

Appendix C

Glossary of Terms

A

AE	VR of type Application Entity
Application Context	Identifies the overall communications context
Application Entity (AE)	A DICOM conformant device
Application Entity (AE) Title	The name of an Application Entity comprising upto sixteen printable ASCII characters. It must be unique within a domain.
Application Model	See DICOM Application Model
Application Profile	An Application Profile is a mechanism for selecting an appropriate set of choices from the parts of DICOM for the support of a particular media interchange application.
AS	VR of type Age String
Association	A network connection during which DIMSE Messages are sent and received
Attribute	A property of an Information Object, implemented as a Data Element. An Attribute has a name and a value which are independent of any encoding scheme.
Attribute Tag	See Tag

B

Basic Offset Table	A table of disk file offset from the start of the table to the individual frames of an encapsulated multi-frame image.
Big Endian	A form of byte ordering where multiple byte binary values are encoded with the most significant byte encoded first, the remaining bytes encoded in decreasing order of significance. See also Little Endian.
Bits Allocated	Element (0028, 0100) specifies the total number of bits allocated for the storage of a pixel sample. See also Image Attributes.
Bits Stored	Element (0028, 0101) specifies the actual number of bis used for storing the pixels. Bits Stored must never be larger than Bits Allocated. See also Image Attributes.
Blue Palette Color Look Up Table Descriptor	Element (0028, 1103) specifies the format of the Blue Palette Color Look UpTable Data (0028, 1202). Required if Photometric Interpretation (0028, 0004) has a value of PALETTECOLOR or ARGB. See PS 3 Table 7.6.3.1.5
Blue Palette Color Table Data	Element (0028, 1203) Blue Palette Color Look Up Table Data. Required if Photometric Interpretation (0028, 0004) has a value of PALETTECOLOR or ARGB.
Byte Ordering	See Big Endian and Little Endian.
Byte Swapping	Converting data from Little to Big Endian or vice versa.

C

Called AE Title	The AE Title of the SCP that an SCU is attempting to open an Association with.
Calling AE Title	The AE Title of the SCU that is attempting to open an Association with an SCP.
Center	See Window.
Cine	A series of image frames that can be displayed in succession to produce a movie, often in a continuous loop.
Character Set	See Character Repertoire.
Character Repertoire	A finite set of different characters that is considered to be complete for a given purpose and is specified independently of their encoding (also referred to as a character set).
Client	The application that initiates the DICOM association with a “server”.
Client-Server	Network terms for specific roles, equivalent to SCU and SCP in DICOM.
Columns	Element (0028, 0011) specifies the number of columns in the image.
Combined Print Image	A pixel matrix created by superimposing an image and an overlay, the size of which is defined by the smallest rectangle enclosing the superimposed image and overlay.
Command	A request to operate on information across a network.
Command Element	Group (0000) Elements that represent the Command segment of a DIMSE Message.
Command Stream	The binary data containing the encoded Message Command Elements using the Little Endian Implicit VR encoding scheme. See also Data Stream.
Complex Object	Composite or normalized object. See also Composite and Normalized Information Object Definition.
Composite Information Object Definition (C-IOD)	An Information Object Definition which represents parts of several entities in the DICOM Application Model. Such an IOD includes attributes which are not inherent in the Real World object that the IOD represents but rather are inherent in the related Real World objects.
Composite Object	Representing more than one real world object.
Conformance Statement	A formal statement associated with a specific implementation of the DICOM Standard. It specifies the Service Classes, Information Objects, and Communication Protocols supported by the implementation. The requirements of a Conformance Statement can be found in PS 3.2.
CS	VR of type Code String

D

Data Dictionary	A registry of DICOM Data Elements that assigns a unique Tag, description, value characteristics and semantics to each Data Element. It is listed in PS 3.6
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	Data Dictionary. Unique Identifiers (UID) are also included in that Section.
Data Element	The smallest unit of information as defined by a single entry in the DICOM PS 3.6 Data Dictionary. Each Data Element holds an Attribute of a real world object. All Elements in the Dictionary have an even Group Number. See also Private Data Elements and Retired Data Elements.
Data Element Tag	A 32 bit number that uniquely identifies a Data Element. It comprises two 16 bit digits called Group Number and Element Number.
Data Element Type	It specifies whether an Attribute of an Information Object Definition or SOP Class is mandatory, conditionally mandatory or optional. Various values of Data Element Type are 1 – required and must have data 1c – Type 1, conditional 2 – must be present, data is optional 2c – Type 2, conditional 3 – presence is optional; if present, data is optional
Dataset	Exchanged information consisting of a structured set of Attribute values directly or indirectly related to Information Objects. The value of each Attribute in a Data Set is expressed as a Data Element. A collection of Data Elements ordered by increasing Data Element Tag number that is an encoding of the values of Attributes of a real world object. See also Nested Data Set.
Data Stream	The binary data containing the encoded Message Dataset Elements using the negotiated encoding scheme. See also Command Stream.
DA	VR of type Date.
Defined Term	The Value of a Data Element is a Defined Term when the Value of the element may be one of an explicitly specified set of standard values, and these values may be extended by implementors. See also Enumerated Value.
Derived Image	An image containing the modified or reconstructed pixel data from one or more source images. For example, a DRR (Digital Reconstructed Radiograph) image is created from a set of CT slices.
DICOM	Digital Imaging and Communications in Medicine – a public standard jointly developed by American College of Radiology (ACR) and National Electronics Manufacturers Association (NEMA) for the interoperation of imaging modalities, Picture Archiving and Communications Systems (PACS), viewing workstations, etc.
DICOM Application Model	An entity-relationship diagram used to model the relationships between real-world objects which are within the area of interest of the DICOM specification.
DICOMDIR	A unique and mandatory DICOM File within a File Set which contains the Media Storage Directory SOP Class. This File is given an single component File ID, DICOMDIR.
DICOM File	A file containing DICOM Data Set preceded by File Meta Information as

	mandated by PS 3.10 of the DICOM Specification.
DICOM Information Model	An entity-relationship diagram which is used to model the relationships between the information object definitions representing classes of real-world objects defined by the DICOM Application Model.
DICOM Upper Layer	The Upper Layer protocols are related to the Session, Presentation and part of the Application Layer of the ISO reference model. These protocols provide the Upper Layer Service. This Service is a proper subset of the ACSE Service and OSI Presentation Layer Service.
DIMSE Message	DICOM Message Service Element Message is the means of sending a DICOM Command and accompanying data, if any. The type of messages are DIMSE-C - Composite DIMSE DIMSE-N - Normalized DIMSE
DS	VR of type Decimal String
DT	VR of type Date Time

E

Element Number	The second number in the ordered pair of numbers that makes up a Data Element Tag. See also Data Element Tag and Element Group.
Encapsulated Format	Compressed format for Pixel Data that is not part of the DICOM standard.
Enumerated Value	The Value of a Data Element is an Enumerated Value when the value of the element must be one of an explicitly specified set of standard values, and these values shall not be extended by implementors. See also Defined Value
Explicit VR	See Value Representation (VR).

F

FD	VR of type 8 bytes Floating Point Double.
File	A File is an ordered string of zero or more bytes, where the first byte is at the beginning of the file and the last byte at the end of the File. Files are identified by a unique File ID and may be written, read and/or deleted.
File ID	Files are identified by a File ID which is unique within the context of the File-set they belong to. A set of ordered File ID Components (up to a maximum of eight) forms a File ID.
File ID Components	A string of one to eight characters of a defined character set.
File Meta Information	The File Meta Information includes identifying information on the encapsulated Data Set. It is a mandatory header at the beginning of every DICOM File.
File Set	A collection of DICOM Files (and possibly non-DICOM Files) that share a common naming space within which File Ids are unique.

File Set Creator	An Application Entity that creates the DICOMDIR File and zero or more DICOM Files.
File Set Reader	An Application Entity that accesses Files, create additional Files or deletes existing File in a File Set.
File Set Updater	An Application Entity that accesses Files, creates additional Files, or deletes existing Files in a File-set. A File-set Updater makes the appropriate alterations to the DICOMDIR file reflecting the additions or deletions.
File Set User	An Application Entity that accesses one or more Files in a File Set.
Film Box	A logical entity representing a physical film or other hardcopy sheet.
Film Session	A session created on a printer prior to setting individual Film Boxes inside the session.
FL	VR of type Floating Point Single (IEEE 754:1985) 4 bytes.

G

Green Palette Color Lookup Table Descriptor	Element (0028, 1102) specifies the format of the Green Palette Color Lookup Table Data (0028, 1202).; Required if Photometric Interpretation (0028, 0004) has a value of PALETTECOLOR or ARGB. See PS3.3 Table 7.6.3.1.5.
Group Number	The first number in the ordered pair of numbers that makes up a Data Element Tag. All Standard and Private Group Numbers have an even and odd value, respectively. See also Data Element Tag, Element Group and Repeating Groups.

I

Image Attributes	Descriptions of the format of an image. Items like width, height, and bits per pixel, Bits Allocated, Bits Stored, High Bit, Photometric Interpretation, etc.
Information Entity (IE)	That portion of information defined by a composite IOD which is related to one specific class of real-world object. There is a one-to-one correspondence between information entities and the entities in the DICOM Application Model.
Information Entity (IE) Module	A number of logically related elements that are grouped together. Patient Module is an example. It contains Data Elements like Patient Name (0010,0010), Patient ID (0010,0020), Referenced Patient Sequence (0008,1120) etc. In DICOM 3.0 the Group Number has no particular significance. An IE may consist of Data Elements from different Groups. Various IE Modules can then be grouped in to IOD Modules.
IO	See Information Objects (IO).
Information Objects (IO)	An abstraction of a Real World Information Entity (e.g. CT Image, Study, etc.) which is acted upon by one or more DICOM Commands. See also Composite Information Objects and Normalized Information Objects.

IOD	See Information Object Definition (IOD) Module.
Information Object Class	A formal description of an Information Object which includes a description of its purpose and the Attributes it possesses. It does not include values for these attributes. Note: This term is only used in PS 3.1. It is an informal term corresponding to a formal term that is introduced in PS 3.4. This formal term is known as a Service-Object Pair Class or more commonly as a SOP Class.
Information Object Definition (IOD) Module	A number of logically related IE Modules are grouped together to form an IOD Module. For instance a CT Image IOD Module consists of a Patient Module, Study Module, Image Module, etc.
Information Object Instance	A representation of an occurrence of an Real World entity, which includes values for the Attributes of the Information Object Class to which the entity belongs.
Information Object Instance	A representation of an occurrence of an real-world entity, which includes values for the Attributes of the Information Object Class to which the entity belongs. Note: This term is only used in PS 3.1. It is an informal term corresponding to a formal term that is introduced in PS 3.4. This formal term is known as a Service-Object Pair Instance or more commonly as a SOP Instance.
Information Model	See DICOM Information Model.
Internet	A collection of networks and gateways, including ARPnet, NSFnet, MILnet, and others.
Instance	A representation of class.
IS	VR name for Integer String.
Item	A component of the Value of a Data Element that is of Value Representation (VR) Sequence of Items (SQ).
Item Delimitation Data Element	Used to mark the end of an Item of Undefined Length in a Sequence (SQ) of Items. This is the last Data Element in an Item of Undefined Length.

L

LO	VR of type Long String.
Listening Port	A TCP/IP device that is listening for other devices wishing to establish a connection of association.
Little Endian	A form of byte ordering where multiple byte binary values are encoded with the least significant byte encoded first, the remaining bytes encoded in increasing order of significance. See also Big Endian.
LT	VR of type Long Text.
LUT	A look-up-table or LUT is a continuous block of computer memory that computes the values of a function for one variable. The LUT is set up for the

	function's variable to be used as an address or offset into the memory block. The value that resides at this memory location becomes the function's output.
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M

Media Format	Data structures and associated policies which organize the bit streams defined by the Physical Media in to Data File structures and associated file directories.
Media Storage Model	The DICOM Media Storage Model pertains to the data structures used at different layers to achieve interoperability through media interchange.
Meta Service Object Pair Class (Meta SOP Class)	A predefined set of SOP classes that may be associated under a single SOP for the purpose of negotiating the use of the set with a single item.
Media Storage Model	The DICOM Media Storage Model pertains to the data structures used at different layers to achieve interoperability through media interchange.
Media Storage Services	DICOM Media Storage Services define a set of operations with media that facilitate storage to and retrieval from the media of DICOM SOP Instances.
Message	A data unit of the Message Exchange Protocol exchanged between two cooperating DICOM Applications. A Message is composed of a Command Stream followed by an optional Data Stream.
Modality	A device that uses a specific type of physics to create a non-invasive image of an object's internal structure.
Modality LUT	A LUT that is used to give unitless pixel values real-world meaning.
Module	A set of Attributes within an Information Entity or Normalized IOD which are logically related to one another.
MONOCHRO ME1	See Image Attributes.
MONOCHRO ME2	See Image Attributes.
Multi-Frame Image	An image than contains multiple two dimensional image. See also Basic Offset Table.

N

Native Format	Uncompressed format for Pixel Data.
NEMA	National Electrical Manufacturers Association. Along with the American Collage of Radiology (ACR) is the standards organization that developed and controls the DICOM Specification.
Nested Data Set	A Data Set contained within a Data Element of another Data Set. Data Sets can be nested recursively. Only Data Elements with Value Representation of Sequence of Items may contain Data Sets.
Normalized	An Information Object Definition which represents a single entity in the

Information Object Definition (N-IOD)	DICOM Application Model. Such an IOD includes Attributes which are only inherent in the Real World Object that the IOD represents.
Nuclear Medicine	A modality that uses radioactive material placed in the body to create images that show the metabolism of the body.

O

OB	VR of type Other Byte.
OW	VR of type Other Word.
OSI	Open System Interconnection (Model developed by the ISO). An international standard that comprises of a layered model of the communication protocols. DICOM allows for communications over Point to Point, TCP/IP and OSI protocols.
Overlay	An image, usually graphics that can be placed over another image.

P

Packet	Structure Data Sets usually between 1 and 1,500 characters in length.
PAD	Packet assembler/disassembler, an X.25 term.
Part 10 Image File	This refers to a DICOM image that has been saved to disk using the Part 10 section of the DICOM Standard. These files contain a File Meta Information Header at its beginning. This header contains information about the way the DICOM Data Set included in this file was encoded.
Patient Attributes	Attributes or characteristics of a given patient.
PDU	Protocol data unit, the transported structure of information.
Photometric Interpretation	See Image Attributes.
Physical Media	A piece of material with recording capabilities for streams of bits. Characteristics of a Physical Media include form factor, mechanical characteristics, recording properties and rules for recording and organizing bit streams in accessible structures
Pixel Cell	The container for a single Pixel Sample Value that may include unused bits or bits for data other than the Pixel Sample Value (e.g. overlay planes). The size of a Pixel Cell shall be specified by the Bits Allocated (0028, 0100) Data Element.
Pixel Data	Graphical data (e.g., images or overlays) of variable pixel-depth encoded in the Pixel Data Element, with Value Representation of OW or OB. Additional descriptor Data Elements are often used to describe the contents of the Pixel Data element.
Pixel Sample Value	A value associated with an individual pixel. An individual pixel consists of one or more Pixel Sample Values (e.g. color images).

PN	VR of type Patient Name.
Point to Point	A communication channel that consists of a physical wire of short distances. Mostly used for connecting peripherals like printers. DICOM allows for communications over Point to Point, TCP/IP and OSI protocols.
Port	Computer ports are I/O channels of communication (i.e., serial or parallel ports).
Preformatted Grayscale Image	An image where all annotation, graphics, and grayscale transformations (up to and including the VOI LUT) expected in the printed image have been burnt in or applied before being sent to the SCP. It is a displayable image where the polarity of the intended display is specified by Photometric Interpretation (0028,0004).
Preformatted Color Image	an image where all annotation, graphics, and color transformations expected in the printed image have been burnt in or applied before being sent to the SCP.
Presentation Context	Consists of abstract syntax and transfer syntax.
Private Data Element	Additional Data Element, defined by an implementor, to communicate information that is not contained in Standard Data Elements. Private Data elements have odd Group Numbers. See also Standard Data Element.
Protocol	A set of rules that allow Applications of various levels to communicate with one another.
PS 3.x	A part of the DICOM Standard, for example, PS 3.5: Data Structure and Encoding. The PS is an archane acronym meaning PACS Standard.

R

Real-World Activity	That which exists in the real world which pertains to specific area of information processing within the area of interest of the DICOM Standard. Such a Real-World Activity may be represented by one or more computer information metaphors called SOP Classes.
Real World Object	That which exists in the Real World upon which operations may be performed which are within the area of interest of the DICOM Standard. Such a Real World Object may be represented through a computer information metaphor called a SOP Instance.
Related General SOP Class	A SOP Class that is related to another SOP Class as being more generalized in terms of behavior defined in the standard, and which may be used to identically encode an instance with the same attributes and values, other than the SOP Class UID. In particular, this may be the SOP Class from which a Specialized SOP Class (see PS3.2) is derived.
Repeating Group	Standard Data Elements within a particular range of Group Numbers where elements that have identical Element Numbers have the same meaning within each Group (and the same VR, VM, and Data Element Type). Repeating Groups exist only for Curves and Overlay Planes (Group Numbers (50xx,eeee) and (60xx,eeee), respectively) and are a remnant of versions of

	the standard prior to V3.0.
Retired Data Element	A Data Element that is discontinued in a release of the DICOM Standard. An implementation may continue to support Retired Data Elements for backward compatibility with earlier versions.
Routers	Path switches of computer networks.

S

Secure DICOM File	A DICOM File that is encapsulated with the Cryptographic Message Syntax specified in RFC 2630.
Secure File-set	A File-set in which all DICOM Files are Secure DICOM Files.
Secure Media Storage Application Profile	A DICOM Media Storage Application Profile that requires a Secure File-set.
Sequence Delimitation Item	Item used to mark the end of a Sequence of Items of Undefined Length. This Item is the last Item in a Sequence of Items of Undefined Length.
Sequence of Items	A Value Representation for Data Elements that contain a sequence of Data Sets. Sequence of Items allows for Nested Data Sets.
Series Attributes	Descriptive elements of a series of images.
Service Class	A structured description of a service which is supported by cooperating DICOM Application using specific DICOM Commands acting on a specific class of Information Object.
Service Class Provider (SCP)	The role played by a DICOM Application Entity (DIMSE-Service-Provider) which invokes operations and performs notifications on a specific Association as client.
Service Class User (SCU)	The role played by a DICOM Application Entity (DIMSE-Service-User) which invokes operations and performs notifications on a specific Association as a server.
SH	VR of type Short String.
Service Object Pair (SOP)	The combination of a specific set of DICOM Message Service Element (DIMSE) and one related Information Object (IO) Definition. A collection of SOP Classes and / or Meta SOP Classes which are related in that they are described together to accomplish a single application.
Service Object Pair (SOP) Class	The union of a specific set of DIMSE Services and one related Information Object Definition (as specified by a Service Class Definition) which completely defines a precise context for communication of operations on such an object or notifications about its state.
Service Object Pair (SOP) Instance	A concrete occurrence of an Information Object that is managed by a DICOM Application Entity and may be operated upon in a communication context defined by a specific set of DIMSE Services (on a network or interchange media). A SOP Instance is persistent beyond the context of its communication.

Sequence Delimitation Item	A special Data Element that is used to mark the end of a Sequence of Items that is of implicit length.
Stack	A set of lower OSI layer protocols (i.e., TCP/IP or OSI).
Standard Data Element	A Data Element defined in the DICOM Standard, and therefore listed in the DICOM Data Element Dictionary in PS 3.6.
SQ	VR of type Sequence of Items. See also Value Representation.
SS	VR of type Signed Short.
ST	VR of type Short Text.

T

Tag	A unique identifier for an Attribute or Data Element. A DICOM Tag is made up of 2 parts. A Group Number and Element Number. The DICOM specification used the following notation when referring to a Tag – (0010,0030). The first 2 byte hexadecimal value is the Group Number and the second is the Element Number. These can be looked up in the Data Dictionary (PS 3.6). The example give above is for the Patients Birth date.
TCP/IP	Transmission Control Protocol divides the PDUs into sequences of packets and, at the receiving end, reassembles these packets into PDUs. This set of Protocols allows various networks to connect to other networks. TCP/IP is implemented through the concept of Sockets. DICOM allows for communications over Point to Point, TCP/IP and OSI protocols.
Teleradiology	The electronic transmission of radiology images from one location to another for interpretation and/or consultation.
Telnet	A terminal emulation program of TCP for remote login.
Tomography	A method of producing a 3-D image of internal objects by comparing the energy (usually x rays) that is absorbed at various angles about the outside of the object. See also Computed Tomography (CT).
TM	VR of type Time.
Transfer Syntax	A set of encoding rules that allow Application Entities to unambiguously negotiate the encoding techniques (e.g., Data Element structure, byte ordering and compression) they are able to support, thereby allowing these Application Entities to communicate.

U

UI	VR of type Unique Identifier.
UID	See Unique Identifier (UID).
Unique Identifier (UID)	A string of characters that uniquely identifies a wide variety of items; guaranteeing uniqueness across multiple countries, sites, vendors and equipment. The string is composed of decimal digits (0-9) and decimal point

	(‘.’) and must not exceed 64 characters in length.
UL	VR of type Unsigned Long.
Ultra Sound (US)	A modality that uses high frequency sound waves to create images.
US	VR of type Unsigned Short.
Undefined Length	The ability to specify an unknown length for a Data Element Value (of Value Representation SQ, OW, or OB) or Item. Data Elements and Items of Undefined Length are delimited with Sequence Delimitation Items and Item Delimiter Data Elements, respectively.

V

Value	A component of a Value Field. A Value Field may consist of one or more Values.
Value Field	The field within a Data Element that contains the Value(s) of the Element. It is encoded according to the VR of the Element and negotiated Transfer Syntax and padded to even byte length, if necessary.
Value Length (VL)	The field within a Data Element that contains the length of the Value Field of the Data Element.
Value Multiplicity (VM)	Specifies the number of Values contained in the Value Field of a Data Element.
Value Of Interest (VOI)	Look Up Table which describes the transformation of the modality pixel values into pixel values which are meaningful for print, display, etc. In the most of images, the transformation is linear, and the LUT can be described by two integers: Window Center and Window Width. When the transformation is not linear, the VOI LUT is described by the VOI LUT sequence. See also Modality LUT.
Value Representation (VR)	Specifies the data type, size and format of the Value(s) contained in the Value Field of a Data Element. The standard VR codes are AE, AS, AT, CS, DA, DS, DT, FL, FD, IS, LO, LT, OB, OW, PN, SH, SQ, SS, ST, TM, UI, UL, US.
Value Representation: Explicit VR	Indicates that the VR is to be included in each Data Element in the Data Set.
Value Representation: Implicit VR	Indicates that the VR is not to be included in each Data Element in the Data Set. The VR of each Data Element must be looked up in the Data Dictionary.
Value Representation Field	The field where the Value Representation of a Data Element is stored in the encoding of a Data Element structure with explicit VR.
Visible Light Modality	The modalities that use visible light (VL) to create an image are VL and Video Endoscopic (ES), VL and Video Microscopic (GM), VL Slide-Coordinates Microscopic (SM) and VL Photographic (XC).
VL	See Value Length (VL) or Visible Light.

VM	See Value Multiplicity (VM).
VOI LUT	See Value Of Interest (VOI).
VR	See Value Representation (VR).

W

Width	See Window.
Window	The range of continuous pixel values that are to be displayed on a computer monitor as distinct intensity values. Pixel values above the Window range are display as all white and those below the Window are displayed as all black.
Window Center	The pixel value of that falls in the center of the Window range. Changing the Window's Center moves the entire contrast Window.
Window Width	The number of pixel values with in the contrast Window. Half of the Width is above the Center and half are below it.