

DICOM Correction Item

Correction Number CP-658	
Log Summary: Conformance Statement Introduction Improvements	
Type of Modification	Name of Standard
Clarification	PS 3.2-2007, Supplement 107
Rationale for Correction <p>The Introduction section of the conformance statement template contains brief suggestions for the content for each of its subsections. Further example text in this section would improve the quality of conformance statements and also make them easier to read within the user community. Conformance statements also would benefit from consistent definitions of various DICOM terms.</p> <p>This change proposal adds suggested text for the audience, remarks and definitions section of the conformance statement template.</p>	
Sections of documents affected PS 3.2 Annex A, B, C, D, E, F, G, H	
Correction Wording:	

Replace PS 3.2, Section A.3 with the following:

A.3 INTRODUCTION

The introduction specifies product and relevant disclaimers as well as any general information that the vendor feels is appropriate.

The following subsections are suggested:

A.3.1 REVISION HISTORY

The revision history provides dates and differences of the different releases of the product and the Conformance Statement.

A.3.2 AUDIENCE

The audience is specified with their assumed pre-knowledge. The following example may be used as a template:

This document is written for the people that need to understand how <Product Name> will integrate into their healthcare facility. This includes both those responsible for overall imaging network policy and architecture, as well as integrators who need to have a detailed understanding of the DICOM features of the product. This document contains some basic DICOM definitions so that any reader may understand how this product implements DICOM features. However, integrators are expected to fully understand all the DICOM terminology, how the tables in this document relate to the product's functionality, and how that functionality integrates with other devices that support compatible DICOM features.

A.3.3 REMARKS

Any important remarks, disclaimers, and general information are specified. The following example may be used as a template:

The scope of this DICOM Conformance Statement is to facilitate integration between <Product Name> and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard. DICOM by itself does not guarantee interoperability. The Conformance Statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.

This Conformance Statement is not supposed to replace validation with other DICOM equipment to ensure proper exchange of intended information. In fact, the user should be aware of the following important issues:

- The comparison of different Conformance Statements is just the first step towards assessing interconnectivity and interoperability between the product and other DICOM conformant equipment.
- Test procedures should be defined and executed to validate the required level of interoperability with specific compatible DICOM equipment, as established by the healthcare facility.

If the product has an IHE Intergration Statement, the following statement may be applicable:

<Product Name> has participated in an industry-wide testing program sponsored by Integrating the Healthcare Enterprise (IHE). The IHE Integration Statement for <Product Name>, together with the IHE Technical Framework, may facilitate the process of validation testing.

A.3.4 TERMS AND DEFINITIONS

Terms and definitions should be listed here. The following example may be used as a template:

Informal definitions are provided for the following terms used in this Conformance Statement. The DICOM Standard is the authoritative source for formal definitions of these terms.

Abstract Syntax – the information agreed to be exchanged between applications, generally equivalent to a Service/Object Pair (SOP) Class. Examples : Verification SOP Class, Modality Worklist Information Model Find SOP Class, Computed Radiography Image Storage SOP Class.

Application Entity (AE) – an end point of a DICOM information exchange, including the DICOM network or media interface software; i.e., the software that sends or receives DICOM information objects or messages. A single device may have multiple Application Entities.

Application Entity Title – the externally known name of an *Application Entity*, used to identify a DICOM application to other DICOM applications on the network.

Application Context – the specification of the type of communication used between *Application Entities*. Example: DICOM network protocol.

Association – a network communication channel set up between *Application Entities*.

Attribute – a unit of information in an object definition; a data element identified by a *tag*. The information may be a complex data structure (Sequence), itself composed of lower level data elements. Examples: Patient ID (0010,0020), Accession Number (0008,0050), Photometric Interpretation (0028,0004), Procedure Code Sequence (0008,1032).

Information Object Definition (IOD) – the specified set of *Attributes* that comprise a type of data object; does not represent a specific instance of the data object, but rather a class of

similar data objects that have the same properties. The *Attributes* may be specified as Mandatory (Type 1), Required but possibly unknown (Type 2), or Optional (Type 3), and there may be conditions associated with the use of an Attribute (Types 1C and 2C). Examples: MR Image IOD, CT Image IOD, Print Job IOD.

Joint Photographic Experts Group (JPEG) – a set of standardized image compression techniques, available for use by DICOM applications.

Media Application Profile – the specification of DICOM information objects and encoding exchanged on removable media (e.g., CDs)

Module – a set of *Attributes* within an *Information Object Definition* that are logically related to each other. Example: Patient Module includes Patient Name, Patient ID, Patient Birth Date, and Patient Sex.

Negotiation – first phase of *Association* establishment that allows *Application Entities* to agree on the types of data to be exchanged and how that data will be encoded.

Presentation Context – the set of DICOM network services used over an *Association*, as negotiated between *Application Entities*; includes *Abstract Syntaxes* and *Transfer Syntaxes*.

Protocol Data Unit (PDU) – a packet (piece) of a DICOM message sent across the network. Devices must specify the maximum size packet they can receive for DICOM messages.

Security Profile – a set of mechanisms, such as encryption, user authentication, or digital signatures, used by an *Application Entity* to ensure confidentiality, integrity, and/or availability of exchanged DICOM data

Service Class Provider (SCP) – role of an *Application Entity* that provides a DICOM network service; typically, a server that performs operations requested by another *Application Entity* (*Service Class User*). Examples: Picture Archiving and Communication System (image storage SCP, and image query/retrieve SCP), Radiology Information System (modality worklist SCP).

Service Class User (SCU) – role of an *Application Entity* that uses a DICOM network service; typically, a client. Examples: imaging modality (image storage SCU, and modality worklist SCU), imaging workstation (image query/retrieve SCU)

Service/Object Pair (SOP) Class – the specification of the network or media transfer (service) of a particular type of data (object); the fundamental unit of DICOM interoperability specification. Examples: Ultrasound Image Storage Service, Basic Grayscale Print Management.

Service/Object Pair (SOP) Instance – an information object; a specific occurrence of information exchanged in a *SOP Class*. Examples: a specific x-ray image.

Tag – a 32-bit identifier for a data element, represented as a pair of four digit hexadecimal numbers, the “group” and the “element”. If the “group” number is odd, the tag is for a private (manufacturer-specific) data element. Examples: (0010,0020) [Patient ID], (07FE,0010) [Pixel Data], (0019,0210) [private data element]

Transfer Syntax – the encoding used for exchange of DICOM information objects and messages. Examples: *JPEG* compressed (images), little endian explicit value representation.

Unique Identifier (UID) – a globally unique “dotted decimal” string that identifies a specific object or a class of objects; an ISO-8824 Object Identifier. Examples: Study Instance UID, SOP Class UID, SOP Instance UID.

Value Representation (VR) – the format type of an individual DICOM data element, such as text, an integer, a person’s name, or a code. DICOM information objects can be transmitted with either explicit identification of the type of each data element (Explicit VR), or without explicit identification (Implicit VR); with Implicit VR, the receiving application must use a DICOM data dictionary to look up the format of each data element.

A.3.5 BASICS OF DICOM COMMUNICATION

A layman’s introduction to DICOM may be included here. The following example may be used as a template:

This section describes terminology used in this Conformance Statement for the non-specialist. The key terms used in the Conformance Statement are highlighted in *italics* below. This section is not a substitute for training about DICOM, and it makes many simplifications about the meanings of DICOM terms.

Two *Application Entities* (devices) that want to communicate with each other over a network using DICOM protocol must first agree on several things during an initial network “handshake”. One of the two devices must initiate an *Association* (a connection to the other device), and ask if specific services, information, and encoding can be supported by the other device (*Negotiation*).

DICOM specifies a number of network services and types of information objects, each of which is called an *Abstract Syntax* for the Negotiation. DICOM also specifies a variety of methods for encoding data, denoted *Transfer Syntaxes*. The Negotiation allows the initiating Application Entity to propose combinations of Abstract Syntax and Transfer Syntax to be used on the Association; these combinations are called *Presentation Contexts*. The receiving Application Entity accepts the Presentation Contexts it supports.

For each Presentation Context, the Association Negotiation also allows the devices to agree on *Roles* – which one is the *Service Class User* (SCU - client) and which is the *Service Class Provider* (SCP - server). Normally the device initiating the connection is the SCU, i.e., the client system calls the server, but not always.

The Association Negotiation finally enables exchange of maximum network packet (*PDU*) size, security information, and network service options (called *Extended Negotiation* information).

The Application Entities, having negotiated the Association parameters, may now commence exchanging data. Common data exchanges include queries for worklists and lists of stored images, transfer of image objects and analyses (structured reports), and sending images to film printers. Each exchangeable unit of data is formatted by the sender in accordance with the appropriate *Information Object Definition*, and sent using the negotiated Transfer Syntax. There is a Default Transfer Syntax that all systems must accept, but it may not be the most efficient for some use cases. Each transfer is explicitly acknowledged by the receiver with a *Response Status* indicating success, failure, or that query or retrieve operations are still in process.

Two Application Entities may also communicate with each other by exchanging media (such as a CD-R). Since there is no Association Negotiation possible, they both use a *Media Application Profile* that specifies “pre-negotiated” exchange media format, Abstract Syntax, and Transfer Syntax.

A.3.6 ABBREVIATIONS

Abbreviations should be listed here. These may be taken from the following list, deleting terms that are not used within the Conformance Statement, and adding any additional terms that are used:

AE	Application Entity
AET	Application Entity Title
CAD	Computer Aided Detection
CDA	Clinical Document Architecture
CD-R	Compact Disk Recordable
CSE	Customer Service Engineer
CR	Computed Radiography
CT	Computed Tomography
DHCP	Dynamic Host Configuration Protocol
DICOM	Digital Imaging and Communications in Medicine
DIT	Directory Information Tree (LDAP)
DN	Distinguished Name (LDAP)
DNS	Domain Name System
DX	Digital X-ray
FSC	File-Set Creator
FSU	File-Set Updater
FSR	File-Set Reader
GSDF	Grayscale Standard Display Function
GSPS	Grayscale Softcopy Presentation State
HIS	Hospital Information System
HL7	Health Level 7 Standard
IHE	Integrating the Healthcare Enterprise
IOD	Information Object Definition
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
ISO	International Organization for Standards
IO	Intra-oral X-ray
JPEG	Joint Photographic Experts Group
LDAP	Lightweight Directory Access Protocol
LDIF	LDAP Data Interchange Format
LUT	Look-up Table
MAR	Medication Administration Record
MPEG	Moving Picture Experts Group
MG	Mammography (X-ray)
MPPS	Modality Performed Procedure Step
MR	Magnetic Resonance Imaging
MSPS	Modality Scheduled Procedure Step

MTU	Maximum Transmission Unit (IP)
MWL	Modality Worklist
NM	Nuclear Medicine
NTP	Network Time Protocol
O	Optional (Key Attribute)
OP	Ophthalmic Photography
OSI	Open Systems Interconnection
PACS	Picture Archiving and Communication System
PET	Positron Emission Tomography
PDU	Protocol Data Unit
R	Required (Key Attribute)
RDN	Relative Distinguished Name (LDAP)
RF	Radiofluoroscopy
RIS	Radiology Information System.
RT	Radiotherapy
SC	Secondary Capture
SCP	Service Class Provider
SCU	Service Class User
SOP	Service-Object Pair
SPS	Scheduled Procedure Step
SR	Structured Reporting
TCP/IP	Transmission Control Protocol/Internet Protocol
U	Unique (Key Attribute)
UL	Upper Layer
US	Ultrasound
VL	Visible Light
VR	Value Representation
XA	X-ray Angiography

A.3.7 REFERENCES

Referenced documents should be listed here, including appropriate product manuals (such as service manuals that specify how to set DICOM communication parameters). References to the DICOM Standard should provide the URL for the free published version of the Standard, but should not specify a date of publication:

NEMA PS3	Digital Imaging and Communications in Medicine (DICOM) Standard, available free at http://medical.nema.org/
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Replace PS 3.2, Annex B, Section B.3 with the following:

B.3.1 REVISION HISTORY

Document Version	Date of Issue	Author	Description
1.1	October 30, 2003	WG 6	Version for Final Text
1.2	August 30, 2007	WG 6	Revised Introduction

B.3.2 AUDIENCE, REMARKS, TERMS AND DEFINITIONS, BASICS OF DICOM COMMUNICATION, ABBREVIATIONS, REFERENCES

See example text in Annex A.3.

B.3.3 ADDITIONAL REMARKS FOR THIS EXAMPLE

This document is a sample DICOM Conformance Statement created for DICOM PS3.2. It is to be used solely as an example to illustrate how to create a DICOM Conformance Statement for an acquisition modality. The subject of the document, EXAMPLE-INTEGRATED-MODALITY, is a fictional product.

Modify PS 3.2, Annex C, section C.3

C.3.1 REVISION HISTORY

Document Version	Date of Issue	Author	Description
1.1	October 30, 2003	WG 6	Version for Final Text
1.2	August 30, 2007	WG 6	Revised Introduction

C.3.2 AUDIENCE, REMARKS, TERMS AND DEFINITIONS, BASICS OF DICOM COMMUNICATION, ABBREVIATIONS, REFERENCES

See example text in Annex A.3.

C.3.3 ADDITIONAL REFERENCES FOR THIS EXAMPLE

IHE Radiology Technical Framework, Revision 7.0, ACC/HIMSS/RSNA, 2006

CPT 2002 Professional Edition, American Medical Association, 2001

C.3.4 ADDITIONAL REMARKS AND DEFINITIONS FOR THIS EXAMPLE

This document is a sample DICOM Conformance Statement created for DICOM PS3.2. It is to be used solely as an example to illustrate how to create a DICOM Conformance Statement for a departmental information system supporting DICOM Modality Worklist and Modality Performed Procedure Step Services. The subject of the document, DICOMRis, is a fictional product.

DICOMRis Database The database that indexes procedures, orders and patients

DICOMSRV DICOM MWL and MPPS application

RisView

DICOMRis' GUI-based application providing views into the DICOMRis' Database, reporting function, etc.

Modify PS 3.2, Annex D, section D.3

D.3.1 REVISION HISTORY

Document Version	Date of Issue	Author	Description
1.1	October 30, 2003	WG 6	Version for Final Text
1.2	August 30, 2007	WG 6	Revised Introduction

D.3.2 AUDIENCE, REMARKS, TERMS AND DEFINITIONS, BASICS OF DICOM COMMUNICATION, ABBREVIATIONS, REFERENCES

See example text in Annex A.3.

D.3.3 ADDITIONAL REMARKS FOR THIS EXAMPLE

This document is a sample DICOM Conformance Statement created for DICOM PS3.2. It is to be used solely as an example to illustrate how to create a DICOM Conformance Statement for a workstation supporting a variety of types of DICOM images. The subject of the document, SAMPLE DICOM IMAGE VIEWER, is a fictional product.

Modify PS 3.2, Annex E, section E.3

E.3.1 REVISION HISTORY

Document Version	Date of Issue	Author	Description
1.1	October 30, 2003	WG 6	Version for Final Text
1.2	August 30, 2007	WG 6	Revised Introduction

E.3.2 AUDIENCE, REMARKS, TERMS AND DEFINITIONS, BASICS OF DICOM COMMUNICATION, ABBREVIATIONS, REFERENCES

See example text in Annex A.3.

E.3.3 ADDITIONAL REMARKS FOR THIS EXAMPLE

This document is a sample DICOM Conformance Statement created for DICOM PS3.2. It is to be used solely as an example to illustrate how to create a DICOM Conformance Statement for a print server system supporting DICOM Print Services. The subject of the document, EXAMPLE-PRINT-SERVER-MANAGEMENT, is a fictional product.

Modify PS 3.2, Annex F, section F.3

F.3.1 REVISION HISTORY

Document Version	Date of Issue	Author	Description
1.1	October 30, 2003	WG 6	Version for Final Text
1.2	August 30, 2007	WG 6	Revised Introduction

F.3.2 AUDIENCE, REMARKS, TERMS AND DEFINITIONS, BASICS OF DICOM COMMUNICATION, ABBREVIATIONS, REFERENCES

See example text in Annex A.3.

F.3.3 ADDITIONAL REMARKS FOR THIS EXAMPLE

This document is a sample DICOM Conformance Statement created for DICOM PS3.2. It is to be used solely as an example to illustrate how to create a DICOM Conformance Statement for an image storage system supporting DICOM images. The subject of the document, EXAMPLE-QUERY-RETRIEVE-SERVER, is a fictional product.

Modify PS 3.2, Annex G, section G.3

G.3.1 REVISION HISTORY

Document Version	Date of Issue	Author	Description
1.1	April 30, 2004	WG 11	Version for Final Text
1.2	August 30, 2007	WG 6	Revised Introduction

G.3.2 AUDIENCE, REMARKS, TERMS AND DEFINITIONS, BASICS OF DICOM COMMUNICATION, ABBREVIATIONS, REFERENCES

See example text in Annex A.3.

G.3.3 ADDITIONAL REMARKS FOR THIS EXAMPLE

This document is a sample DICOM Conformance Statement created for DICOM PS3.2. It is to be used solely as an example to illustrate how to create a DICOM Conformance Statement for a workstation supporting a variety of types of DICOM images and DICOM Hanging Protocol objects. The subject of the document, SAMPLE IMAGE VIEWER, is a fictional product.

Modify PS 3.2, Annex H (Supplement 107), sections H.3

H.3.1 REVISION HISTORY

Document Version	Date	Author	Description
1.1	October 30, 2006	WG 6	Version for Final Text

1.2	August 30, 2007	WG 6	Revised Introduction
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H.3.2 AUDIENCE, REMARKS, TERMS AND DEFINITIONS, BASICS OF DICOM COMMUNICATION, ABBREVIATIONS, REFERENCES

See example text in Annex A.3.

H.3.3 ADDITIONAL REMARKS FOR THIS EXAMPLE

The EXAMPLE-MEDICATION-SYSTEM-GATEWAY relies on the associated, but independent, Pharmacy and Medication Administration Record Systems to fulfill the medical application functions implicit in the DICOM services supported. In particular, these functions are part of a critical patient safety workflow. However, those patient safety functions are not specified by DICOM, and they are not fully described by this Conformance Statement. Please see the product specifications of the Pharmacy and Medication Administration Record Systems for full details on the clinical decision support and records management features of those systems.

This document is a sample DICOM Conformance Statement created for DICOM PS3.2. It is to be used solely as an example to illustrate how to create a DICOM Conformance Statement for a server supporting the DICOM Substance Administration Information Services. The subject of the document, EXAMPLE-MEDICATION-SYSTEM-GATEWAY, is a fictional product.