicine (DICOM)**

4

6 *PART 4 Addendum*

8 *Presentation LUT SOP Class*

10

12

Part 4 Addendum: Presentation LUT SOP Class

Section H.2.1.2 :Make the following changes:

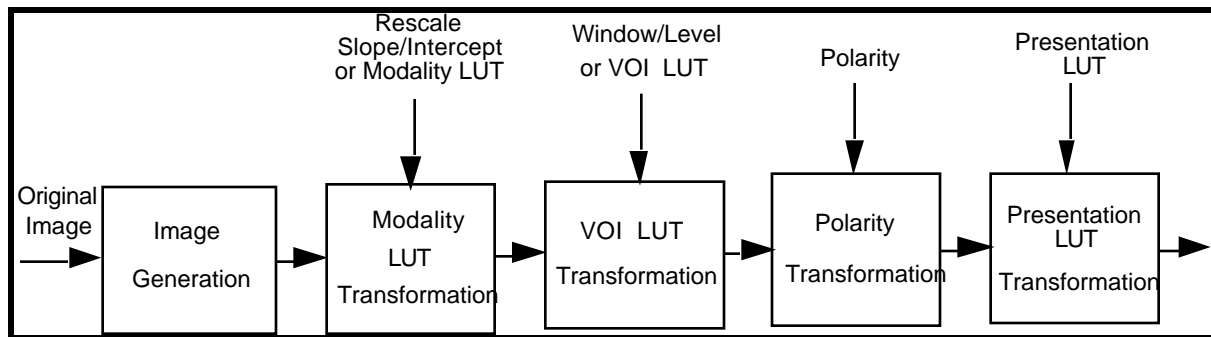
2

H.2.1.2. Grayscale Transformations

4 The Print Management Service Class supports a sequence of grayscale transformations and spatial transformations that converts an original image into a printed image.

6 The sequence of spatial transformations (e.g., magnification and merging of annotation with images) and their relationships with the grayscale transformations are implementation specific and fall beyond the scope of the DICOM Standard.

10 The sequence of grayscale transformations is important for achieving consistent image quality because of the non-orthogonal nature of the different transformations. Figure H.2-2 describes the sequence of grayscale transformations.



12

Figure H.2-2

PRINT MANAGEMENT DATA FLOW MODEL

14

H.2.1.2.1 Modality LUT

16 The Modality LUT transforms the manufacturer dependent pixel values into pixel values which are meaningful for the modality and which are manufacturer independent (e.g., Hounsfield number for CT modalities, OD for film digitizers) It is modality dependent and is specified as part of the Image IOD.

20 In the case of a linear transformation, the Modality LUT is described by the Rescale Slope (0028,1053) and Rescale Intercept (0028,1052). In the case of a non-linear transformation, the Modality LUT is described by the Modality LUT module.

22 The meaning of pixel values output from the Modality LUT is modality dependent. For example, Hounsfield number for CT, Optical Density for film digitizers. For other modalities the output pixel values are usually undefined.

24

H.2.1.2.2 Value of Interest (VOI) LUT

26 The Value of interest (VOI) LUT transforms the modality pixel values into pixel values which are meaningful for the user or the application. For example it selects of a range of pixel values to be optimized for display, such as soft tissue or bone windows in a CT image.

28

2 The semantics of the VOI pixel values are defined by the Photometric Interpretation (0028,0004) (see PS
3 3.3) if the Photometric Interpretation is MONOCHROME1 then the a minimum VOI pixel value will be
4 displayed as white; if the Photometric Interpretation is MONOCHROME2 then the a minimum VOI pixel
value will be displayed as black.

6 In the case of a linear transformation, the VOI LUT Box is described by the Window Center (0028,1050) and
7 Window Width (0028,1051) In the case of a non-linear transformation, the VOI LUT is described by the VOI
8 LUT module (as part of the Image IOD) or by the VOI LUT Box IOD (referenced by the Image Box IOD). The
VOI LUT shall not have any sections with negative slope.

10 The VOI LUT is either part of the Image IOD or part of the Image Box IOD. If the VOI LUT is part of both the
Image IOD and the Image Box IOD then the Image Box related VOI LUT shall have precedence over the
Image related VOI LUT.

12 ~~The meaning of pixel values output from the VOI LUT is unchanged from the output of the Modality LUT,
for example, Hounsfield number, optical density, or undefined.~~

14 **H.2.1.2.3 Polarity**

16 Polarity specifies whether minimum VOI pixel values shall be displayed as black or white. If Polarity
(2020,0020) is NORMAL then the VOI pixels will be displayed as specified by Photometric Interpretation; if
18 Polarity is REVERSE then the VOI pixels will be displayed with the opposite polarity as specified by
Photometric Interpretation.

Polarity (2020,0020) is an Attribute of the Image Box IOD.

20 **H.2.1.2.4 Presentation LUT**

22 The Presentation LUT transforms the polarity pixel values into Presentation Values (P-Values), which are
meaningful for display of the images. P-Values are approximately related to human perceptual response.
They are intended to facilitate consistent display with common input for both hardcopy and softcopy display
24 devices and be independent of the specific class or characteristics of the display device. It is used to
realize image display tailored for specific modalities, applications, and user preferences

26 In the Print Management Service Class, the Presentation LUT is part of the Presentation LUT IOD.

28 Hardcopy devices convert P-Values into optical density for printing. This conversion depends on desired
image D-max and D-min. It also depends on expected viewing conditions such as lightbox intensity for
transparency films. The conversion to printed density is specified in the Presentation LUT SOP Class.

30 If the modality desires to natively specify P-Values as its output, it can negotiate for support of the
Presentation LUT, but specify a LUT that is an identity function. The identity function informs the display
32 device that no further translation is necessary.

34 Note: Performing this translation in the printer prevents potential loss of precision (detail) that would occur if
this translation were to be performed on many of the existing 8-bit modalities.

36 ~~— Perception LUT transformation: transforms the polarity pixel values into optical density related values
which are optimal for human perception. The Perception LUT depends on the type of display (e.g. soft
38 copy, hard copy). The Perception LUT is not addressed by this version of the DICOM Standard.~~

Section H.3.3.1 : Modify the last paragraph as follows:

2 H.3.3 Optional SOP Classes

The following functionality is supported by the optional SOP Classes :

- 4 — annotation
- tracking the printing of the print process
- 6 — overlays
- Presentation LUTs

8

Section H.3.3.2 : append the following entries to the table

10

SOP Class Name	Reference	Usage SCU/SCP
Presentation LUT SOP Class	H.4.9.	U/U

12 Note: Negotiation of the Presentation LUT SOP Class does not imply any behavior in the SCP. Behavior is
14 explicit when the Presentation LUT SOP Class is created and referenced at either the Film Session, Film
Box, or Image Box levels.

16 H.4.1 Basic Film Session SOP Class

Section H.4.1.2: Modify the last paragraph as follows:

18

H.4.1 IOD Description

20 The Basic Film Session SOP Instance refers to one or more Basic Film Box SOP Instances and zero or one
Presentation LUT SOP Instances.

22

Section H.4.1.2.1.1 : append the following entries to the table

24 H.4.1.2 DIMSE Service Group

H.4.1.2.1 N-CREATE

26

Attribute name	Tag	Usage SCU/SCP
Referenced Presentation LUT Sequence	(2050,0500)	U/MC - required if Presentation LUT is supported
>SOP Class UID	(0008,1150)	U/MC - required if sequence is present
>SOP Instance UID	(0008,1155)	U/MC - required if sequence is present

2 H.4.2 Basic Film Box SOP Class

H.4.2.1 IOD Description

4

Section H.4.2.1 : modify the last paragraph as follows:

6 The Basic Film Box SOP Instance refers to one or more Image Box SOP Instances, zero or more film related Annotation Box SOP Instances and zero or one Presentation LUT SOP Instances.

8

H.4.2.2 DIMSE Service Group

10 H.4.2.2.1 N-CREATE

H.4.2.2.1.1 Attributes

12

Section H.4.2.2.1.1 : add the following text to the end of this section:

14 Values for Referenced Presentation LUT Sequence override any Presentation LUT that may have been set at the Basic Film Session.

16 If the Illumination (2010, 015E) and Reflected Ambient Light (2010, 0160) values, respectively termed L_0 and L_a , are not created, the following default values are recommended:

18 For transmissive film: $L_0 = 2000 \text{ cd/m}^2$.
 $L_a = 10 \text{ cd/m}^2$.

20 For reflective media: $L_0 = 150 \text{ cd/m}^2$.

Section H.4.2.2.1.1 : append the following entries to the table

Attribute name	Tag	Usage SCU/SCP
Illumination	(2010,015E)	U/MC - required if Presentation LUT is supported.
Reflective Ambient Light	(2010,0160)	U/MC - required if Presentation LUT is supported
Referenced Presentation LUT Sequence	(2050,0500)	U/MC - required if Presentation LUT is supported
>SOP Class UID	(0008,1150)	U/MC - required if sequence is present
>SOP Instance UID	(0008,1155)	U/MC - required if sequence is present

2

H.4.2.2.1.2 Status

4

Section H.4.2.2.1.2 : Replace this section with the following

6 The status values which are specific for this SOP Class are defined as follows:

Status	Meaning	Code
Success	Film Box successfully created	0000
Warning	Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead.	B605

8 **H.4.2.2.2 N-SET**

H.4.2.2.1.1 Attributes

10

Section H.4.2.2.2.1 : add the following text to the end of this section

12 Values for Referenced Presentation LUT Sequence override any Presentation LUT that may have been set at the Basic Film Session.

14

Section H.4.2.2.2.1 : append the following entries to the table

Attribute name	Tag	Usage SCU/SCP
Illumination	(2010,015E)	U/MC - required if Presentation LUT is supported
Reflective Ambient Light	(2010,0160)	U/MC - required if Presentation LUT is supported
Referenced Presentation LUT Sequence	(2050,0500)	U/MC - required if Presentation LUT is supported
>SOP Class UID	(0008,1150)	U/MC - required if sequence is present
>SOP Instance UID	(0008,1155)	U/MC - required if sequence is present

2

4 H.4.3.1 Basic Grayscale Image Box SOP Class

H.4.3.1.1 IOD Description

6

Section H.4.3.1.1 : Modify the last paragraph as follows:

8 The Basic Grayscale Image Box SOP Instance refers to zero or one Image Overlay Box SOP Instance and zero or one Presentation LUT SOP Instances.

10

H.4.3.1.2 DIMSE Service Group

12 **H.4.3.1.2.1 N-SET**

H.4.3.1.2.1.1 Attributes

14

Section H.4.3.1.2.1.1 : add the following text to the end of this section

16 Values for Referenced Presentation LUT Sequence override any Presentation LUT that may have been set at the Basic Film Session or the Basic Film Box. Values for Min/Max Density override any Density values
18 that may have been set at the Basic Film Box.

Section H.4.3.1.2.1.1 : append the following entries to the table

Attribute name	Tag	Usage SCU/SCP
Min Density	(2010,0120)	U/U
Max Density	(2010,0130)	U/U
Referenced Presentation LUT Sequence	(2050,0500)	U/U
>SOP Class UID	(0008,1150)	U/U
>SOP Instance UID	(0008,1155)	U/U

2

H.4.3.1.2.1.2 Status

4

Section H.4.3.1.2.1.2 : append the following entries to the table:

Status	Meaning	Code
Success	Image successfully stored in Image Box	0000
Warning	Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead.	B605

6

H.4.3.3 Referenced Image Box SOP Class

H.4.3.3.1 IOD Description

8

Section H.4.3.1.1 : Modify the last paragraph as follows:

10

The Referenced Image Box SOP Instance refers to zero or one Image SOP Instance, zero or one VOI LUT Box SOP Instance, and zero or one Image Overlay Box SOP Instance, and zero or one Presentation LUT SOP Instances.

12

14

H.4.3.3.2 DIMSE Service Group

16

H.4.3.3.2.1 N-SET

H.4.3.3.2.1.1 Attributes

18

Section H.4.3.3.2.1.1 : add the following text to the end of this section

- 2 Values for Referenced Presentation LUT Sequence override any Presentation LUT that may have been
set at the Basic Film Session or the Basic Film Box. Values for Min/Max Density override any Density values
4 that may have been set at the Basic Film Box.

Section H.4.3.3.2.1.1 : append the following entries to the table

6

Attribute name	Tag	Usage SCU/SCP
Min Density	(2010,0120)	U/U
Max Density	(2010,0130)	U/U
Referenced Presentation LUT Sequence	(2050,0500)	U/U
>SOP Class UID	(0008,1150)	U/U
>SOP Instance UID	(0008,1155)	U/U

8 **H.4.3.3.2.1.2 Status**

Section H.4.3.1.2.1.2 : append the following entries to the table:

10

Status	Meaning	Code
Success	Image successfully stored in Image Box	0000
Warning	Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead.	B605

Add Section H.4.9. Presentation LUT SOP Class

12

H.4.9. PRESENTATION LUT SOP CLASS

14 **H.4.9.1 Information Object Description**

- 16 The Presentation LUT Information Object is an abstraction of a Presentation LUT (see Section H.2.1.1).
18 The objective of the Presentation LUT is to realize image display tailored for specific modalities,
applications, and user preferences. It is used to prepare image pixel data for display on devices that
conform to the Grayscale Standard Display Function defined In PS 3.14. a standard response.

20 Note: The density range to be printed, Min Density to Max Density, is specified at either the Film Box or the
Image Box. As follows from the definition for Min Density and Max Density in PS 3.3, if the requested

minimum density is lower than the minimum printer density, or the requested maximum density is greater than the maximum printer density, the printer will use its minimum or maximum density, respectively, when computing the standard response.

The output of the Presentation LUT is Presentation Values (P-Values). P-Values are approximately related to human perceptual response. They are intended to facilitate common input for both hardcopy and softcopy display devices. P-Values are intended to be independent of the specific class or characteristics of the display device.

The Presentation LUT is not intended to alter the appearance of the pixel values, as specified as specified by the Photometric Interpretation (0028,0004) and Polarity (2020,0020).

The Basic Film Session Information Object, Basic Film Box Information Object, the Basic Image Box Information Object and the Referenced Image Box Object reference the Presentation LUT.

If the Configuration Information Attribute (2010,0150) of the Basic Film Box IOD contains information similar to the Presentation LUT, then the Presentation LUT Attributes shall take precedence.

H.4.9.1.1 Mapping of P-Values to Optical Density

The mathematical definition of the Grayscale Standard Display Function and mapping of P-Values to optical density for reflective and transmissive printers is contained in PS 3.14.

H.4.9.2 DIMSE Service Group

The following DIMSE Services are applicable to the association related Presentation LUT Information Object:

DIMSE Service Element	Usage SCU/SCP
N-CREATE	M/M
N-DELETE	U/M

The meaning of the Usage SCU/SCP is described in section H.2.4.

This section describes the behavior of the DIMSE Services, which are specific for this Information Object. The general behavior of the DIMSE services is specified in Part 7 of this Standard.

H.4.9.2.1 N-CREATE

The N-CREATE Service Element is used to create an instance of the Presentation LUT SOP Class.

H.4.9.2.1.1 Attributes

The attribute list of the N-CREATE Service Element is defined as follows:

Attribute name	Tag	Usage SCU/SCP
Presentation LUT Sequence	(2050,0010)	MC/M Required if Presentation LUT Shape (2050,0020) is not present. Not allowed otherwise.
>LUT Descriptor	(0028,3002)	MC/M Required if sequence is present. The third value (number of bytes for each LUT entry) shall be between 10-16. Note: The number of bytes that is sent via this LUT will be 2^n , where n is the third value.

>LUT Explanation	(0028,3003)	U/U
>LUT Data	(0028,3006)	MC/M Required if sequence is present
Presentation LUT Shape	(2050,0020)	MC/M Required if Presentation LUT Sequence (2050,0010) is not present. Not allowed otherwise. SCPs shall support the Enumerated Values IDENTITY and LIN OD

2 H.4.9.2.1.2 Status

The status values which are specific for this SOP Class are defined as follows:

Status	Meaning	Code
Success	Presentation LUT successfully created	0000
Warning	Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead.	B605

4

H.4.9.2.1.3 Behavior

- 6 The SCU uses the N-CREATE Service Element to request the SCP to create a Presentation LUT SOP Instance. The SCU shall initialize attributes of the SOP Class as specified in section H.2.4.
- 8 The SCU shall create the Presentation LUT prior to referencing from the Film Session, the Film Box or the Image Box.
- 10 The Presentation LUT persists in the SCP as long as the Association in which it was created is open or an explicit N-DELETE is issued by the SCU.
- 12 The SCP shall return the status code of the requested SOP Instance creation. The meaning of success, warning, and failure status codes is defined in Section H.2.5.

14 H.4.9.2.2 N-DELETE

The N-DELETE Service Element is used to delete the Presentation LUT SOP Instance.

16 H.4.9.2.2.1 Status

There are no specific error codes

18 H.4.9.2.2.2 Behavior

- 20 The SCU uses the N-DELETE Service Element to request the SCP to delete the Presentation LUT SOP Instance. The SCU shall specify the Presentation LUT SOP Instance UID.

- 22 The SCP shall not delete a Presentation LUT SOP Instance as long as there are outstanding references to it. Otherwise, it shall delete the specified Presentation LUT SOP Instance. The SCP shall return the status code of the requested Presentation LUT SOP Instance deletion. The meaning of success, warning, and failure status codes is defined in Section H.2.5.
- 24

H.4.9.2.4 SOP Class Definition and UID

- 26 The Presentation LUT SOP Class UID is "1.2.840.10008.5.1.1.23".

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Digital Imaging and Communications in Medicine

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PART 6 Addendum

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Presentation LUT Data Dictionary

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14

2 **Part 6 Addendum : Presentation LUT Data dictionary**

Section 6 : Append the following entries to the table

4

Tag	Name	VR	VM
(2050,0010)	Presentation LUT Sequence	SQ	1
(2050,0020)	Presentation LUT Shape	CS	1
(2050,0500)	Referenced Presentation LUT Sequence	SQ	1
(2010,015E)	Illumination	US	1
(2010,0160)	Reflected Ambient Light	US	1

6

Annex A : append the following entries to the table

UID Value	UID Name	UID Type	Part
1.2.840.10008.5.1.1.23	Presentation LUT SOP Class	SOP Class	PS 3.4

8