



Varian DICOM Worklist

DICOM Conformance Statement

Abstract This document provides information about the DICOM Conformance of the Varian DICOM Worklist version 10 MR2.

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1. Introduction

1.1 Audience

The intended audience is:

- Customers, who want to use ARIA Worklist Service
- Marketing and Sales persons
- System Integrators of medical equipment
- Other vendors offering interfacing via DICOM

It is assumed, that the reader is familiar with the DICOM standard.

The document is structured firmly along the template definition as specified in Part 2 of the DICOM standard.

1.2 Overview

This document specifies the compliance to DICOM conformance requirements for connecting to the Varian Medical Systems Treatment Management System (TMS) over the ARIA Worklist Service.

The ARIA Worklist Service features described in this document support information exchange between the ARIA Worklist Service and third-party systems for the following uses:

Workflow: The ARIA Worklist Service allows the client to query for Unified Procedure Steps (UPS) or Modality Scheduled Procedure Steps, to update the Unified Procedure Steps or to create a Modality Performed Procedure Step and update it .

Table 1-1 provides an overview of the network services supported by ARIA Worklist Provider Application Entity.

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Verification		
Verification	Not supported	Yes
Workflow Management		
Unified Procedure Step – Pull	Not supported	Yes
Modality Worklist	Not supported	Yes
Modality Performed Procedure Step	Not supported	Yes
Transfer		
RT Beam Delivery Instruction – Trial	Yes	Not supported
Query/Retrieve		
Study Root Query/Retrieve Information Model - MOVE	Not supported	Yes

Table 1-1: Network Services

Note: The ARIA Worklist Service supports in the input sequence of a Scheduled Procedure Step only the reference to an instance of RT Plan SOP class or an RT Treatment Record in case of a Continuation. Reference to an instance of a RT Plan SOP class or RT Treatment Record SOP Class will only be provided, if the RT Plan SOP instance or RT Treatment Record SOP Instance is stored in the TMS.

The following product is in the scope of this Conformance Statement:

- ARIA Worklist Service

1.3 Remarks

The scope of this Conformance Statement is to facilitate communication with ARIA Worklist Service and other vendor's medical equipment. The Conformance Statement should be read and understood in conjunction with the DICOM standard [1], Supplement 74 and Supplement 96 of the DICOM standard [3].

DICOM, by itself, does not guarantee interoperability. However, the Conformance Statement facilitates a first-level validation for interoperability between different applications supporting the same DICOM functionality.

This Conformance Statement is not intended to replace validation with other DICOM equipment to ensure proper exchange of information intended.

Because the DICOM standard is subject to ongoing changes, enhancements and improvements, Varian Medical Systems reserves the right to advance their products by making use of upcoming DICOM features without prior announcement.

1.4 References

- [1] Digital Imaging and Communications in Medicine (DICOM), Parts 1-18 (2008)
National Electrical Manufacturers Association (NEMA)
Rosslyn, VA
United States of America
- [2] DICOM Supplement 74 (Frozen Draft): Utilization of Worklist in Radiotherapy Treatment Delivery
DICOM Standards Committee, Working Group 7 Radiation Therapy
Rosslyn, VA
United States of America
- [3] DICOM Supplement 96 (Frozen Draft): Unified Worklist and Procedure Step
DICOM Standard Committee, Working Group 6
Rosslyn, VA
United States of America

1.5 Abbreviations

This section provides the definitions of terms, acronyms, and abbreviations which are used throughout the document. An arrow sign (→) left of a word indicates that it can be looked up in this table.

AE	Application Entity (→DICOM term)
DB	Varian System Database

DICOM	Digital Imaging and Communications in Medicine, a standard on image communications in medical applications
DIMSE	DICOM Message Service element
DNS	Domain Name System
EMPTY	Attribute is sent without a value
IE	Information Entity
IOD	Information Object Definition (→DICOM term)
MPPS	Modality Performed Procedure Step
NEMA	National Electrical Manufacturers Association
PDU	Protocol Data Unit (→DICOM term)
RT	Radiation Therapy
SCU	Service Class User (→DICOM term)
SCP	Service Class Provider (→DICOM term)
SOP	Service-Object-Pair, a definition of an information object (like an image) and of a service (like storage) that can be performed for the object (→DICOM term)
TCP/IP	Transmission Control Protocol / Internet Protocol, a widely used computer networking protocol
UID	Unique Identifier used to identify an object by a worldwide unique identifier (→DICOM term)
UPS	Unified Procedure Step
VNAP	Value Not Always Present (attribute sent zero length if no value is present)
VR	Value Representation, a data encoding method in →DICOM

2. Networking

2.1 Implementation Model

2.1.1 Application Data Flow

The following sections illustrate the application's data flow models. There are two models, one for Unified Worklist and one for Modality Worklist.

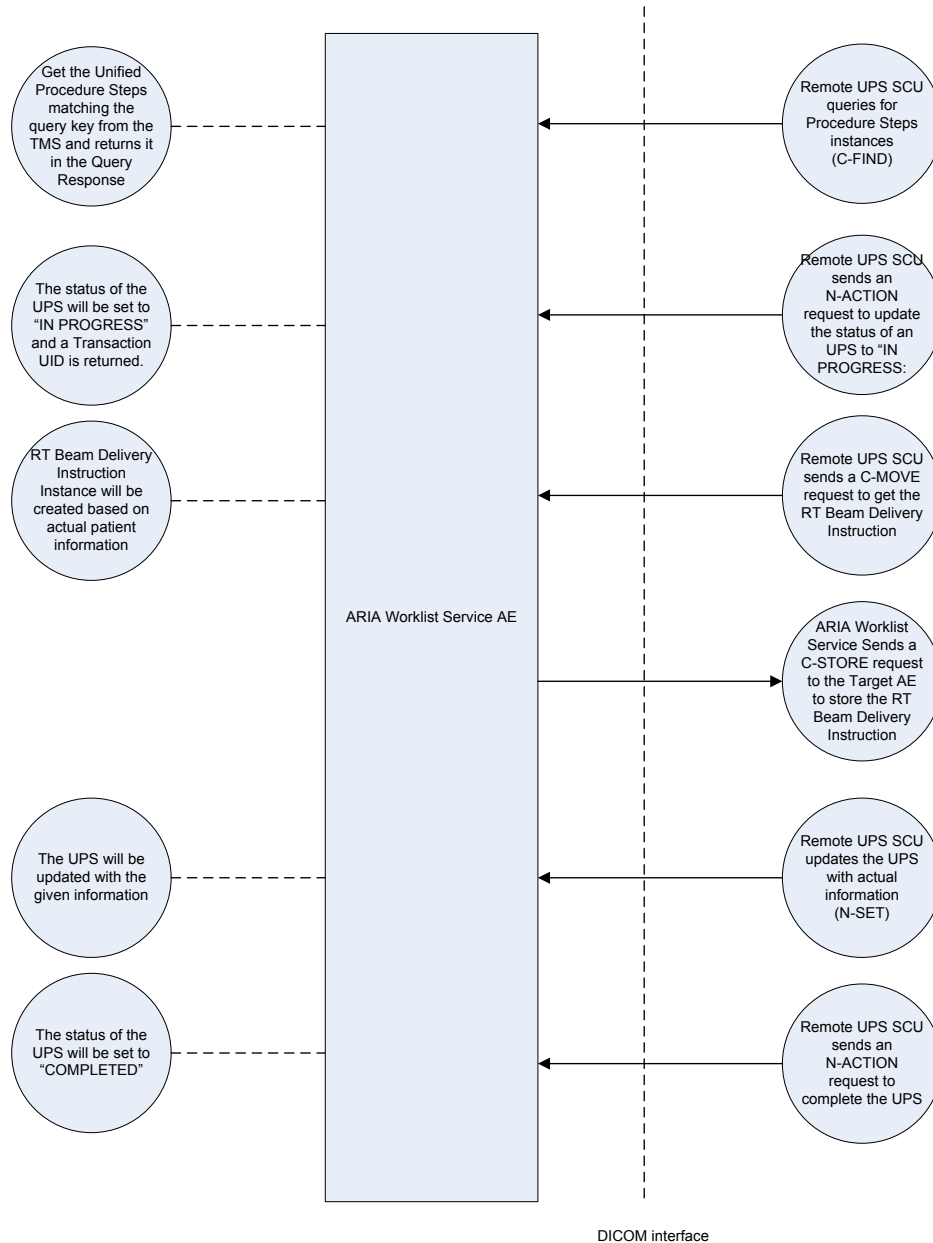


Figure 2-1: Application Data Flow for Unified Worklist

A Remote UPS Client can send a C-FIND request to the ARIA Worklist Service to get the list of Unified Procedure Steps. The client can take ownership over a selected UPS by setting it to "In

Progress". ARIA Worklist Service will return a Transaction UID, which will be required by the client for all updates it will make of this UPS.

The client can request the ARIA Worklist Service to move the RT Beam Delivery Instruction to the given location.

The client can update the selected UPS with the actual information using N-SET request. No more updates can be made after the status of the UPS is set to "Completed" or "Canceled".

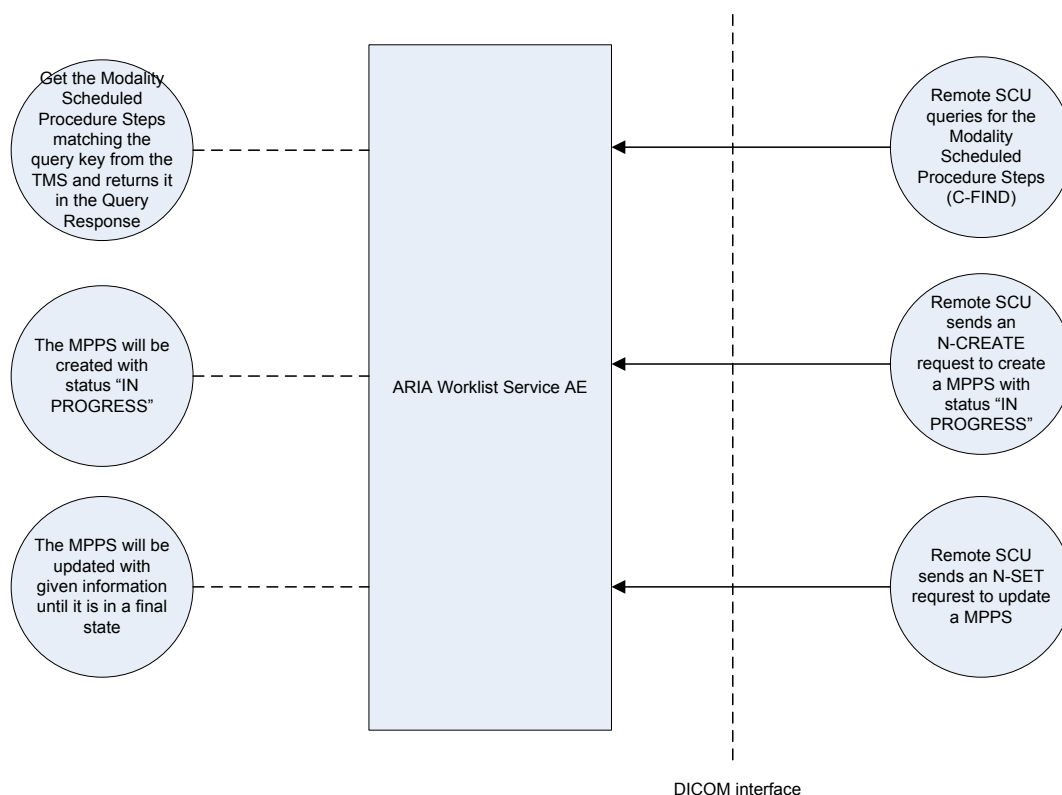


Figure 2-2: Application Data Flow for Modality Worklist

A Remote Client can send a C-FIND request to the ARIA Worklist Service to get the list of Modality Scheduled Procedure Steps. The client can send a N-CREATE request for a Modality Performed Procedure Step, which can belong to an existing Modality Scheduled Procedure Step or is an un-scheduled MPPS.

The client can update the created MPPS with the actual information using N-SET request, until it is in a final state. The possible final states are: COMPLETED or DISCONTINUED.

2.1.2 Functional Definition of AE's

2.1.2.1 Functional Definition of the ARIA Worklist Service Application Entity

The ARIA Worklist Service Application Entity resides on a workstation with connection to the TMS or on the TMS server itself. It is a Windows Service which starts up when the station on which it resides is brought up, and runs continuously until the station is brought down or the service is stopped via services management console. It will then wait for a remote Application Entity to request an association. The ARIA Worklist Service Application Entity accepts the association if the proposed context is valid and supported. It waits for C-ECHO, C-FIND, N-ACTION, N-CREATE and N-SET commands from the remote Application Entity. The

associations are maintained by the ARIA Worklist Service until the remote Application Entity initiates the release process or an abort. The following operations are supported:

- Verification
 - The connection is verified by responding to an external C-ECHO command.
- Unified Procedure Step – Pull
 - C-FIND
 - N-ACTION
 - N-SET
- RT Beam Delivery Instruction
 - C-MOVE
 - C-STORE as an SCU
- Modality Worklist
 - C-FIND
- Modality Performed Procedure Step
 - N-CREATE
 - N-SET

Note: The service N-GET of the Unified Procedure Step – Pull SOP Class is not supported.

2.1.3 Sequencing of Real World Activities

The ARIA Worklist Service Application Entity does not control the sequence; however it expects the requests to be sent in a certain sequence.

The standard sequence for Unified Worklist and Modality Worklist are described in the following two chapters.

2.1.3.1 Unified Worklist

The following diagram shows a standard sequence for Unified Worklist.

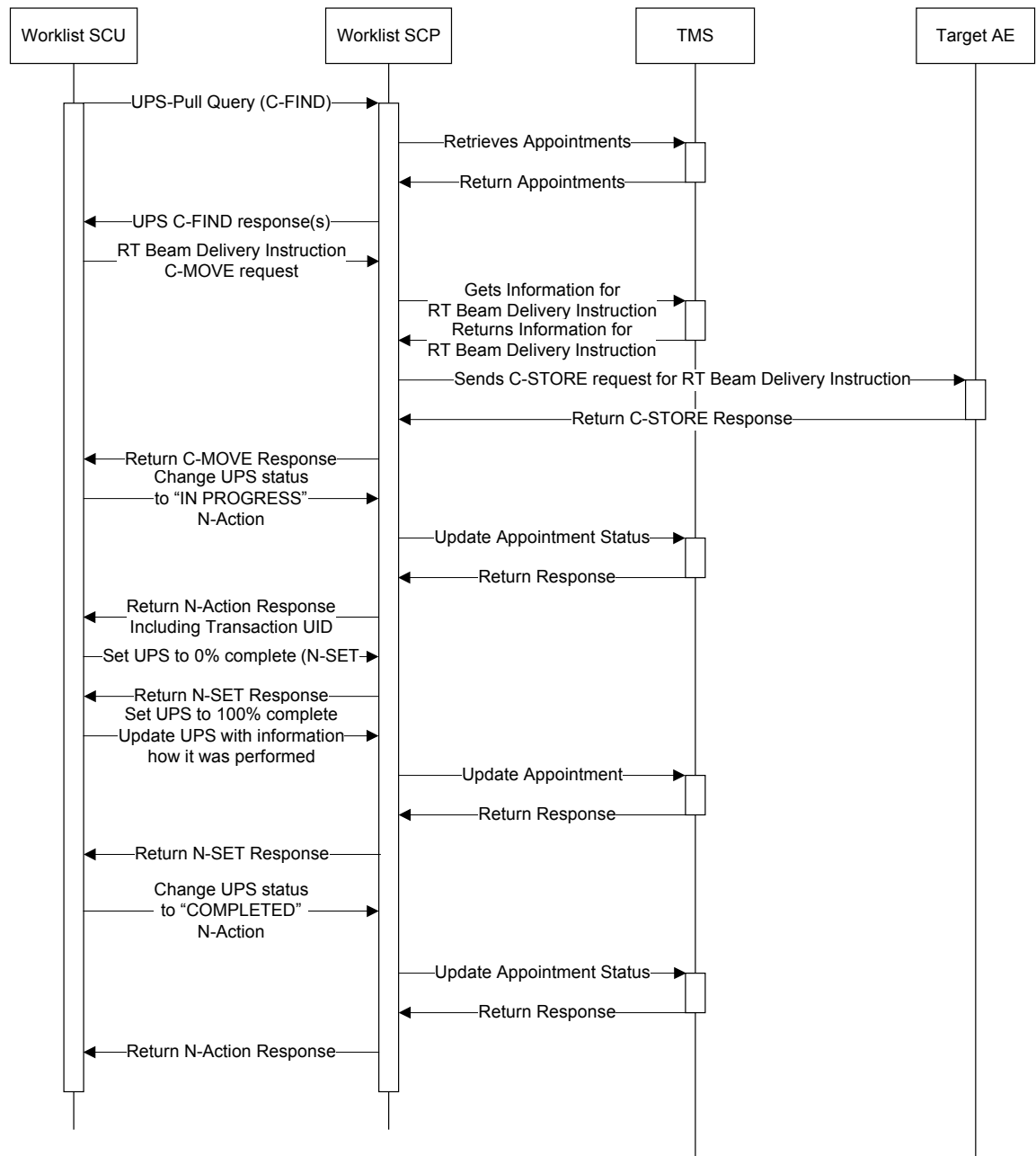


Figure 2-3: Sequence Diagram for Unified Worklist

The above sequence diagram shows a possible sequence from the selection of a Unified Procedure Step till the completion. Steps where the Worklist SCP is not involved are not shown, e.g. retrieving RT Plan and RT Treatment Records. However the Worklist Provider cannot control the sequence. All sequences are accepted as long as it follows the following rules:

- An UPS with status “SCHEDULED” must be at least once retrieved with C-FIND. A SOP Instance UID is created, which is valid until the UPS is “COMPLETED” or “CANCELED”
- An UPS with status “SCHEDULED” can either be set to “IN PROGRESS” or to “CANCELED” through an N-ACTION request. No other requests will be accepted at this point. The N-ACTION request will return a Transaction UID when setting the UPS to “IN PROGRESS”.
- An UPS with status “IN PROGRESS” can be updated using an N-SET request and the correct Transaction UID. There is no limitation how often it can be updated.
- An UPS with status “IN PROGRESS” and with a Progress of 100% must be set to “COMPLETED” with an N-ACTION request and the correct Transaction UID.
- An UPS with status “IN PROGRESS” and with a Progress of less than 100% can be set to “CANCELED” with an N-ACTION request and the correct Transaction UID.
- No N-ACTION or N-SET requests will be accepted to modify an UPS with status “COMPLETED” or “CANCELED”.
- The SOP Instance UID of the UPS will be no longer valid after the UPS is set to “CANCELED” or “COMPLETED”.

2.1.3.2 Modality Worklist

The following diagram shows a standard sequence for Modality Worklist and Modality Performed Procedure Step.

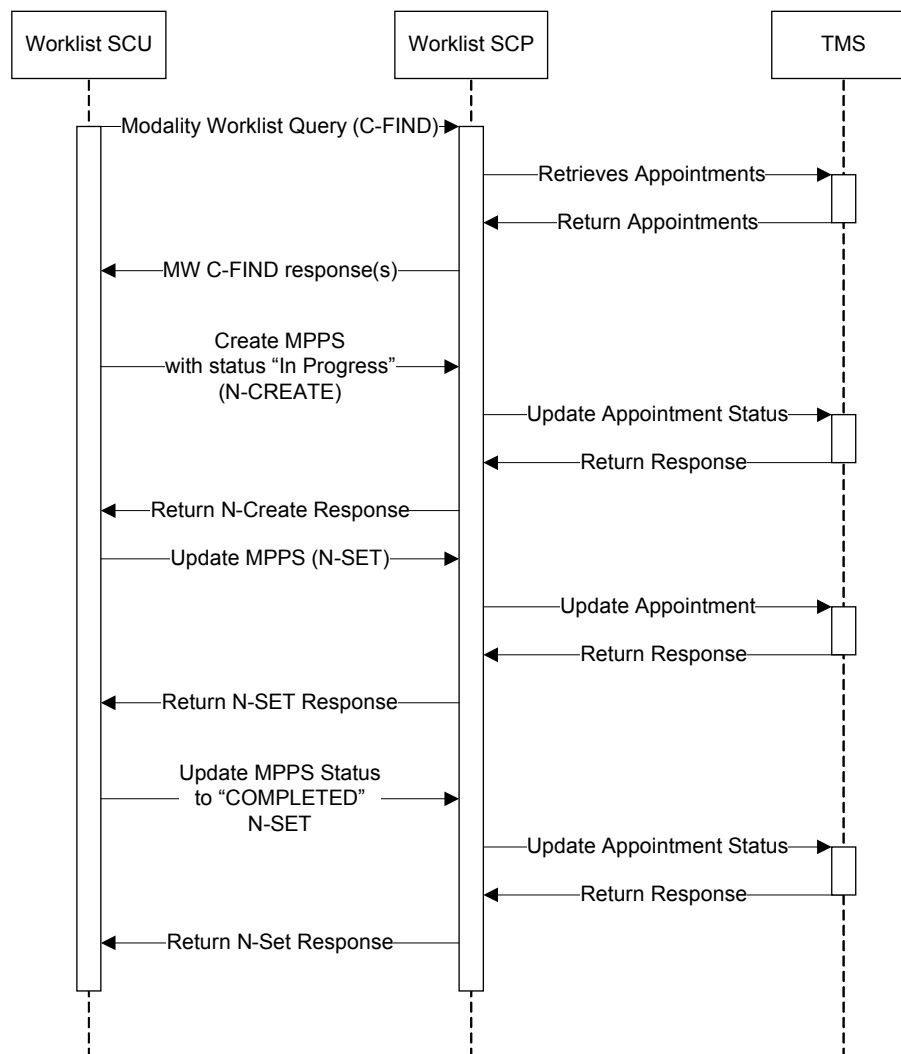


Figure 2-4: Sequence Diagram for Modality Worklist

The above sequence diagram shows a possible sequence from the selection of a Modality Scheduled Procedure Step, creation of a Modality Performed Procedure Step till the completion of the MPPS. However the Worklist Provider cannot control the sequence. All sequences are accepted as long as it follows the following rules:

- An MPPS with status "IN PROGRESS" can be updated through an N-SET request until it reached a final state
- An MPPS can be updated only for 24 hours after it was updated the last time. After this time, the SOP Instance UID might not be valid anymore.
- A MSPS can only have one MPPS which has status "IN PROGRESS" at the time.

2.2 AE Specifications

2.2.1 ARIA Worklist Service Application Entity

2.2.1.1 SOP Classes

The ARIA Worklist Service Application Entity provides Standard Conformance to the following DICOM V3.0 and Supplement 96 SOP Classes as an SCP.

SOP Class Name	SOP Class UID	SCU	SCP
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	No	Yes
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	No	Yes
Unified Procedure Step - Pull	1.2.840.10008.5.1.4.34.4.3	No	Yes
RT Beam Delivery Instruction - Trial	1.2.840.10008.5.1.4.34.1	Yes	No
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	No	Yes
Verification	1.2.840.10008.1.1	No	Yes

Table 2-1: Standard SOP Classes for ARIA Worklist Service Application Entity

Note 1: the SCU role is supported only to perform a C-STORE sub-commands upon a C-MOVE request.

2.2.1.2 Association Policies

2.2.1.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed.

Application Context Name	1.2.840.10008.3.1.1.1
--------------------------	-----------------------

Table 2-2: DICOM Application Context for ARIA Worklist Service Application Entity

The ARIA Worklist Service Application Entity accepts but never initiates associations.

Maximum PDU size received	28672
---------------------------	-------

Table 2-3: Maximum PDU size received as a SCP for the ARIA Worklist Service Application Entity.

2.2.1.2.2 Number of Associations

The ARIA Worklist Service Application Entity does not limit the number of concurrent associations.

Maximum number of simultaneous Associations	unlimited
---	-----------

Table 2-4: Number of Associations accepted by the ARIA Worklist Service Application Entity.

2.2.1.3 Asynchronous Nature

ARIA Worklist Service Application Entity does not support asynchronous communication.

2.2.1.4 Implementation Identifying Information

The implementation information for this Application Entity is defined in the following table.

ARIA Worklist Service Implementation Class UID	1.2.246.352.300.1
Implementation Version Name	(not used)

Table 2-5: DICOM Implementation Class and Version for ARIA Worklist Service Application Entity

2.2.1.5 Association Initiation Policy

The ARIA Worklist Service does not initiate any associations.

2.2.1.6 Association Acceptance Policy

The ARIA Worklist Service accepts Associations only if they have valid Presentation Contexts. If none of the Presentation Contexts are accepted, then the Association Request itself is rejected. It can be configured to only accept Associations from known hosts (using TCP/IP address) and/or Application Entity Titles.

2.2.1.6.1 Activity – Receive Verification Request (C-ECHO)

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name	UID		
Verification	1.2.840.10008.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Table 2-6: Proposed Presentation Contexts for ARIA Worklist Service Application Entity

2.2.1.6.1.1 SOP specific conformance for the verification SOP Class

The ARIA Worklist Service Application Entity provides standard conformance to the DICOM Verification Class as a Service Class Provider.

2.2.1.6.2 Activity – Receive Query Request (C-FIND)

2.2.1.6.2.1 Description and Sequencing of Activity

If the ARIA Worklist Service AE receives a query (C-FIND) request then the responses will be sent over the same Association used to send the C-FIND-Request.

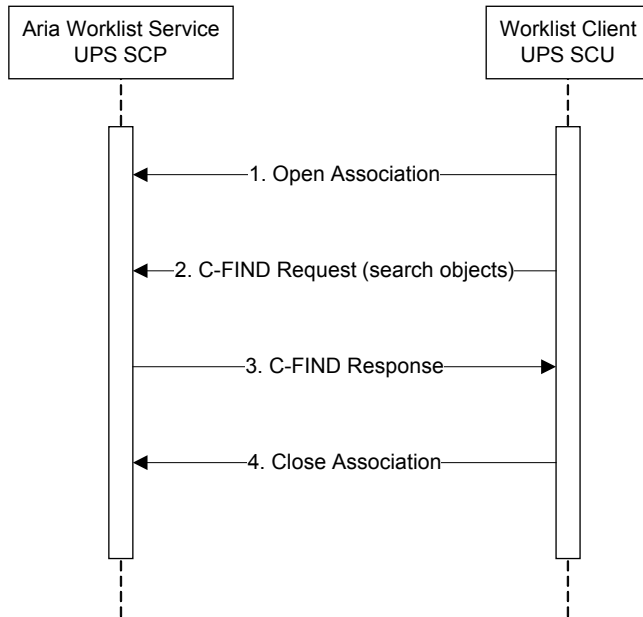


Figure 2-5: Sequencing of Activities – ARIA Worklist Service handling C-FIND Requests

A typical sequence of interactions between ARIA Worklist Service C-FIND SCP and a remote C-FIND SCU querying Instances is illustrated in Figure 2-5

1. Remote AE opens Association to ARIA Worklist Service.
2. Remote AE sends a C-FIND Request Message.
3. The ARIA Worklist Service AE returns a C-FIND Response Message for each matching UPS. A final C-FIND Response is sent indicating that the matching is complete.
4. Remote AE releases Association.

2.2.1.6.2.2 Accepted Presentation Contexts

ARIA Worklist Service Entity accepts Presentation Contexts shown in the following table.

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name	UID		
Unified Worklist and Procedure Step – Pull SOP Class	1.2.840.10008.5.1.4.34.4.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Table 2-7: Acceptable Presentation Contexts for ARIA Worklist Service – C-FIND

2.2.1.6.2.3 SOP Specific Conformance

The C-FIND service of the Unified Worklist and Procedure Step – Pull SOP Class always returns all supported attributes, even if they are not requested.

The following table shows the supported query keys. Not all required query keys are supported.

Attribute Name	Tag	VR	Matching Criteria	Types of Matching
Scheduled Procedure Step Priority	(0074,1200)	CS		*** not implemented ***
Procedure Step Label	(0074,1204)	LO		*** not implemented ***
Worklist Label	(0074,1202)	LO		*** not implemented ***
Scheduled Station Name Code Sequence	(0040,4025)	SQ	Code Value: Machine Id Code Meaning: Machine Id	Single Value Matching
Scheduled Station Class Code Sequence	(0040,4026)	SQ		*** not implemented ***
Scheduled Station Geographic Location Code Sequence	(0040,4027)	SQ		*** not implemented ***
Human Performer Code Sequence	(0040,4034)	SQ	Code Value: Doctor Id or Staff Id Code Meaning: Doctor Alias Name of Staff Alias Name	Single Value Matching
Human Performs Name	(0040,4037)	PN	Doctor or Staff: First Name, Last Name, Middle Name, Honorific, Name Suffix	Single Value Matching
Scheduled Procedure Step Start Date and Time	(0040,4005)	DT	Appointment Start Date and Time	Range Matching
Expected Completion Date and Time	(0040,4011)	DT	Appointment End Date and Time	Range Matching
Scheduled Workitem Code Sequence	(0040,4018)	SQ		*** not implemented ***
Patient ID	(0010,0020)	LO	Patient Id1	Single Value Matching
Issuer of Patient ID	(0010,0021)	LO		*** not implemented ***
Patient's Name	(0010,0010)	PN	Patient Last Name, Patient First Name	Single Value Matching
Patient's Birth Date	(0010,0030)	DA	Patient Birth Date	*** not implemented ***
Patient's Sex	(0010,0040)	CS	Patient Sex	*** not implemented ***
Admission ID	(0038,0010)	LO		*** not implemented ***
Issuer of Admission ID	(0038,0011)	LO		*** not implemented ***
Accession Number	(0008,0050)	SH		*** not implemented ***
Requested Procedure ID	(0040,1001)	SH		*** not implemented ***
Confidentiality Code	(0040,1008)	LO		*** not implemented ***

Attribute Name	Tag	VR	Matching Criteria	Types of Matching
Requested Service	(0032,1033)	LO		*** not implemented ***
Related Procedure Step Sequence	(0074,1220)	SQ		*** not implemented ***

Table 2-8: Required Query Keys and their support in ARIA Worklist Service

The ARIA Worklist Service Application Entity will return one of the following Response Status to the C-FIND Request.

Service Status	Further Meaning	Error Code	Reason
Refused	Out of Resources	A700	Never sent.
Failure	Data Set does not match SOP Class	A900	Sent when Data Set is empty
	Refused: Not Authorized	C305	Never sent.
	Unable to process	C000 - CFFF	Error Id is set to give more information about Error: 0xC100, Received command is not a C-FIND Request 0xC101, DataSet is empty 0xC102, Failed to retrieve UPS from database 0xC103, Unexpected Error
	SOP Class not supported	0122H	Never sent.
Cancel	Matching terminated due to Cancel Request	FE00	Sent after receiving a Cancel Request
Pending	Matches are continuing – Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys	FF00	
	Matches are continuing – Warning that one or more Optional Keys were not supported for the existence of this Identifier.	FF01	Never sent.
Success	Matching is completed – No final Identifier is supplied	0000	

Table 2-9: ARIA Worklist Service Response Status Values for C-FIND

2.2.1.6.3 Activity Change Status - N-ACTION

2.2.1.6.3.1 Description and Sequencing of Activity

If the ARIA Worklist Service AE receives a status change request (N-ACTION), it will change the status of the UPS if it is according the rules. It will then send the response over the same association used to send the N-ACTION request.

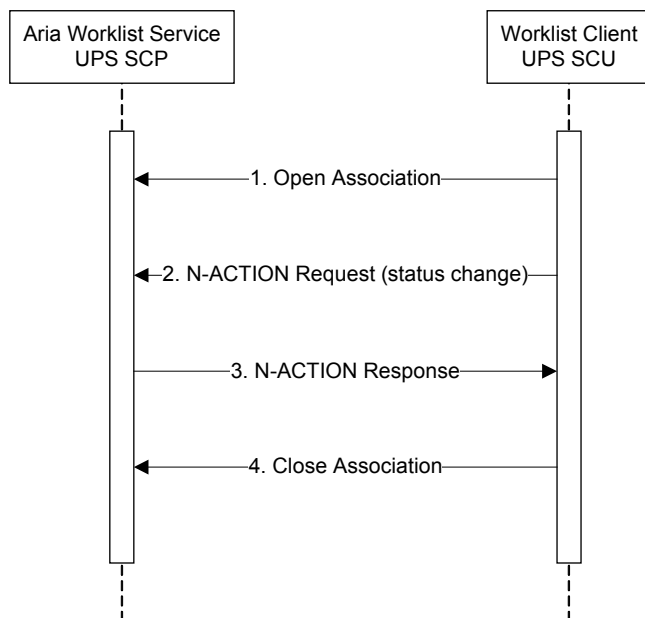


Figure 2-6: Sequencing of Activities – ARIA Worklist Service handling N-ACTION requests

A typical sequence of interactions between ARIA Worklist Service N-ACTION SCP and a remote N-ACTION SCU requesting status changes is illustrated in Figure 2-6.

5. Remote AE opens Association to ARIA Worklist Service.
6. Remote AE sends one N-ACTION Request.
7. The ARIA Worklist Service updates the UPS with the new status if it is a valid status change request (see Table 2-10).
8. Remote AE releases Association.

The following table shows all possible status changes. Status changes not mentioned in Table 2-10 are not valid, and therefore ARIA Worklist Service responses with an error message.

Requested UPS Status	Transaction UID	Current UPS Status	Current Progress	New Appointment Status
IN PROGRESS	Empty	SCHEDULED	N/A	In Progress
COMPLETED	Valid Transaction UID	IN PROGRESS	100	Completed
CANCELED	Valid Transaction UID	IN PROGRESS	0	Canceled
CANCELED	Valid Transaction UID	IN PROGRESS	> 0, < 100	Part. Compl. Active

Requested UPS Status	Transaction UID	Current UPS Status	Current Progress	New Appointment Status
CANCELED	Valid Transaction UID	IN PROGRESS	100	Part. Compl. Finished

Table 2-10: Valid Status changes

2.2.1.6.3.2 Accepted Presentation Contexts

The ARIA Worklist Service accepts Presentation Contexts shown in Table 2-7.

2.2.1.6.3.3 SOP Specific Conformance

The ARIA Worklist Service Application Entity provides standard conformance to Unified Procedure Step – Pull SOP Class N-ACTION.

Service Status	Further Meaning	Error Code	Reason
Refused	Out of Resources	A700	Never sent.
Failure	Data Set does not match SOP Class	A900	Sent when Data Set is empty
	Refused: Not Authorized	C305	Never sent.
	Unable to process	C000 - CFFF	Error Id is set to give more information about Error: 0xC100, Command is not an N-ACTION request 0xC101, DataSet is empty 0xC104, Cancel Request not implemented 0xC108, UPS cannot be COMPLETED if Progress is smaller than 100 0xC106, Invalid Status Change Request 0xC108, Unexpected Error
	SOP Class not supported	0122H	Never sent.
	Unmatched Transaction UID	A505	The Transaction UID sent in the Status change request does not match the Transaction UID associated with the SOP Instance UID.
	May no longer be updated	A501	The UPS is already in a final state (CANCELED or COMPLETED) and cannot be updated anymore.

Service Status	Further Meaning	Error Code	Reason
Success	Status is successfully updated	0000	

Table 2-11: ARIA Worklist Service Response Status Values for Status Change Request (N-ACTION)

2.2.1.6.4 Activity Update Unified Procedure Step - N-SET

2.2.1.6.4.1 Description and Sequencing of Activity

If the ARIA Worklist Service receives an N-SET request, it will update the UPS if the status of the UPS is SCHEDULED or if the status is IN PROGRESS and the Transaction UID is valid. It will then send the response message over the same association used to send the N-SET request.

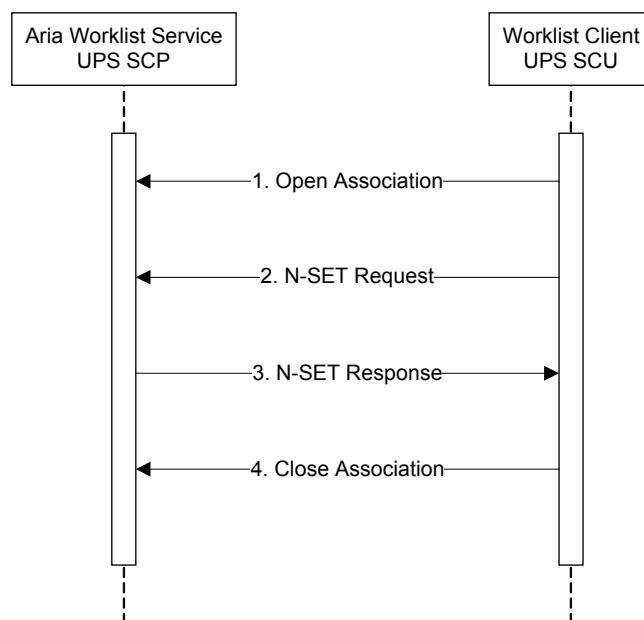


Figure 2-7: Sequencing of Activities – ARIA Worklist Service handling N-SET Requests

A typical sequence of interactions between ARIA Worklist Service N-SET SCP and a remote N-SET SCU requesting UPS updates is illustrated in Figure 2-7.

1. Remote AE opens Association to ARIA Worklist Service.
2. Remote AE sends one N-SET Requests.
3. The ARIA Worklist Service updates the UPS with the new information if an update is allowed.
4. Remote AE releases Association.

2.2.1.6.4.2 Accepted Presentation Contexts

The ARIA Worklist Service accepts Presentation Contexts shown in Table 2-7.

2.2.1.6.4.3 SOP Specific Conformance

The ARIA Worklist Service Application Entity does not support the full set of Type 1 attribute. ARIA Worklist Service does not look at the not supported attributes, and therefore may return a success, even if not all requested information is updated.

Attribute Name	Tag	VR	Remark
Scheduled Procedure Step Priority	(0074,1200)	CS	
Procedure Step Label	(0074,1204)	LO	*** not implemented ***
Worklist Label	(0074,1202)	LO	*** not implemented ***
Scheduled Station Name Code Sequence	(0040,4025)	SQ	Code Value used to find matching machine (Machine Id) on database.
Scheduled Station Class Code Sequence	(0040,4026)	SQ	*** not implemented ***
Scheduled Station Geographic Location Code Sequence	(0040,4027)	SQ	
Human Performer Code Sequence	(0040,4034)	SQ	Code Value used to find Doctor or Staff
Human Performs Name	(0040,4037)	PN	*** not implemented ***
Scheduled Procedure Step Start Date and Time	(0040,4005)	DT	Appointment Start Date and Time
Expected Completion Date and Time	(0040,4011)	DT	Appointment End Date and Time
Scheduled Workitem Code Sequence	(0040,4018)	SQ	
Comments on the Scheduled Procedure Step	(0040,0400)		Added to the Appointment Note.
Input Information Sequence	(0040,4021)		*** not implemented ***
Related Procedure Step Sequence	(0074,1220)		*** not implemented ***
UPS Progress Information Sequence	(0074,1002)	SQ	
> Unified Procedure Step Progress	(0074,1004)		Progress is only stored temporarily until UPS is COMPLETED or CANCELED. It is not visible in any ARIA Application
> Unified Procedure Step Progress Description	(0074,1006)		*** not implemented ***
> Unified Procedure Step Communications URI Sequence	(0074,1008)	SQ	*** not implemented ***

Attribute Name	Tag	VR	Remark
> Unified Procedure Step Discontinuation Reason Code Sequence	(0074,100e)		*** not implemented ***
UPS Performed Procedure Sequence	(0074,1216)	SQ	
>Actual Human Performers Sequence	(0040,4035)	SQ	Code Value of Human Performer Code Sequence is used to find the doctor with matching DoctorId or staff with matching StaffId in the database. If found, the scheduled human performer will be replaced with the actual human performer.
> Performed Station Name Code Sequence	(0040,4028)	SQ	*** not implemented ***
> Performed Station Class Code Sequence	(0040,4029)		*** not implemented ***
> Performed Station Geographic Location Code Sequence	(0040,4030)	SQ	*** not implemented ***
> Performed Processing Application Code Sequence	(0040,4007)	SQ	*** not implemented ***
> Performed Procedure Step Start Date	(0040,0244)		
> Performed Procedure Step Start Time	(0040,0245)		
> Performed Procedure Step Description	(0040,0254)		Added to the Appointment Note
> Comments on the Performed Procedure Step	(0040,0280)		Added to the Appointment Note
> Performed Workitem Code Sequence	(0040,4019)		
> Performed Processing Parameters Sequence	(0074,1212)		*** not implemented ***
> Performed Procedure Step End Date	(0040,0250)		
> Performed Procedure Step End Time	(0040,0251)		
> Output Information Sequence	(0040,4033)		*** not implemented ***
> Non-DICOM Output Code Sequence	(0040,4032)		*** not implemented ***

Table 2-12: Supported attributes of an N-SET request

Service Status	Further Meaning	Error Code	Reason
Refused	Out of Resources	A700	Never sent
Failure	May No Longer Be Updated	A501	Appointment is in a final state and cannot be updated anymore. An error is returned
	Unmatched Transaction UID	A505	Invalid Transaction UID, no update is done, an error is returned.
	Processing Failure	C001	Error Id is set to give more information about Error: 0xC100: Unexpected Error
Success	Unified Procedure Step is successfully updated	0000	Update of all supported attributes was successful

Table 2-13: ARIA Worklist Service Response Status Values for N-SET

2.2.1.6.5 Activity Retrieve Unified Procedure Step - N-GET

2.2.1.6.5.1 Description and Sequencing of Activity

The ARIA Worklist Service does not support N-GET service of the Unified Procedure Step - PULL SOP Class.

2.2.1.6.5.2 Accepted Presentation Contexts

The ARIA Worklist Service accepts Presentation Contexts shown in Table 2-7.

2.2.1.6.5.3 SOP Specific Conformance

The ARIA Worklist Service always returns the Error Code C000.

2.2.1.6.6 Activity Move RT Beam Delivery Instruction – C-MOVE

2.2.1.6.6.1 Description and Sequencing of Activity

If the ARIA Worklist Service AE receives a move (C-MOVE) request, it will create the RT Beam Delivery Instruction and send a C-STORE request to the target destination. The C-MOVE response will be sent over the same association as the C-MOVE request was received.

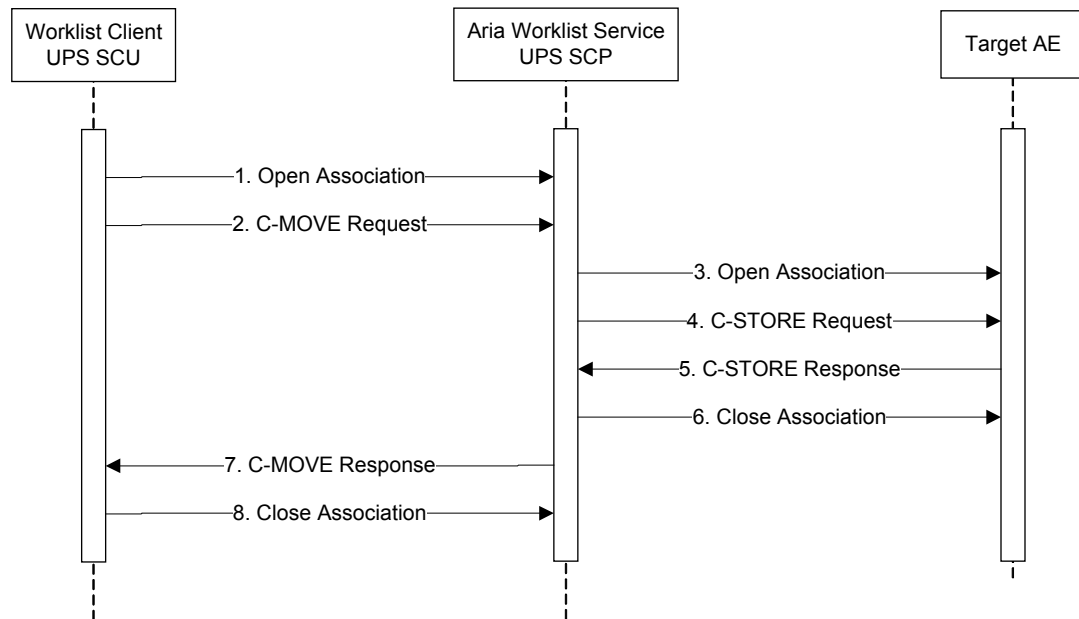


Figure 2-8 Sequencing of Activities – ARIA Worklist Service handling C-MOVE Requests

A typical sequence of interactions between ARIA Worklist Service C-MOVE SCP and a remote C-FIND SCU querying Instances is illustrated in Figure 2-5

1. Remote AE opens Association to ARIA Worklist Service.
2. Remote AE sends a C-MOVE Request Message
3. The ARIA Worklist Service AE opens an association to the Target AE
4. The ARIA Worklist Service AE sends a C-STORE request to the Target AE
5. The Target AE sends a C-STORE—RSP message to the ARIA Worklist Service AE
6. The ARIA Worklist Service AE releases the association to the Target AE
7. The ARIA Worklist Service AE sends a C-MOVE-RSP message to the Remote AE
8. .The Remote AE releases Association

2.2.1.6.6.2 Accepted Presentation Contexts

ARIA Worklist Service Entity accepts Presentation Contexts shown in the following table.

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name	UID		
RT Beam Delivery Instruction – Trial	1.2.840.10008.5.1.4.34.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Table 2-14: Acceptable Presentation Contexts for ARIA Worklist Service – C-MOVE

2.2.1.6.6.3 SOP Specific Conformance for RT Beam Delivery Move

Only Instance Level C-MOVE for RT Beam Delivery Instruction is supported. The RT Beam Delivery Instruction Instance is created based on actual patient information on the database and therefore can only be retrieved until Treatment Records are sent back or the Unified Procedure Step is COMPLETED or CANCELED.

Service Status	Further Meaning	Error Code	Reason
Refused	Out of Resources	A700	Never sent
Failure	No Such SOP Instance	0112	Requested SOP Instance could not be found
	Move Destination Unknown	A801	Move Destination unknown
	Cannot Unsterstand	C000	Move Request not supported, for example Move Request on Study or Series Level are not supported
Success	Move was successfull	0000	RT Beams Delivery SOP Instance is successfully moved

Table 2-15: ARIA Worklist Service Response Status Values for C-MOVE

2.2.1.6.7 Activity – Receive Modality Worklist Query Request (C-FIND)

2.2.1.6.7.1 Description and Sequencing of Activity

If the ARIA Worklist Service AE receives a query (C-FIND) request then the responses will be sent over the same Association used to send the C-FIND-Request.

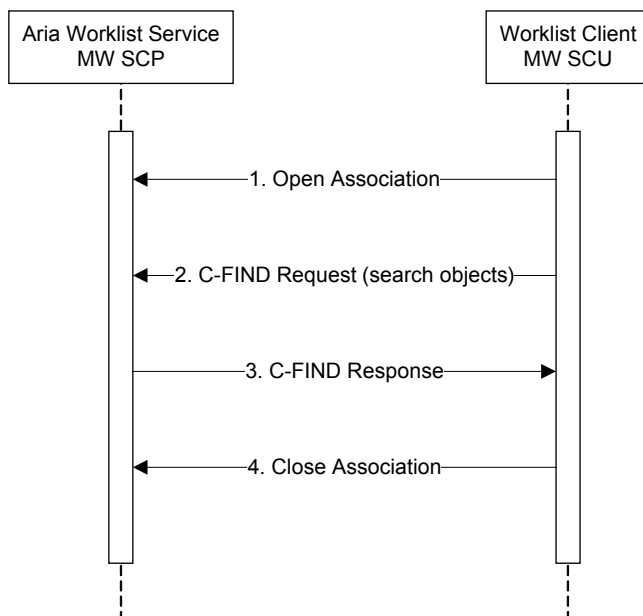


Figure 2-9: Sequencing of Activities – ARIA Worklist Service handling C-FIND Requests

A typical sequence of interactions between ARIA Worklist Service C-FIND SCP and a remote C-FIND SCU querying Instances is illustrated in Figure 2-5

1. Remote AE opens Association to ARIA Worklist Service.
2. Remote AE sends a C-FIND Request Message.
3. The ARIA Worklist Service AE returns a C-FIND Response Message for each matching MSPS. A final C-FIND Response is sent indicating that the matching is complete.
4. Remote AE releases Association.

2.2.1.6.7.2 Accepted Presentation Contexts

ARIA Worklist Service Entity accepts Presentation Contexts shown in the following table.

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name	UID		
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Table 2-16: Acceptable Presentation Contexts for ARIA Worklist Service – C-FIND

2.2.1.6.7.3 SOP Specific Conformance

The C-FIND service of the Modality Worklist Information SOP Class always returns all supported attributes, even if they are not requested.

The following table shows the supported query keys. Not all required query keys are supported.

Attribute Name	Tag	VR	Matching Criteria	Types of Matching
Scheduled Procedure Step Sequence	(0040,0100)	SQ		
> Scheduled Station AE Title	(0040,0001)	AE	Machine AE Title	Single Value Matching
> Scheduled Procedure Step Start Date	(0040,0002)	DT	Appointment Start Date	Range Matching
> Scheduled Procedure Step Start Time	(0040,0003)	TM	Appointment Start Time	Range Matching
> Scheduled Procedure Step End Date	(0040,0004)	DT	Appointment End Date	Range Matching
> Scheduled Procedure Step End Time	(0040,0005)	TM	Appointment End Time	Range Matching
> Modality	(0008,0060)	CS	Modality defined for Machine / Procedure Code	Single Value Matching

Attribute Name	Tag	VR	Matching Criteria	Types of Matching
> Scheduled Performing Physician's Name	(0040,0006)	PN	Doctor	Single Value Matching
> Scheduled Station Name	(0040,0010)	SH	Machine Name	Single Value Matching
> Scheduled Procedure Step Status	(0040,0020)	CS	Appointment Status	Single Value Matching
Requested Procedure ID	(0040,1001)	SH	Appointment Id	Single Value Matching
Accession Number	(0008,0050)	SH		*** not implemented ***
Patient's Name	(0010,0010)	PN	Patient First Name, Last Name, Middle Name	Single Value Matching
Patient ID	(0010,0020)	LO	Patient ID1	Single Value Matching

Table 2-17: Required Query Keys and their support in ARIA Worklist Service

The ARIA Worklist Service Application Entity will return one of the following Response Status to the C-FIND Request.

Service Status	Further Meaning	Error Code	Reason
Refused	Out of Resources	A700	Never sent.
Failure	Data Set does not match SOP Class	A900	Sent when Data Set is empty
	Refused: Not Authorized	C305	Never sent.
	Unable to process	C000 - CFFF	Error Id is set to give more information about Error: 0xC100, Received command is not a C-FIND Request 0xC101, DataSet is empty 0xC102, Failed to retrieve MSPS from database 0xC103, Unexpected Error
	SOP Class not supported	0122H	Never sent.
Cancel	Matching terminated due to Cancel Request	FE00	Sent after receiving a Cancel Request
Pending	Matches are continuing – Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys	FF00	

Service Status	Further Meaning	Error Code	Reason
	Matches are continuing – Warning that one or more Optional Keys were not supported for the existence of this Identifier.	FF01	Never sent.
Success	Matching is completed – No final Identifier is supplied	0000	

Table 2-18: ARIA Worklist Service Response Status Values for C-FIND response

2.2.1.6.8 Activity – Create Modality Performed Procedure Step – N-CREATE

2.2.1.6.8.1 Description and Sequencing of Activity

If the ARIA Worklist Service AE receives a Modality Performed Procedure Step (MPPS) N-CREATE request, it will match it to a scheduled Appointment. If no Appointment is found, a new Appointment is created if all necessary information is given.

The Appointment status will be set to 'In Progress'.

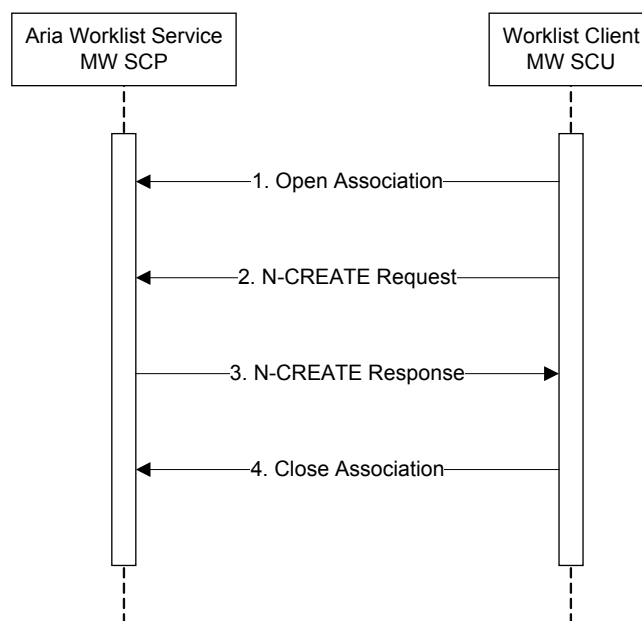


Figure 2-10: Sequencing of Activities – ARIA Worklist Service handling N-CREATE requests

A typical sequence of interactions between ARIA Worklist Service N-CREATE SCP and a remote N-CREATE SCU requesting the creation of a Modality Performed Procedure Step is illustrated in Figure 2-6

1. Remote AE opens Association to ARIA Worklist Service.
2. Remote AE sends one N-CREATE Request.
3. The ARIA Worklist service gets the Appointment with given Requested Procedure Id, Patient Id and Study UID.

4. If no Appointment was found, an Appointment will be created. Following is the list of the minimal required information:
 - Patient ID
 - Requested Procedure Code Sequence
 - Performed Station AE Title
 - Performed Procedure Step Start Date / Performed Procedure Step Start Time
 - Performed Procedure Step Status
5. The Appointment status will be set to 'In Progress'.
6. The ARIA Worklist service sends a success response.
7. Remote AE releases Association.

The workflow for adding another MPPS to a MSPS is the same. The only difference is, that the appointment status is Completed or Canceled before it will be set again to In Progress.

2.2.1.6.8.2 Accepted Presentation Contexts

ARIA Worklist Service Entity accepts Presentation Contexts shown in the following table.

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name	UID		
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Table 2-19: Acceptable Presentation Contexts for ARIA Worklist Service – N-CREATE

2.2.1.6.8.3 SOP Specific Conformance

The ARIA Worklist Service Application Entity does not support the full set of Type 1 attribute. ARIA Worklist Service does not look at the not supported attributes, and therefore may return a success, even if not all requested information is updated.

Attribute Name	Tag	VR	Remark
Specific Character Set	(0008,0005)	CS	*** not implemented ***
SOP Instance UID	(0008,0018)	UI	SOP Instance UID is only stored temporarily until the MPPS got into a final state.
Scheduled Step Attribute Sequence	(0040,0270)	SQ	
> Study Instance UID	(0020,000D)	UI	Used to identify scheduled appointment
> Accession Number	(0008,0050)	SH	
> Requested Procedure ID	(0040,1001)	SH	Used to identify scheduled appointment

Attribute Name	Tag	VR	Remark
> Requested Procedure Code Sequence	(0032,1064)	SQ	Used to find Activity to create appointment
>> Code Value	(0008,0100)	SH	Activity Code
>> Coding Scheme Designator	(0008,0102)	SH	
Patient's Name	(0010,0010)	PN	Used to identify scheduled appointment or create a patient in case of an emergency appointment.
Patient ID	(0010,0020)	LO	Used to identify scheduled appointment or in case of an emergency appointment to identify the patient or create a patient.
Patient's Birth Date	(0010,0030)	DA	Used when creating the patient in case of an emergency appointment
Performed Procedure Step ID	(0040,0253)	SH	*** not implemented ***
Performed Station AE Title	(0040,0241)	AE	Used to find machine. The machine will be linked to the appointment.
Performed Procedure Step Start Date	(0040,0244)	DA	*** not implemented ***
Performed Procedure Step Start Time	(0040,0245)	TM	*** not implemented ***
Performed Procedure Step Status	(0040,0252)	CS	Appointment status
Modality	(0008,0060)	CS	*** not implemented ***
Performed Protocol Code Sequence	(0040,0260)	SQ	Link Procedure Code to Appointment. Procedure Code must exist.
> Code Value	(0008,0100)	SH	Procedure Code
> Coding Scheme Designator	(0008,0102)	SH	

Table 2-20: Supported attributes of an N-CREATE request

The ARIA Worklist Service Application Entity will return one of the following Response Status to the N-CREATE Request.

Service Status	Further Meaning	Error Code	Reason
Refused	Out of Resources	A700	Never sent
Failure	Unable to process	C000 - CFFF	Possible reasons: More than one scheduled appointment found Unexpected error
Success	MPPS is created	0000	

Table 2-21: ARIA Worklist Service Response Status Values for N-CREATE response

2.2.1.6.9 Activity – Update Modality Performed Procedure Step – N-SET

2.2.1.6.9.1 Description and Sequencing of Activity

If the ARIA Worklist Service receives an N-SET request, it will update the MPPS if the status of the MPPS is IN PROGRESS. It will then send the response message over the same association used to send the N-SET request.

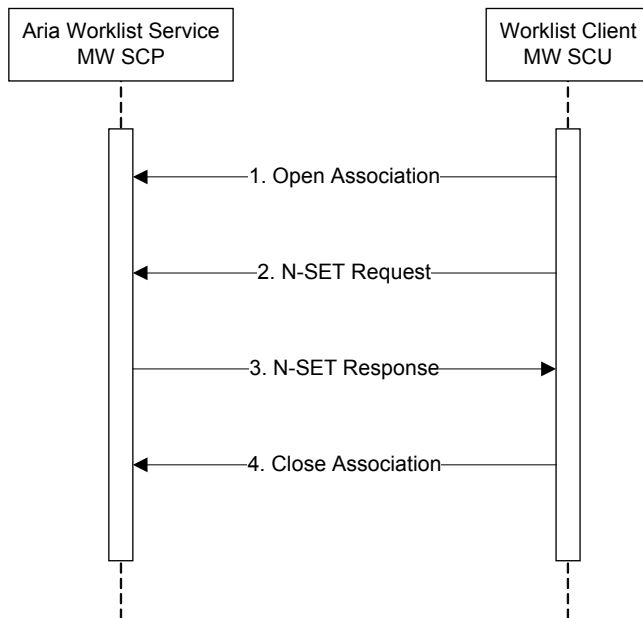


Figure 2-11: Sequencing of Activities – ARIA Worklist Service handling N-SET Requests

A typical sequence of interactions between ARIA Worklist Service N-SET SCP and a remote N-SET SCU requesting MPPS updates is illustrated in Figure 2-7.

1. Remote AE opens Association to ARIA Worklist Service.
2. Remote AE sends one N-SET Requests.
3. The ARIA Worklist Service updates the MPPS with the new information if an update is allowed.
4. Remote AE releases Association.

2.2.1.6.9.2 Accepted Presentation Contexts

The ARIA Worklist Service accepts Presentation Contexts shown in Table 2-19.

2.2.1.6.9.3 SOP Specific Conformance

The ARIA Worklist Service Application Entity does not support the full set of Type 1 attribute. ARIA Worklist Service does not look at the not supported attributes, and therefore may return a success, even if not all requested information is updated.

Attribute Name	Tag	VR	Remark
SOP Instance UID	(0008,0018)	UI	Used to get appointment
Performed Procedure Step Status	(0040,0252)	CS	Appointment status
Performed Procedure Step End Date	(0040,0250)	DA	*** not implemented *** Actual Appointment End Data and Time will be set when the appointment is set to Completed.
Performed Procedure Step End Time	(0040,0251)	TM	*** not implemented ***
Performed Protocol Code Sequence	(0040,0260)	SQ	Link Procedure Code to Appointment. Procedure Code must exist.
> Code Value	(0008,0100)	SH	Procedure Code
> Coding Scheme Designator	(0008,0102)	SH	
Performed Series Sequence	(0040,0340)	SQ	*** not implemented ***

Table 2-22: Supported attributes of an N-SET request

The ARIA Worklist Service Application Entity will return one of the following Response Status to the N-SET Request.

Service Status	Further Meaning	Error Code	Reason
Refused	Out of Resources	A700	Never sent
Failure	May No Longer Be Updated	A501	Appointment is in a final state and cannot be updated anymore. An error is returned
	Unmatched Transaction UID	A505	Invalid Transaction UID, no update is done, an error is returned.
	Processing Failure	C001	Error Id is set to give more information about Error: 0xC100: Unexpected Error
Success	Modality Performed Procedure Step is successfully updated	0000	Update of all supported attributes was successful

Table 2-23: ARIA Worklist Service Response Status Values for N-SET response

2.3 Network Interfaces

2.3.1 Physical Network Interfaces

The application is indifferent to the physical medium over which TCP/IP executes; which is dependent on the underlying operating system and hardware.

2.3.2 Additional Protocols

When host names rather than IP addresses are used in the configuration properties to specify presentation addresses for remote AEs, the application is dependent on the name resolution mechanism of the underlying operating system (e.g. DNS).

2.3.2.1 IPv4 and IPv6 Support

This product supports both IPv4 and IPV6. It does not utilize any of the optional configuration identification of security features of IPv6.

3. Media Interchange

ARIA Worklist Service Application Entity does not support Media Interchange.

4. Support of Character Sets

No dedicated support for Character Sets beyond the Default Character Repertoire is available. However, text fields containing characters not in the Default Character Repertoire when importing an Instance will appear unchanged when re-exporting the same Instance again.

5. Security

5.1 Security Profiles

No Security Profiles are supported.

5.2 Association Level Security

The ARIA Worklist Service Application Entity checks the following values when determining whether to accept Association Open Requests:

- Called AE Title

By default those additional checks are disabled when setting up a new ARIA Worklist Service configuration.

5.3 Application Level Security

To set up a new ARIA Worklist Service configuration or to change an existing ARIA Worklist Service configuration local administrative credentials on the affected computer are required

Appendix A IOD Details

A.1 Supported IODs

For better reference with DICOM Standard [1] and Supplement 96 [3] section titles of the following sub-sections are decorated with section number of DICOM Standard or Supplement 96 where the corresponding IOD Module table can be found.

A.1.1 Unified Worklist and Procedure Step – B.X.2

IE	Module	Reference	Module Description
Unified Procedure Step	Unified Procedure Step Relationship Module	C.X.4	References the related SOPs and IEs
	Unified Procedure Step Scheduled Procedure Information	C.X.2	Describes the UPS task to be performed including information about place, time, priority and input data
	Unified Procedure Step Progress Information	C.X.1	Describes the progress of a UPS task
	Unified Procedure Step Performed Procedure Information	C.X.3	Describes the work performed including information about status, place, time and result data
	SOP Common	C.12.1	Contains SOP common information

Table A-1: Unified Procedure Step IOD Modules

A.1.2 RT Beams Delivery Instruction IOD Module Table – A.tt.3-1

IE	Module	Reference	Module Description
Patient	Patient	C.7.1.1	
	Clinical Trial Subject	C.7.13	
Study	General Study	C.7.2.1	
	Patient Study	C.7.2.2	
	Clinical Trial Study	C.7.2.3	
Series	General Series	C.7.3.1	
	Clinical Trial Series	C.7.3.2	
Equipment	General Equipment	C.7.5.1	
Treatment Delivery	RT Beams Delivery Instruction	C.8.8.aa	
	Common Instance Reference Module	C.12.2	

IE	Module	Reference	Module Description
	SOP Common	C.12.1	

Table A-2: RT Beams Delivery Instruction IOD Modules

A.1.3 Modality Worklist Information – K.6.1.2

IE	Module	Reference	Module Description
Patient	Patient Relationship	C.2.1	
	Patient Identification	C.2.2	
	Patient Demographic	C.2.3	
	Patient Medical	C.2.4	
Visit	Visit Relationship	C.3.1	
	Visit Identification	C.3.2	
	Visit Status	C.3.3	
	Visit Admission	C.3.4	
Scheduled Procedure Step	SOP Common	C.12.1	Contains SOP common information
	Scheduled Procedure Step	C.4.10	
Requested Procedure	Requested Procedure	C.4.11	
Imaging Service Request	Imaging Service Request	C.4.12	

Table A-2: Modality Worklist Scheduled Information Modules

A.1.4 Modality Performed Procedure Step – B.17.2

IE	Module	Reference	Module Description
Modality Performed Procedure Step	SOP Common	C.12.1	Contains SOP common information
	Performed Procedure Step Relationship	C.4.13	Referenced the related SOPs and IEs
	Performed Procedure Step Information	C.4.14	Includes identifying and status information as well as place and time
	Image Acquisition Results	C.4.15	Identifies Series and Images related to this PPS and specific image acquisition conditions.

IE	Module	Reference	Module Description
	Radiation Dose	C.4.16	Contains radiation dose information related to this Performed Procedure Step.
	Billing and Material Management Codes	C.4.17	Contains codes for billing and material management.

Table A-3: Modality Performed Procedure Step IOD Modules

A.2 Modules and Attributes

For better reference with DICOM Standard [1] section titles of the following sub-sections are decorated with section number of DICOM Standard Part 3 where the corresponding Module Attribute table can be found.

The first four columns in the following tables contain definitions from the DICOM standard. References in those columns refer to the DICOM standard and not to this document.

The “Handling” column describes for each Attribute whether it is supported and to which database attribute it maps. A value of “*** Not Implemented ***” indicates that an Attribute is unknown and therefore ignored by the application. A value of “*** Not Used ***” indicates that an Attribute is validated, but its value is not saved on the database.

A.2.1 Unified Procedure Step Progress Information Module – C.X.1

Attribute Name	Tag	T	Description	Handling
Unified Procedure Step State	(0074,1000)		<p>Contains the state of the Unified Procedure Step. See F.X.1 for more details.</p> <p>Enumerated Values:</p> <p>SCHEDULED = The UPS is scheduled to be performed.</p> <p>IN PROGRESS = An SCU has taken ownership of the UPS and has likely started performing the procedure step. This is the only state that implies an exclusive lock.</p> <p>CANCELED = The UPS has been permanently stopped before or during execution of the step due to voluntary or involuntary action by a human or machine.</p> <p>COMPLETED = The UPS has been completed.</p> <p>Note: CANCELLED with two L's is NOT a valid value.</p>	<p>Appointment Status</p> <p>The mapping between the Appointment Status and the UPS State is:</p> <p>“Open” -> “SCHEDULED”</p> <p>“Canceled” -> “CANCELED”</p> <p>“Part. Compl. Active” -> “CANCELED”</p> <p>“Part. Compl. Finish” -> “CANCELED”</p> <p>“In Progress” -> “IN PROGRESS”</p>
UPS Progress Information Sequence	(0074,1002)		Zero or one item may be present.	

Attribute Name	Tag	T	Description	Handling
>Unified Procedure Step Progress	(0074,1004)		A numerical indicator of progress expressed as percentage complete. Note: this is primarily for simplicity and ease of rendering (e.g. progress bar). The percentage is not necessarily an accurate indication of total time.	Will be stored temporary until the UPS is set to "CANCELED" or "COMPLETED". If the value is 0.0 at the time of canceling the UPS, the appointment status will be set to "CANCELED", otherwise to "Part. Compl. Active"
>Unified Procedure Step Progress Description	(0074,1006)		A textual description of progress. For example, it might contain "Annealing complete".	*** not implemented ***
>Unified Procedure Step Communications URI Sequence	(0074,1008)		Zero or more items may be present in this sequence.	*** not implemented ***
>>Contact URI	(0074,100a)		URI to communicate with performer of the procedure in progress. Any URI (telephone number, URL, etc.) is permitted.	*** not implemented ***
>>Contact Display Name	(0074,100c)		Name of the person, department or organization to contact for more information about the performance of the procedure step.	*** not implemented ***
>Unified Procedure Step Discontinuation Code Sequence	(0074,100e)		Reasons for Discontinuation	*** not implemented ***
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	*** not implemented ***
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	*** not implemented ***
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	*** not implemented ***

A.2.2 Unified Procedure Step Scheduled Procedure Information Module – C.X.2

Attribute Name	Tag	T	Description	Handling
Scheduled Procedure Step Priority	(0074,1200)		Priority of the scheduled Unified Procedure Step Enumerated Values are: HIGH: used to indicate an urgent or emergent work item, equivalent to a STAT request. MEDIUM: used to indicate a work item that has a priority less than HIGH and higher than LOW. It can be used to further stratify work items. LOW: used to indicate a routine or non-urgent work item.	Appointment Priority
Scheduled Procedure Information Modification Date and Time	(0040,4010)		Date and time when the Scheduled Procedure Information was last modified or first created (whichever is most recent). Note: This attribute should be implicitly updated by the worklist management system whenever any modification is made to Scheduled Procedure Information Module attributes of a Unified Procedure Step.	Appointment History Date Time
Worklist Label	(0074,1202)		A label identifying the worklist to which the Unified Procedure Step instance belongs.	"Varian Delivery Worklist"
Procedure Step Label	(0074,1204)		A label describing the task of the Unified Procedure Step in text appropriate for displaying in the user selection interface.	Set to the Activity Code Will be created at run time, only valid, until UPS is COMPLETED or CANCELED
Comments on the Scheduled Procedure Step	(0040,0400)		User-defined comments on the scheduled Unified Procedure Step.	Appointment Note. Limited to 254 character
Scheduled Station Name Code Sequence	(0040,4025)		Identifying name within the enterprise of the equipment for which the Unified Procedure Step is scheduled. The name conveyed in the Code Value (0008,0100) may be the same as the AE Title, but does not have to be. Zero or more Items may be included in this sequence.	Machine
>Code Value	(0008,0100)			Machine.MachineId

Attribute Name	Tag	T	Description	Handling
>Coding Scheme Designator	(0008,0102)			"99VMS_MACHINE" Varian Coding Scheme Designator
>Code Meaning	(0008,0104)			Machine.MachineID
Scheduled Station Class Code Sequence	(0040,4026)		Class of the equipment for which the Unified Procedure Step is scheduled. Zero or more Items may be included in this sequence.	
>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	PDS
>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	"99VMS_IHE"
>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	"Positioning and Delivery System"
Scheduled Station Geographic Location Code Sequence	(0040,4027)		Geographic location of the equipment for which the Unified Procedure Step is scheduled. Zero or more Items may be included in this sequence.	*** not implemented ***
>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	*** not implemented ***
>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	*** not implemented ***
>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	*** not implemented ***
Scheduled Human Performers Sequence	(0040,4034)		The list of human performers that are scheduled to be involved or responsible for performing the Workitem in the Unified Procedure Step. Zero or more Items may be included in this sequence.	Staff / Doctor

Attribute Name	Tag	T	Description	Handling
>Human Performer Code Sequence	(0040,4009)		Human performer that is involved or responsible for performing the Workitem. Only a single Item shall be permitted in this sequence.	
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	StaffId / DoctorId
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	"99VMS_STAFF" / "99VMS_DOCTOR"
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Display Name
>Human Performer's Name	(0040,4037)		Name of the human performer.	Last Name, First Name, Middle Name, Honorific, Suffix
>Human Performer's Organization	(0040,4036)		Organization to which the human performer is accountable for the activities in the Workitem.	Hospital
Scheduled Procedure Step Start Date and Time	(0040,4005)		Date and time on which the Unified Procedure Step is scheduled to start.	Appointment Date and Start Time
Expected Completion Date and Time	(0040,4011)		Date on which the Unified Procedure Step is expected to be completed.	Appointment Date and End Time
Scheduled Workitem Code Sequence	(0040,4018)		A sequence that conveys the code for the Workitem. Only a single Item shall be permitted in this sequence.	Hard coded, depending on the Machine. Value for TomoTherapy:
>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	"201"
>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	"99TOMO"

Attribute Name	Tag	T	Description	Handling
>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	"RT Treatment with Internal Verification"
Scheduled Processing Parameters Sequence	(0074,1210)		A sequence that conveys the processing parameters to be used by the performing system when carrying out the Workitem. Zero or more Items may be included in this sequence.	Sequence added for "CONTINUATION". Information if it is a CONITUNATION appointment is taken from Sessions if available, otherwise from the Appointments of the last 7 days. CONTINATUION is set if a previous appointment has status "Pt. Completed Active". A previous Appointment is the previous Appointment with a status of "Completed", "Pt. Compl Active" or "Pt. Compl Finished".
>Value Type	(0040,A0\$0)		The type of the value encoded in this name-value item. Enumerated Value: DATETIME DATE TIME PNAME UIDREF TEXT CODE NUMERIC	
>Concept Name Code Sequence	(0040,A043)		Coded concept name of this name-value item.	
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	

Attribute Name	Tag	T	Description	Handling
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
>DateTime	(0040,A120)		Datetime value for this name-value item. Required if Value Type (0040,A040) is DATETIME.	
>Date	(0040,A121)		Date value for this name-value item. Required if Value Type (0040,A040) is DATE.	
>Time	(0040,A122)		Time value for this name-value item. Required if Value Type (0040,A040) is TIME.	
>Person Name	(0040,A123)		Person name value for this name-value item. Required if Value Type (0040,A040) is PNAME.	
>UID	(0040,A124)		UID value for this name-value item. Required if Value Type (0040,A040) is UIDREF.	
>Text Value	(0040,A160)		Text value for this name-value item. Required if Value Type (0040,A040) is TEXT.	
>Concept Code Sequence	(0040,A168)		Coded concept value for this name-value item. Required if Value Type (0040,A040) is CODE	
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
>Numeric Value	(0040,A30A)		Numeric value for this name-value item. Required if Value Type (0040,A040) is NUMERIC.	

Attribute Name	Tag	T	Description	Handling
>Measurement Units Code Sequence	(0040,08EA)		Units of measurement for a numeric value in this name-value item. Required if Value Type (0040,A040) is NUMERIC.	
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
Input Availability Flag	(0040,4020)		Flag that indicates the availability of Composite SOP Instances referenced in the Attribute "Input Information Sequence" (0040,4021) of the Unified Procedure Step. Enumerated values are: INCOMPLETE COMPLETE The value INCOMPLETE denotes that the list of Composite SOP Instances may not yet be complete. The value COMPLETE denotes that all Composite SOP Instances are available and listed. Note: It may happen that the list of Composite SOP Instances is empty when the value of the Input Availability Flag is COMPLETE. In such a case a Workitem has been scheduled that does not require input information.	COMPLETE
Input Information Sequence	(0040,4021)		List of Composite SOP Instances that forms the input information needed to perform the scheduled Unified Procedure Step. See also Input Availability Flag (0040,4020). Zero or more Items may be included in this sequence.	For TomoTherapy: Not supported. TomoTherapy plans are not stored in TMS. For other Delivery Treatments: Scheduled Plan
> Study Instance UID	(0020,000D)	1	Unique identifier for the Study	

Attribute Name	Tag	T	Description	Handling
> Referenced Series Sequence	(0008,1115)	1	Sequence of Items where each Item includes the Attributes of a Series containing referenced Composite Object(s). One or more Items may be included in this sequence	
>> Series Instance UID	(0020,000E)	1	Unique identifier of a Series that is part of this Study and contains the referenced Composite Object(s).	
>> Retrieve AE Title	(0008,0054)	3	Title of the DICOM Application Entity where the Composite Object(s) may be retrieved on the network.	
>> Storage Media File-Set ID	(0088,0130)	3	The user or implementation specific human readable identifier that identifies the Storage Media on which the Composite Object (s) reside.	
>> Storage Media File-Set UID	(0088,0140)	3	Uniquely identifies the Storage Media on which the Composite Object (s) reside.	
>> Referenced SOP Sequence	(0008,1199)	1	References to Composite Object SOP Class/SOP Instance pairs that are part of the Study defined by Study Instance UID and the Series defined by Series Instance UID (0020,000E). One or more Items may be included in this sequence	
>>> Referenced SOP Class UID	(0008,1150)	1	Uniquely identifies the referenced SOP Class.	
>>> Referenced SOP Instance UID	(0008,1155)	1	Uniquely identifies the referenced SOP Instance.	
>> Purpose of Reference Code Sequence	(0040,A170)	3	Describes the purpose for which the reference is made. One or more Items may be included in this sequence.	
>>> Include 'Code Sequence Macro' Table 8.8-1			Baseline Context ID may be specified in Macro invocation.	

Attribute Name	Tag	T	Description	Handling
>> Referenced Digital Signature Sequence	(0400,0402)	3	Sequence of references to Digital Signatures in the referenced SOP Instance. One or more Items may be present. Note: The Attributes in this sequence can be used to detect if the referenced SOP Instance has been altered.	
>>> Digital Signature UID	(0400,0100)	1	The Unique Identifier of a Digital Signature held in the referenced SOP Instance.	
>>> Signature	(0400,0120)	1	The Signature Value identified by the Digital Signature UID within the Referenced SOP Instance UID.	
>> Referenced SOP Instance MAC Sequence	(0400,0403)	3	A MAC Calculation from data in the referenced SOP Instance that can be used as a data integrity check. Only a single Item shall be permitted in this Sequence. Note: This Attribute may be used in place of the Referenced Digital Signature Sequence Attribute (0400,0402), particularly if the SOP Instance does not have appropriate Digital Signatures that can be referenced.	
>>> MAC Calculation Transfer Syntax UID	(0400,0010)	1	The Transfer Syntax UID used to encode the values of the Data Elements included in the MAC calculation. When computing the MAC, only Transfer Syntaxes that explicitly include the VR and use Little Endian encoding shall be used. Notes: 1. Certain Transfer Syntaxes, particularly those that are used with compressed data, allow the fragmentation of the pixel data to change. If such fragmentation changes, Digital Signatures generated with such Transfer Syntaxes could become invalid. 2. This does not constrain the transfer syntax used to transmit the object.	

Attribute Name	Tag	T	Description	Handling
>>> MAC Algorithm	(0400,0015)	1	The algorithm used in generating the MAC. Defined Terms: RIPEMD160 MD5 SHA1 Note: Digital Signature Security Profiles (see PS 3.15) may require the use of a restricted subset of these terms.	
>>> Data Elements Signed	(0400,0020)	1	A list of Data Element Tags in the order they appear at the top level of the referenced SOP Instance that identify the Data Elements used in creating the MAC. See Section C.12.1.1.3.1.1.	
>>> MAC	(0400,0404)	1	The MAC generated as described in Section 12.2.1.1, but unencrypted and without inclusion of fields from the Digital Signatures Sequence. See Section C.12.1.1.3.1.2.	
Study Instance UID	(0020,000D)		Unique Study identification that shall be used for the created Composite SOP Instances resulting from this Unified Procedure Step. Note: In most cases this will be the same Study Instance UID as for the instances in the Input Information Sequence (0040,4021).	Study UID of Plan, if Plan is given, otherwise not supported.

A.2.3 Unified Procedure Step Performed Procedure Information Module – C.X.3

Attribute Name	Tag	T	Description	Handling
UPS Performed Procedure Sequence	(0074,1216)		Zero or one item may be present.	

Attribute Name	Tag	T	Description	Handling
>Actual Human Performers Sequence	(0040,4035)		The list of human performers that are/were actually involved or responsible for performing the Procedure Step. Zero or more Items may be included in this sequence. Note: Initially this list will be empty. A list of entries may be created at or after the status transition of the Unified Procedure Step State (0074,1000) to "IN PROGRESS"	Replace Scheduled Human Performers with Actual Human Performers in Attendee. Human Performer must already be in the TMS.
>>Human Performer Code Sequence	(0040,4009)		Human performer that is involved or responsible for performing the Workitem. Only a single Item shall be permitted in this sequence.	
>>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Doctor / Staff ID Id used to find the doctor or staff member on the database.
>>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Doctor / Staff Display Name
>>Human Performer's Name	(0040,4037)		Name of the human performer.	Doctor / Staff First Name Last Name Middle Name Honorific Prefix
>>Human Performer's Organization	(0040,4036)		Organization to which the human performer is accountable for the activities in the Workitem.	

Attribute Name	Tag	T	Description	Handling
>Performed Station Name Code Sequence	(0040,4028)		Name within the enterprise of the equipment that created the Procedure Step. This name may be the same as the AE Title, but does not have to be. Zero or one Item may be included in this sequence.	*** not used ***
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
>Performed Station Class Code Sequence	(0040,4029)		Class of the equipment that created the Procedure Step. Zero or one Item may be included in this sequence	*** not used ***
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
>Performed Station Geographic Location Code Sequence	(0040,4030)		Geographic location of the equipment that created Procedure Step. Zero or one Item may be included in this sequence.	*** not implemented ***
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	

Attribute Name	Tag	T	Description	Handling
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
>Performed Processing Applications Code Sequence	(0040,4007)		The list of processing application instances and/or application types on which the Procedure Step is executed. Zero or more Items may be included in this sequence.	*** not implemented ***
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
>Performed Procedure Step Start Date	(0040,0244)		Date on which the Procedure Step started.	Appointment Actual Start Date
>Performed Procedure Step Start Time	(0040,0245)		Time at which the Procedure Step started.	Appointment Actual Start Time
>Performed Procedure Step Description	(0040,0254)		Institution-generated description or classification of the Procedure Step that was performed.	Activity Description
>Performed Workitem Code Sequence	(0040,4019)		A sequence that conveys the type of procedure performed. Zero or more items may be present in this sequence.	Procedure Code. Will replace Scheduled Procedure Codes with Performed Procedure Codes

Attribute Name	Tag	T	Description	Handling
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Procedure Code - Code Procedure Code needs already to be on the database. Code value is used to find the Procedure Code
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Procedure Code Description
>Performed Processing Parameters Sequence	(0074,1212)		A sequence that conveys details of the procedure performed. Zero or more items may be present in this sequence	*** not implemented ***
>>Value Type	(0040,A0\$0)		The type of the value encoded in this name-value item. Enumerated Value: DATETIME DATE TIME PNAME UIDREF TEXT CODE NUMERIC	
>>Concept Name Code Sequence	(0040,A043)		Coded concept name of this name-value item.	
>>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	

Attribute Name	Tag	T	Description	Handling
>>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
>>DateTime	(0040,A120)		Datetime value for this name-value item. Required if Value Type (0040,A040) is DATETIME.	
>>Date	(0040,A121)		Date value for this name-value item. Required if Value Type (0040,A040) is DATE.	
>>Time	(0040,A122)		Time value for this name-value item. Required if Value Type (0040,A040) is TIME.	
>>Person Name	(0040,A123)		Person name value for this name-value item. Required if Value Type (0040,A040) is PNAME.	
>>UID	(0040,A124)		UID value for this name-value item. Required if Value Type (0040,A040) is UIDREF.	
>>Text Value	(0040,A160)		Text value for this name-value item. Required if Value Type (0040,A040) is TEXT.	
>>Concept Code Sequence	(0040,A168)		Coded concept value for this name-value item. Required if Value Type (0040,A040) is CODE	
>>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
>>Numeric Value	(0040,A30A)		Numeric value for this name-value item. Required if Value Type (0040,A040) is NUMERIC.	

Attribute Name	Tag	T	Description	Handling
>>Measurement Units Code Sequence	(0040,08EA)		Units of measurement for a numeric value in this name-value item. Required if Value Type (0040,A040) is NUMERIC.	
>>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
>Performed Procedure Step End Date	(0040,0250)		Date on which the Procedure Step ended.	Appointment Actual End Date
>Performed Procedure Step End Time	(0040,0251)		Time at which the Procedure Step ended.	Appointment Actual End Time
>Output Information Sequence	(0040,4033)		A Sequence that provides reference to any resulting Composite SOP instances or HL7 Structured Documents (unencapsulated) created. Zero or more Items may be included in this sequence.	*** not implemented ***
>> Study Instance UID	(0020,000D)	1	Unique identifier for the Study	
>> Referenced Series Sequence	(0008,1115)	1	Sequence of Items where each Item includes the Attributes of a Series containing referenced Composite Object(s). One or more Items may be included in this sequence	
>>> Series Instance UID	(0020,000E)	1	Unique identifier of a Series that is part of this Study and contains the referenced Composite Object(s).	
>>> Retrieve AE Title	(0008,0054)	3	Title of the DICOM Application Entity where the Composite Object(s) may be retrieved on the network.	

Attribute Name	Tag	T	Description	Handling
>>> Storage Media File-Set ID	(0088,0130)	3	The user or implementation specific human readable identifier that identifies the Storage Media on which the Composite Object (s) reside.	
>>> Storage Media File-Set UID	(0088,0140)	3	Uniquely identifies the Storage Media on which the Composite Object (s) reside.	
>>> Referenced SOP Sequence	(0008,1199)	1	References to Composite Object SOP Class/SOP Instance pairs that are part of the Study defined by Study Instance UID and the Series defined by Series Instance UID (0020,000E). One or more Items may be included in this sequence	
>>>> Referenced SOP Class UID	(0008,1150)	1	Uniquely identifies the referenced SOP Class.	
>>>> Referenced SOP Instance UID	(0008,1155)	1	Uniquely identifies the referenced SOP Instance.	
>>> Purpose of Reference Code Sequence	(0040,A170)	3	Describes the purpose for which the reference is made. One or more Items may be included in this sequence.	
>>>> Include 'Code Sequence Macro' Table 8.8-1			Baseline Context ID may be specified in Macro invocation.	
>>> Referenced Digital Signature Sequence	(0400,0402)	3	Sequence of references to Digital Signatures in the referenced SOP Instance. One or more Items may be present. Note: The Attributes in this sequence can be used to detect if the referenced SOP Instance has been altered.	
>>>> Digital Signature UID	(0400,0100)	1	The Unique Identifier of a Digital Signature held in the referenced SOP Instance.	
>>>> Signature	(0400,0120)	1	The Signature Value identified by the Digital Signature UID within the Referenced SOP Instance UID.	

Attribute Name	Tag	T	Description	Handling
>>> Referenced SOP Instance MAC Sequence	(0400,0403)	3	A MAC Calculation from data in the referenced SOP Instance that can be used as a data integrity check. Only a single Item shall be permitted in this Sequence. Note: This Attribute may be used in place of the Referenced Digital Signature Sequence Attribute (0400,0402), particularly if the SOP Instance does not have appropriate Digital Signatures that can be referenced.	
>>>> MAC Calculation Transfer Syntax UID	(0400,0010)	1	<p>The Transfer Syntax UID used to encode the values of the Data Elements included in the MAC calculation. When computing the MAC, only Transfer Syntaxes that explicitly include the VR and use Little Endian encoding shall be used.</p> <p>Notes: 1. Certain Transfer Syntaxes, particularly those that are used with compressed data, allow the fragmentation of the pixel data to change. If such fragmentation changes, Digital Signatures generated with such Transfer Syntaxes could become invalid.</p> <p>2. This does not constrain the transfer syntax used to transmit the object.</p>	
>>>> MAC Algorithm	(0400,0015)	1	<p>The algorithm used in generating the MAC. Defined Terms:</p> <ul style="list-style-type: none"> RIPMD160 MD5 SHA1 <p>Note: Digital Signature Security Profiles (see PS 3.15) may require the use of a restricted subset of these terms.</p>	

Attribute Name	Tag	T	Description	Handling
>>>> Data Elements Signed	(0400,0020)	1	A list of Data Element Tags in the order they appear at the top level of the referenced SOP Instance that identify the Data Elements used in creating the MAC. See Section C.12.1.1.3.1.1.	
>>>> MAC	(0400,0404)	1	The MAC generated as described in Section 12.2.1.1, but unencrypted and without inclusion of fields from the Digital Signatures Sequence. See Section C.12.1.1.3.1.2.	
>Non-DICOM Output Code Sequence	(0040,4032)		A Sequence that describes the type of any other output produced as results. Zero or more Items may be included in this sequence. Note: This does not provide a direct link or identifier for the output. Such output may be indexed by Patient ID, Accession # or other similar attributes.	*** not implemented ***
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	*** not implemented ***
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	*** not implemented ***
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	*** not implemented ***

A.2.4 Unified Procedure Step Relationship Module – C.X.4

Attribute Name	Tag	T	Description	Handling
Patient's Name	(0010,0010)		Patient's full legal name.	Patient First Name, Last Name, Middle Name, Honorific, Prefix

Attribute Name	Tag	T	Description	Handling
Patient ID	(0010,0020)		Primary hospital identification number or code for the patient. See C.X.4.1	ID1
Issuer of Patient ID	(0010,0021)		Identifier of the Assigning Authority that issued the Patient ID.	Patient Id Issuer
Other Patient IDs Sequence	(0010,1002)		A sequence of identification numbers or codes used to identify the patient, which may or may not be human readable, and may or may not have been obtained from an implanted or attached device such as an RFID or barcode.	
>Patient ID	(0010,0020)		An identification number or code used to identify the patient.	Patient ID2 Patient Universel ID
>Issuer of Patient ID	(0010,0021)		Identifier of the Assigning Authority that issued the Patient ID.	Patient Id Issuer
>Type of Patient ID	(0010,0022)		The type of identifier in this item. Defined Terms: TEXT RFID BARCODE Note: The identifier is coded as a string regardless of the type, not as a binary value.	TEXT
Patient's Birth Date	(0010,0030)		Date of birth of the named patient.	Patient Birth Date
Patient's Sex	(0010,0040)		Sex of the named Patient. Enumerated Values: M = male F = female O = other	Patient Sex
Admission ID	(0038,0010)		Identification number of the visit as assigned by the healthcare provider	*** not implemented ***
Issuer of Admission ID	(0038,0011)		Name of healthcare provider that issued the Admission ID	*** not implemented ***

Attribute Name	Tag	T	Description	Handling
Admitting Diagnoses Description	(0008,1080)		Description of admitting diagnosis (diagnoses).	*** not implemented ***
Admitting Diagnoses Code Sequence	(0008,1084)		A sequence that conveys the admitting diagnosis (diagnoses). One or more Items may be included in this Sequence.	*** not implemented ***
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
Referenced Request Sequence	(0040,A370)		The list of Requested Procedures the Procedure Step shall contribute to. Zero or more Items may be included in the sequence.	Only one item supported
>Study Instance UID	(0020,000D)		Unique identifier for the Study.	*** not implemented ***
>Referenced Study Sequence	(0008,1110)		Uniquely identifies the Study SOP Instance associated with this Unified Procedure Step. Only a single Item shall be permitted in this sequence.	*** not implemented ***
>>Referenced SOP Class UID	(0008,1150)		Uniquely identifies the SOP Class.	*** not implemented ***
>>Referenced SOP Instance UID	(0008,1155)		Uniquely identifies the SOP Instance.	*** not implemented ***
>Accession Number	(0008,0050)		A departmental IS generated number that identifies the Imaging Service Request.	*** not implemented ***
>Requested Procedure Code Sequence	(0032,1064)		A sequence that conveys the Procedure Type of the Requested Procedure. Zero or one Item may be included in this sequence.	*** not implemented ***

Attribute Name	Tag	T	Description	Handling
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	*** not implemented ***
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	*** not implemented ***
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	*** not implemented ***
>Placer Order Number / Imaging Service Request	(0040,2016)		The order number assigned to the Imaging Service Request by the party placing the order.	*** not implemented ***
>Filler Order Number / Imaging Service Request	(0040,2017)		The order number assigned to the Imaging Service Request by the party filling the order.	*** not implemented ***
>Requested Procedure ID	(0040,1001)		Identifier of the related Requested Procedure.	*** not implemented ***
>Requested Procedure Description	(0032,1060)		Institution-generated description or classification of the Requested Procedure.	Activity Code
>Reason for the Requested Procedure	(0040,1002)		Reason for requesting this procedure.	*** not implemented ***
> Reason for Requested Procedure Code Sequence	(0040,100A)		Coded reason for requesting this procedure.	*** not implemented ***
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	

Attribute Name	Tag	T	Description	Handling
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
>Requested Procedure Comments	(0040,1400)		User-defined comments on the Requested Procedure.	Appointment Note
>Confidentiality Code	(0040,1008)		Confidentiality Constraints on the Requested Procedure by the party filling the order.	*** not implemented ***
>Names of Intended Recipients of Results	(0040,1010)		Names of the physicians, who are intended recipients of results.	*** not implemented ***
>Imaging Service Request Comments	(0040,2400)		User-defined comments on the Imaging Service Request.	*** not implemented ***
>Requesting Physician	(0032,1032)		Physician who requested the Imaging Service Request.	*** not implemented ***
>Requesting Service	(0032,1033)		Institutional department where the request initiated.	*** not implemented ***
>Issue Date of Imaging Service Request	(0040,2004)		Date on which the Imaging Service Request was issued by the requester.	*** not implemented ***
>Issue Time of Imaging Service Request	(0040,2005)		Time at which the Imaging Service Request was issued by the requester.	*** not implemented ***
>Referring Physician's Name	(0008,0090)		Patient's primary physician for this Imaging Service Request.	*** not implemented ***
Related Procedure Step Sequence	(0074,1220)		List of Procedure Step Instances related to this Procedure Step Instance	*** not implemented ***
>Referenced SOP Class UID	(0008,1150)		Uniquely identifies the SOP Class of the referenced Instance	

Attribute Name	Tag	T	Description	Handling
>Referenced SOP Instance UID	(0008,1155)		Uniquely identifies the referenced SOP Instance	
>Procedure Step Relationship Type	(0074,1222)		Description of the referenced Procedure Step's relationship to this Procedure Step.	

A.2.5 SOP Common – C.12.1

Attribute Name	Tag	T	Description	Handling
SOP Class UID	(0008,0016)	1	Uniquely identifies the SOP Class. See C.12.1.1.1 for further explanation. See also PS 3.4.	The SOP Class UID is used to map the data to an appropriate object type.
SOP Instance UID	(0008,0018)	1	Uniquely identifies the SOP Instance. See C.12.1.1.1 for further explanation. See also PS 3.4.	A New SOP Instance UID will be created the first time and the UPS is returned in a Query response. The SOP Instance UID is only valid until the UPS is Completed or Canceled.
Specific Character Set	(0008,0005)	1C	Character Set that expands or replaces the Basic Graphic Set. Required if an expanded or replacement character set is used. See C.12.1.1.2 for Defined Terms.	*** Not Used *** Supported character set depends on client operating system version. No character translation is performed other than reading/writing contents of DICOM string attributes in corresponding database attributes. Also no support for multiple character sets within a single attribute.
Instance Creation Date	(0008,0012)	3	Date the SOP Instance was created.	*** Not Implemented **
Instance Creation Time	(0008,0013)	3	Time the SOP Instance was created.	*** Not Implemented **
Instance Creator UID	(0008,0014)	3	Uniquely identifies device which created the SOP Instance.	*** Not Implemented **

Attribute Name	Tag	T	Description	Handling
Related General SOP Class UID	(0008,001A)	3	Uniquely identifies a Related General SOP Class for the SOP Class of this Instance. See PS 3.4.	*** Not Implemented ***
Original Specialized SOP Class UID	(0008,001B)	3	The SOP Class in which the Instance was originally encoded, but which has been replaced during a fall-back conversion to the current Related General SOP Class. See PS 3.4.	*** Not Implemented ***
Coding Scheme Identification Sequence	(0008,0110)	3	Sequence of items that map values of Coding Scheme Designator (0008,0102) to an external coding system registration, or to a private or local coding scheme. One or more items may be present in the sequence.	*** Not Implemented ***
> Coding Scheme Designator	(0008,0102)	1	The value of a Coding Scheme Designator, used in this SOP Instance, which is being mapped.	*** Not Implemented ***
> Coding Scheme Registry	(0008,0112)	1C	The name of the external registry where further definition of the identified coding scheme may be obtained. Required if coding scheme is registered. Defined term: HL7	*** Not Implemented ***
> Coding Scheme UID	(0008,010C)	1C	The coding scheme UID identifier. Required if coding scheme is identified by an ISO 8824 object identifier compatible with the UI VR.	*** Not Implemented ***
> Coding Scheme External ID	(0008,0114)	2C	The coding scheme identifier as defined in an external registry. Required if coding scheme is registered and Coding Scheme UID (0008,010C) is not present.	*** Not Implemented ***
> Coding Scheme Name	(0008,0115)	3	The coding scheme full common name	*** Not Implemented ***
> Coding Scheme Version	(0008,0103)	3	The coding scheme version associated with the Coding Scheme Designator (0008,0102).	*** Not Implemented ***
> Responsible Organization	(0008,0116)	3	Name of the organization responsible for the Coding Scheme. May include organizational contact information.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
Timezone Offset From UTC	(0008,0201)	3	<p>Contains the offset from UTC to the timezone for all DA and TM Attributes present in this SOP Instance. Encoded as an ASCII string in the format "&ZZZZ". The components of this string, from left to right, are & = "+" or "-", and ZZZZ = Hours and Minutes of offset.</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. This encoding is the same as described in PS 3.5 for the DT Value Representation. 2. This Attribute does not apply to values with a DT Value Representation, which may contain an explicitly encoded timezone. 3. The corrected time may cross a 24 hour boundary. For example, if Local Time = 1.00 a.m. and Offset = +0200, then UTC = 11.00 p.m. (23.00) the day before. 4. The "+" sign may not be omitted. Time earlier than UTC is expressed as a negative offset. <p>Note:</p> <p>For example: UTC = 5.00 a.m. Local Time = 3.00 a.m. Offset = -0200 The local timezone offset is undefined if this Attribute is absent.</p>	*** Not Implemented ***
Contributing Equipment Sequence	(0018,A001)	3	Sequence of Items containing descriptive attributes of related equipment which has contributed to the acquisition, creation or modification of the composite instance. One or more Items may be included in this Sequence. See C.12.1.1.5 for further explanation.	*** Not Implemented ***
> Purpose of Reference Code Sequence	(0040,A170)	1	Describes the purpose for which the related equipment is being reference. Only a single Item shall be permitted in this sequence. See C.12.1.1.5 for further explanation.	*** Not Implemented ***
>> Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	*** Not Implemented ***
>> Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
>> Coding Scheme Version	(0008,0103)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	*** Not Implemented ***
>> Code Meaning	(0008,0104)	1C	See Section 8.3. Required if a sequence item is present.	*** Not Implemented ***
> Manufacturer	(0008,0070)	1	Manufacturer of the equipment that contributed to the composite instance.	*** Not Implemented **
> Institution Name	(0008,0080)	3	Institution where the equipment that contributed to the composite instance is located.	*** Not Implemented **
> Institution Address	(0008,0081)	3	Address of the institution where the equipment that contributed to the composite instance is located.	*** Not Implemented ***
> Station Name	(0008,1010)	3	User defined name identifying the machine that contributed to the composite instance.	*** Not Implemented **
> Institutional Department Name	(0008,1040)	3	Department in the institution where the equipment that contributed to the composite instance is located.	*** Not Implemented **
> Manufacturer's Model Name	(0008,1090)	3	Manufacturer's model name of the equipment that contributed to the composite instance.	*** Not Implemented ***
> Device Serial Number	(0018,1000)	3	Manufacturer's serial number of the equipment that contributed to the composite instance.	*** Not Implemented ***
> Software Version(s)	(0018,1020)	3	Manufacturer's designation of the software version of the equipment that contributed to the composite instance.	*** Not Implemented ***
> Spatial Resolution	(0018,1050)	3	The inherent limiting resolution in mm of the acquisition equipment for high contrast objects for the data gathering and reconstruction technique chosen. If variable across the images of the series, the value at the image center.	*** Not Implemented ***
> Date of Last Calibration	(0018,1200)	3	Date when the image acquisition device calibration was last changed in any way. Multiple entries may be used for additional calibrations at other times. See C.7.5.1.1.1 for further explanation.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
> Time of Last Calibration	(0018,1201)	3	Time when the image acquisition device calibration was last changed in any way. Multiple entries may be used. See C.7.5.1.1.1 for further explanation.	*** Not Implemented ***
> Contribution Date Time	(0018,A002)	3	The Date & Time when the equipment contributed to the composite instance.	*** Not Implemented ***
> Contribution Description	(0018,A003)	3	Description of the contribution the equipment made to the composite instance.	*** Not Implemented ***
Instance Number	(0020,0013)	3	A number that identifies this Composite object instance.	*** Not Implemented ***
SOP Instance Status	(0100,0410)	3	A flag that indicates the storage status of the SOP Instance. Not Specified (NS) implies that this SOP Instance has no special storage status, and hence no special actions need be taken. Original (OR) implies that this is the primary SOP instance for the purpose of storage, but that it has not yet been authorized for diagnostic use. Authorized Original (AO) implies that this is the primary SOP instance for the purpose of storage, which has been authorized for diagnostic use. Any copies of an Authorized Original should be given the status of Authorized Copy. Authorized Copy (AC) implies that this is a copy of an Authorized Original SOP Instance. Enumerated Values: NS, OR, AO, AC Note: Proper use of these flags is specified in Security Profiles. Implementations that do not conform to such Security Profiles may not necessarily handle these flags properly.	*** Not Implemented ***
SOP Authorization Date and Time	(0100,0420)	3	The date and time when the SOP Instance Status (0100,0410) was set to AO.	*** Not Implemented ***
SOP Authorization Comment	(0100,0424)	3	Any comments associated with the setting of the SOP Instance Status (0100,0410) to AO.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
Authorization Equipment Certification Number	(0100,0426)	3	The certification number issued to the Application Entity that set the SOP Instance Status (0100,0410) to AO.	*** Not Implemented ***
MAC Parameters Sequence	(4FFE,0001)	3	A sequence of one or more items that describe the parameters used to calculate a MAC for use in Digital Signatures.	*** Not Implemented ***
> MAC ID Number	(0400,0005)	1	A number used to identify this MAC Parameters Sequence item.	*** Not Implemented ***
> MAC Calculation Transfer Syntax UID	(0400,0010)	1	The Transfer Syntax UID used to encode the values of the Data Elements included in the MAC calculation. Only Transfer Syntaxes that explicitly include the VR and use Little Endian encoding shall be used. Notes: Certain Transfer Syntaxes, particularly those that are used with compressed data, allow the fragmentation of the pixel data to change. If such fragmentation changes, Digital Signatures generated with such Transfer Syntaxes could become invalid.	*** Not Implemented ***
> MAC Algorithm	(0400,0015)	1	The algorithm used in generating the MAC to be encrypted to form the Digital Signature. Defined Terms: RIPEMD160 MD5 SHA1. Note: Digital Signature Security Profiles (see PS 3.15) may require the use of a restricted subset of these terms.	*** Not Implemented ***
> Data Elements Signed	(0400,0020)	1	A list of Data Element Tags in the order they appear in the Data Set which identify the Data Elements used in creating the MAC for the Digital Signature. See Section C.12.1.1.3.1.1.	*** Not Implemented ***
Digital Signatures Sequence	(FFFA,FFFA)	3	Sequence holding one or more Digital Signatures.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
> MAC ID Number	(0400,0005)	1	A number used to identify which MAC Parameters Sequence item was used in the calculation of this Digital Signature.	*** Not Implemented ***
> Digital Signature UID	(0400,0100)	1	A UID that can be used to uniquely reference this signature.	*** Not Implemented ***
> Digital Signature DateTime	(0400,0105)	1	The date and time the Digital Signature was created. The time shall include an offset (i.e., time zone indication) from Coordinated Universal Time. Note: This is not a certified timestamp, and hence is not completely verifiable. An application can compare this date and time with those of other signatures and the validity date of the certificate to gain confidence in the veracity of this date and time.	*** Not Implemented ***
> Certificate Type	(0400,0110)	1	The type of certificate used in (0400,0115). Defined Term: X509_1993_SIG Note: Digital Signature Security Profiles (see PS 3.15) may require the use of a restricted subset of these terms.	*** Not Implemented ***
> Certificate of Signer	(0400,0115)	1	A certificate that holds the identity of the entity producing this Digital Signature, that entity's public key or key identifier, and the algorithm and associated parameters with which that public key is to be used. Algorithms allowed are specified in Digital Signature Security Profiles (see PS 3.15). Notes: 1. As technology advances, additional encryption algorithms may be allowed in future versions. Implementations should take this possibility into account. 2. When symmetric encryption is used, the certificate merely identifies which key was used by which entity, but not the actual key itself. Some other means (e.g., a trusted third party) must be used to obtain the key.	*** Not Implemented ***
> Signature	(0400,0120)	1	The MAC generated as described in Section 12.2.1.1 and encrypted using the algorithm, parameters, and private key associated with the Certificate of the Signer (0400,0115). See Section C.12.1.1.3.1.2.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
> Certified Timestamp Type	(0400,0305)	1C	The type of certified timestamp used in the Certified Timestamp (0400,0310) Attribute. Required if Certified Timestamp (0400,0310) is present. Defined Terms: CMS_TSP û Internet X.509 Public Key Infrastructure Time Stamp Protocol Note: Digital Signature Security Profiles (see PS 3.15) may require the use of a restricted subset of these terms.	*** Not Implemented ***
> Certified Timestamp	(0400,0310)	3	A certified timestamp of the Digital Signature (0400,0120) Attribute Value, which shall be obtained when the Digital Signature is created. See Section C.12.1.1.3.1.3.	*** Not Implemented ***
Encrypted Attributes Sequence	(0400,0500)	1C	Sequence of Items containing encrypted DICOM data. One or more Items shall be present. Required if application level confidentiality is needed and certain recipients are allowed to decrypt all or portions of the Encrypted Attributes Data Set. See C.12.1.1.4.1.	*** Not Implemented ***
> Encrypted Content Transfer Syntax UID	(0400,0510)	1	Transfer Syntax used to encode the encrypted content. Only Transfer Syntaxes that explicitly include the VR and use Little Endian encoding shall be used.	*** Not Implemented ***
> Encrypted Content	(0400,0520)	1	Encrypted data. See C.12.1.1.4.2.	*** Not Implemented ***
HL7 Structured Document Reference Sequence	(0040,A390)	1C	Sequence of items defining mapping and/or access mechanism for HL7 Structured Documents referenced from the current SOP Instance. One or more Items may be included in this sequence. See C.12.1.1.6. Required if HL7 Structured Documents are referenced within the Instance.	*** Not Implemented ***
> Referenced SOP Class UID	(0008,1150)	1	Unique identifier for the class of HL7 Structured Document.	*** Not Implemented ***
> Referenced SOP Instance UID	(0008,1155)	1	Unique identifier for the HL7 Structured Document as used in DICOM instance references.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
> HL7 Instance Identifier	(0040,E001)	1	Instance Identifier of the referenced HL7 Structured Document, encoded as a UID (OID or UUID), concatenated with a caret ("^") and Extension value (if Extension is present in Instance Identifier).	*** Not Implemented ***
> Retrieve URI	(0040,E010)	3	Retrieval access path to HL7 Structured Document. Includes fully specified scheme, authority, path, and query in accordance with RFC 2396	*** Not Implemented ***

A.2.6 Patient Relationship – C.2.1

Attribute Name	Tag	T	Description	Handling
Referenced Study Sequence	(0008,1110)	3	Uniquely identifies the Study SOP Instances associated with the Patient SOP Instance. One or more Items may be included in this Sequence.	*** Not Implemented ***
> Referenced SOP Class UID	(0008,1150)	1	Unique identifier for the class of HL7 Structured Document.	
> Referenced SOP Instance UID	(0008,1155)	1	Unique identifier for the HL7 Structured Document as used in DICOM instance references.	
Referenced Visit Sequence	(0008,1125)	3	Uniquely identifies the Visit SOP Instances associated with this Patient SOP Instance. One or more Items may be included in this Sequence.	*** Not Implemented ***
> Referenced SOP Class UID	(0008,1150)	1	Unique identifier for the class of HL7 Structured Document.	
> Referenced SOP Instance UID	(0008,1155)	1	Unique identifier for the HL7 Structured Document as used in DICOM instance references.	
Referenced Patient Alias Sequence	(0038,0004)	3	Uniquely identifies any Patient SOP Instances that also describe this patient. These SOP Instances are aliases. Zero or more Items may be included in this Sequence.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
> Referenced SOP Class UID	(0008,1150)	1	Unique identifier for the class of HL7 Structured Document.	
> Referenced SOP Instance UID	(0008,1155)	1	Unique identifier for the HL7 Structured Document as used in DICOM instance references.	

A.2.7 Patient Identification – C.2.2

Attribute Name	Tag	T	Description	Handling
Patient's Name	(0010,0010)		Patient's full name	Patient First Name, Last Name, Middle Name, Honorific, Prefix
Patient ID	(0010,0020)		Primary hospital identification number or code for the patient.	ID1
Issuer of Patient ID	(0010,0021)		Identifier of the Assigning Authority (system, organization, agency, or department) that issued the Patient ID. Note: Issuer of Patient ID (0010,0021) is equivalent to HL7 v2 PID-3 component 4.	Patient Id Issuer
Other Patient IDs	(0010,1000)		Other identification numbers or codes used to identify the patient.	ID2
Other Patient IDs Sequence	(0010,1002)		A sequence of identification numbers or codes used to identify the patient, which may or may not be human readable, and may or may not have been obtained from an implanted or attached device such as an RFID or barcode.	
>Patient ID	(0010,0020)		An identification number or code used to identify the patient	Patient ID2 Patient Universal ID
>Issuer of Patient ID	(0010,0021)		Identifier of the Assigning Authority that issued the Patient ID.	Patient Id Issuer
>Type of Patient ID	(0010,0022)		The type of identifier in this item. Defined Terms: TEXT RFID BARCODE Note: The identifier is coded as a string regardless of the type, not as a binary value.	TEXT

Attribute Name	Tag	T	Description	Handling
Other Patient Names	(0010,1001)		Other names used to identify the patient.	*** Not Implemented ***
Patient's Birth Name	(0010,1005)		Patient's birth name.	Maiden Name
Patient's Mother's Birth Name	(0010,1060)		Birth name of patient's mother.	Mother's Maiden Name
Medical Record Locator	(0010,1090)		An identifier used to find the patient's existing medical record (e.g. film jacket).	*** Not Implemented ***

A.2.8 Patient Demographic – C.2.3

Attribute Name	Tag	T	Description	Handling
Patient's Age	(0010,1010)		Age of the Patient.	*** Not Implemented ***
Occupation	(0010,2180)		Occupation of the Patient.	*** Not Implemented ***
Confidentiality Constraint on Patient Data Description	(0040,3001)		Special indication to the modality operator about confidentiality of patient information (e.g., that he should not use the patients name where other patients are present).	*** Not Implemented ***
Patient's Birth Date	(0010,0030)		Date of birth of the named patient	Birth Date
Patient's Birth Time	(0010,0032)		Time of birth of the named patient	*** Not Implemented ***
Patient's Sex	(0010,0040)		Sex of the named patient. Enumerated Values: M = male F = female O = other	Sex
Patient's Insurance Plan Code Sequence	(0010,0050)		A sequence that conveys the patient's insurance plan. Zero or more Items may be included in this Sequence.	*** Not Implemented ***
>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	

Attribute Name	Tag	T	Description	Handling
>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
Patient's Primary Language Code Sequence	(0010,0101)		The languages that can be used to communicate with the patient. Zero or more Items may be included in the sequence. The sequence items are ordered by preference (most preferred language to least preferred	*** Not Implemented ***
>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
> Patient's Primary Language Code Modifier Sequence	(0010,0102)		A modifier for a Patient's Primary Language. Can be used to specify a national language variant. Exactly one Item may be included in the sequence.	
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
Patient's Size	(0010,1020)		Patient's height or length in meters	*** Not Implemented ***
Patient's Weight	(0010,1030)		Weight of the patient in kilograms	*** Not Implemented ***
Patient's Address	(0010,1040)		Legal address of the named patient	*** Not Implemented ***
Military Rank	(0010,1080)		Military rank of patient	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
Branch of Service	(0010,1081)		Branch of the military. The country allegiance may also be included (e.g. U.S. Army).	*** Not Implemented ***
Country of Residence	(0010,2150)		Country in which patient currently resides	*** Not Implemented ***
Region of Residence	(0010,2152)		Region within patient's country of residence	*** Not Implemented ***
Patient's Telephone Numbers	(0010,2154)		Telephone numbers at which the patient can be reached	*** Not Implemented ***
Ethnic Group	(0010,2160)		Ethnic group or race of patient	*** Not Implemented ***
Patient's Religious Preference	(0010,21F0)		The religious preference of the patient	*** Not Implemented ***
Patient Comments	(0010,4000)		User-defined comments about the patient	*** Not Implemented ***
Responsible Person	(0010,2297)		Name of person with medical decision making authority for the patient.	*** Not Implemented ***
Responsible Person Role	(0010,2298)		Relationship of Responsible Person to the patient. Defined Terms: OWNER	*** Not Implemented ***
Responsible Organization	(0010,2299)		Name of organization with medical decision making authority for the patient.	*** Not Implemented ***
Patient Species Description	(0010,2201)		The species of the patient.	*** Not Implemented ***
Patient Species Code Sequence	(0010,2202)		The species of the patient.	*** Not Implemented ***
>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	

Attribute Name	Tag	T	Description	Handling
Patient Breed Description	(0010,2292)		The breed of the patient.	*** Not Implemented ***
Patient Breed Code Sequence	(0010,2293)		The breed of the patient.	*** Not Implemented ***
>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
Breed Registration Sequence	(0010,2294)		Information identifying an animal within a breed registry.	*** Not Implemented ***
>Breed Registration Number	(0010,2295)		Identification number of a veterinary patient within the registry.	
>Breed Registry Code Sequence	(0010,2296)		Identification of the organization with which an animal is registered.	
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	

A.2.9 Patient Medical – C.2.4

Attribute Name	Tag	T	Description	Handling
Medical Alerts	(0010,2000)		Conditions to which medical staff should be alerted (e.g. contagious condition, drug allergies, etc.)	Patient Medical Alerts

Attribute Name	Tag	T	Description	Handling
Allergies	(0010,2110)		Description of prior reaction to contrast agents, or other patient allergies or adverse reactions.	*** Not Implemented ***
Smoking Status	(0010,21A0)		Indicates whether patient smokes. Enumerated Values: YES NO UNKNOWN	*** Not Implemented ***
Additional Patient History	(0010,21B0)		Additional information about the patient's medical history	*** Not Implemented ***
Pregnancy Status	(0010,21C0)		Describes pregnancy state of patient. Enumerated Values: 0001 = not pregnant 0002 = possibly pregnant 0003 = definitely pregnant 0004 = unknown	*** Not Implemented ***
Last Menstrual Date	(0010,21D0)		Date of onset of last menstrual period	*** Not Implemented ***
Patient's Sex Neutered	(0010,2203)		Whether or not a procedure has been performed in an effort to render the patient sterile. Enumerated value: ALTERED = Altered/Neutered UNALTERED = Unaltered/intact	*** Not Implemented ***
Special Needs	(0038,0050)		Medical and social needs (e.g. wheelchair, oxygen, translator, etc.)	Patient Special Needs
Patient State	(0038,0500)		Description of patient state (comatose, disoriented, vision impaired, etc.)	*** Not Implemented ***
Pertinent Documents Sequence	(0038,0100)		List of Documents (e.g., SR, or CDA) that contain information considered pertinent for the patient medical condition. Zero or more Items may be included in this sequence.	*** Not Implemented ***
> Referenced SOP Class UID	(0008,1150)	1	Unique identifier for the class of HL7 Structured Document.	
> Referenced SOP Instance UID	(0008,1155)	1	Unique identifier for the HL7 Structured Document as used in DICOM instance references.	
>Purpose of Reference Code Sequence	(0040,A170)		Describes the purpose for which the document reference is made. Zero or more Items may be present.	
>>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	

Attribute Name	Tag	T	Description	Handling
>>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	
>>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
>Document Title	(0042,0010)		Title of the referenced document.	
Patient Clinical Trial Participation Sequence	(0038,0502)		Sequence of identifiers for clinical trials in which the patient participates. Zero or more Items may be included in this sequence.	*** Not Implemented ***
>Clinical Trial Sponsor Name	(0012,0010)		The name of the clinical trial sponsor, responsible for conducting the clinical trial and for defining the Clinical Trial Protocol.	
>Clinical Trial Protocol ID	(0012,0020)		Identifier for the noted protocol, used by the Clinical Trial Sponsor to uniquely identify the investigational protocol.	
>Clinical Trial Protocol Name	(0012,0021)		The name or title of the clinical trial protocol.	
>Clinical Trial Site ID	(0012,0030)		The identifier, issued by the Clinical Trial Sponsor, of the site responsible for submitting clinical trial data.	
>Clinical Trial Site Name	(0012,0031)		Name of the site responsible for submitting clinical trial data.	
>Clinical Trial Subject ID	(0012,0040)		The assigned identifier for the patient as a clinical trial subject.	
>Clinical Trial Subject Reading ID	(0012,0042)		Identifies the patient as a clinical trial subject for blinded evaluations.	

A.2.10 Visit Relationship – C.3.1

Attribute Name	Tag	T	Description	Handling
Referenced Study Sequence	(0008,1110)		Uniquely identifies the Study SOP Instances associated with the Visit SOP Instance. One or more Items may be included in this Sequence.	*** Not Implemented ***
> Referenced SOP Class UID	(0008,1150)	1	Unique identifier for the class of HL7 Structured Document.	
> Referenced SOP Instance UID	(0008,1155)	1	Unique identifier for the HL7 Structured Document as used in DICOM instance references.	
Referenced Patient Sequence	(0008,1120)		Uniquely identifies the Patient SOP Instance that relates to the Visit SOP Instance. Only a single Item shall be permitted in this Sequence.	*** Not Implemented ***
> Referenced SOP Class UID	(0008,1150)	1	Unique identifier for the class of HL7 Structured Document.	
> Referenced SOP Instance UID	(0008,1155)	1	Unique identifier for the HL7 Structured Document as used in DICOM instance references.	

A.2.11 Visit Identification – C.3.2

Attribute Name	Tag	T	Description	Handling
Institution Name	(0008,0080)		Institution where the equipment is located	*** Not Implemented ***
Institution Address	(0008,0081)		Mailing Address of the institution where the equipment is located	*** Not Implemented ***
Institution Code Sequence	(0008,0082)		A sequence that conveys the healthcare facility identification. Only a single Item shall be permitted in this Sequence.	*** Not Implemented ***
>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	
>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	

Attribute Name	Tag	T	Description	Handling
>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	
Admission ID	(0038,0010)		Identification number of the visit as assigned by the healthcare provider	*** Not Implemented ***
Issuer of Admission ID	(0038,0011)		Name of healthcare provider which issued the Admission ID	*** Not Implemented ***
Service Episode ID	(0038,0060)		Identifier of the Service Episode as assigned by the healthcare provider	*** Not Implemented ***
Issuer of Service Episode ID	(0038,0061)		Name of healthcare provider that issued the Service Episode ID	*** Not Implemented ***
Service Episode Description	(0038,0062)		Description of the type of service episode.	*** Not Implemented ***

A.2.12 Visit Status – C.3.3

Attribute Name	Tag	T	Description	Handling
Visit Status ID	(0038,0008)		Identifies the state of the visit. Defined Terms: CREATED = Created but not yet scheduled SCHEDULED = Scheduled but not yet admitted ADMITTED = Patient admitted to institution DISCHARGED = Patient Discharged	*** Not Implemented ***
Current Patient Location	(0038,0300)		Describes the current known location of the patient	*** Not Implemented ***
Patient's Institution Residence	(0038,0400)		Primary location where patient resides (ward, floor, room, etc. or outpatient)	*** Not Implemented ***
Visit Comments	(0038,4000)		User-defined comments about the visit	*** Not Implemented ***

A.2.13 Visit Admission – C.3.4

Attribute Name	Tag	T	Description	Handling
Referring Physician's Name	(0008,0090)	3	Patient's primary referring physician for this visit	*** Not Implemented ***
Referring Physician's Address	(0008,0092)	3	Referring physician's address	*** Not Implemented ***
Referring Physician's Telephone Numbers	(0008,0094)	3	Referring physician's telephone numbers	*** Not Implemented ***
Referring Physician Identification Sequence	(0008,0096)	3	Identification of the patient's referring physician. Only a single item shall be permitted in this sequence.	*** Not Implemented ***
<i>>Include 'Person Identification Macro' Table 10-1</i>				
Admitting Diagnoses Description	(0008,1080)	3	Description of admitting diagnosis (diagnoses).	Diagnosis Description of Last Diagnosis
Admitting Diagnoses Code Sequence	(0008,1084)	3	A sequence that conveys the admitting diagnosis (diagnoses). One or more Items may be included in this Sequence.	Patient Diagnosis
>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Diagnosis Code
>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Code Type
>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Clinical Description (reduced to 64 characters)
Route of Admissions	(0038,0016)	3	Mode of admission: emergency, normal	*** Not Implemented ***
Admitting Date	(0038,0020)	3	Date patient visit began	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
Admitting Time	(0038,0021)	3	Time patient visit began	*** Not Implemented ***

A.2.14 Scheduled Procedure Step – C.4.10

Attribute Name	Tag	T	Description	Handling
Scheduled Procedure Step Sequence	(0040,0100)		One or more Scheduled Procedure Steps for one Requested Procedure.	
>Scheduled Station AE Title	(0040,0001)		The AE title of the modality on which the Scheduled Procedure Step is scheduled to be performed.	Machine AE Title
>Scheduled Station Name	(0040,0010)		An institution defined name for the modality on which the Scheduled Procedure Step is scheduled to be performed.	Machine Id
>Scheduled Procedure Step Location	(0040,0011)		The location at which the Procedure Step is scheduled to be performed.	Venue Id
>Scheduled Procedure Step Start Date	(0040,0002)		Date on which the Scheduled Procedure Step is scheduled to start.	Appointment Date
>Scheduled Procedure Step Start Time	(0040,0003)		Time at which the Scheduled Procedure Step is scheduled to start.	Appointment Start Time
>Scheduled Procedure Step End Date	(0040,0004)		Date on which the Scheduled Procedure Step is scheduled to end.	Calculated based on Appointment Date and Duration
>Scheduled Procedure Step End Time	(0040,0005)		Time at which the Scheduled Procedure Step is scheduled to end.	Appointment End Time
>Scheduled Performing Physician's Name	(0040,0006)		Name of the physician scheduled to administer the Scheduled Procedure Step.	Last Name, First Name, Middle Name, Honorific and Name Suffix of an Attendee of type Doctor

Attribute Name	Tag	T	Description	Handling
>Scheduled Performing Physician Identification Sequence	(0040,000B)		Identification of the physician scheduled to administer the Scheduled Procedure Step. Only a single item shall be permitted in this sequence.	*** Not Implemented ***
<i>>>Include 'Person Identification Macro' Table 10-1</i>				
>Scheduled Procedure Step Description	(0040,0007)		Institution-generated description or classification of the Scheduled Procedure Step to be performed. Note: The purpose of this attribute is to store a description or classification that is used at a local level (e.g., a hospital or a managed care network), and this description need not comply to an accepted standard.	*** Not Implemented ***
>Scheduled Protocol Code Sequence	(0040,0008)		Sequence describing the Scheduled Protocol following a specified coding scheme. This sequence contains one or more Items.	Procedure Code
>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Procedure Code
>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Code Scheme
>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Description
>>Protocol Context Sequence	(0040,0440)			*** Not Implemented ***
<i>>>>Include 'Content Item Macro' Table 10-2</i>				
>>> Content Item Modifier Sequence	(0040,0441)		Sequence that specifies modifiers for a Protocol Context Content Item. One or more items may be included in this sequence. See Section C.4.10.1.	*** Not Implemented ***
<i>>>>>Include 'Content Item Macro' Table 10-2</i>				

Attribute Name	Tag	T	Description	Handling
>Scheduled Procedure Step ID	(0040,0009)		Identifier that identifies the Scheduled Procedure Step.	Created first time the SPS is queried.
>Scheduled Procedure Step Status	(0040,0020)		A real world condition that may affect the selection of the Scheduled Procedure Step. Defined Terms: SCHEDULED – Procedure Step scheduled ARRIVED – patient is available for the Scheduled Procedure Step READY – all patient and other necessary preparation for this step has been completed STARTED – at least one Performed Procedure Step has been created that references this Scheduled Procedure Step	Appointment Status: Open ->SCHEDULED Open and Checked in -> ARRIVED All other status -> STARTED
>Comments on the Scheduled Procedure Step	(0040,0400)		User-defined comments on the Scheduled Procedure Step. Note: The Comments attribute is intended to transmit non-structured information, which can be displayed to the operator of the Modality.	Appointment Note
>Modality	(0008,0060)		Source equipment for the image. See Section C.7.3.1.1.1 for Defined Terms.	Modality configured for the Machine / Procedure Code pair
>Requested Contrast Agent	(0032,1070)		Contrast agent requested for use in the Scheduled Procedure Step.	Appointment Contrast Agent
>Pre-Medication	(0040,0012)		Medication to be administered at the beginning of the Scheduled Procedure Step, e.g. Nuclear Medicine radiopharmaceutical.	Appointment Pre-Medication

A.2.15 Requested Procedure – C.4.11

Attribute Name	Tag	T	Description	Handling
Requested Procedure ID	(0040,1001)		Identifier that identifies the Requested Procedure in the Imaging Service Request.	Activity Instance Id (not visible in any UI)

Attribute Name	Tag	T	Description	Handling
Reason for the Requested Procedure	(0040,1002)		Reason for requesting this imaging procedure. Note: This reason is more specific to the requested procedure than the reason mentioned in the imaging service request (0040,2001).	*** Not Implemented ***
Requested Procedure Comments	(0040,1400)		User-defined comments on the Requested Procedure.	*** Not Implemented ***
Reason for Requested Procedure Code Sequence	(0040,100A)		Coded Reason for requesting this procedure. One or more sequence items may be present.	*** Not Implemented ***
>Include 'Code Sequence Macro' Table 8.8-1			No Baseline Context ID is defined.	*** Not Implemented ***
Requested Procedure Code Sequence	(0032,1064)		A sequence that conveys the Requested Procedure of one Procedure Type.	Activity
>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Code Value
>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	Code scheme
>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	Activity Name
Study Instance UID	(0020,000D)		Unique identifier to be used to identify the Study	Study UID
Study Date	(0008,0020)		Date the Study started, if any previous procedure steps within the same study have already been performed.	*** Not Implemented ***
Study Time	(0008,0030)		Time the Study started, if any previous procedure steps within the same study have already been performed.	*** Not Implemented ***
Referenced Study Sequence	(0008,1110)		Uniquely identifies the Study SOP Instances associated with this SOP Instance.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
>Include 'SOP Instance Reference Macro' Table 10-11				*** Not Implemented ***
Requested Procedure Description	(0032,1060)		Institution-generated administrative description or classification of Requested Procedure	Activity Name
Requested Procedure Priority	(0040,1003)		Requested Procedure Type Urgency. Defined Terms: STAT, HIGH, ROUTINE, MEDIUM, LOW	Appointment Priority
Patient Transport Arrangements	(0040,1004)		Mode of transportation of the patient to the location of examination.	Patient Transportation
Requested Procedure Location	(0040,1005)		Physical location at which the Requested Procedure is to be performed.	*** Not Implemented ***
Confidentiality Code	(0040,1008)		Confidentiality Constraints on the Requested Procedure by the party filling the order.	*** Not Implemented ***
Reporting Priority	(0040,1009)		Requested Reporting Priority. Defined Terms: HIGH, ROUTINE, MEDIUM, LOW	*** Not Implemented ***
Names of Intended Recipients of Results	(0040,1010)		Names of the physicians, who are intended recipients of results.	*** Not Implemented ***
Intended Recipients of Results Identification Sequence	(0040,1011)		Identification of the physicians who are intended recipients of results. One or more items shall be included in this sequence. If more than one item, the number and order shall correspond to the value of Names of Intended Recipients of Results (0040,1010), if present.	*** Not Implemented ***
>>Include 'Person Identification Macro' Table 10-1				*** Not Implemented ***

A.2.16 Imaging Service Request – C.4.12

Attribute Name	Tag	T	Description	Handling
Imaging Service Request Comments	(0040,2400)		User-defined comments on the Imaging Service Request. Note: The Comments attribute is intended to transmit non-structured information, which can be displayed to the operator of the equipment (e.g. Modality).	*** Not Implemented ***
Requesting Physician	(0032,1032)		Name of the physician who requested the Imaging Service Request.	*** Not Implemented ***
Requesting Physician Identification Sequence	(0032,1031)		Identification of the physician who requested the Imaging Service Request. Only a single item shall be permitted in this sequence.	*** Not Implemented ***
>Include 'Person Identification Macro' Table 10-1				*** Not Implemented ***
Referring Physician's Name	(0008,0090)		Name of the patient's referring physician for this Imaging Service Request.	*** Not Implemented ***
Referring Physician Identification Sequence	(0008,0096)		Identification of the patient's referring physician. Only a single item shall be permitted in this sequence.	*** Not Implemented ***
>Include 'Person Identification Macro' Table 10-1				*** Not Implemented ***
Requesting Service	(0032,1033)		Institutional department where the request initiated.	*** Not Implemented ***
Accession Number	(0008,0050)		A departmental IS generated number that identifies the order for the Imaging Service Request.	Study Accession Number
Issue Date of Imaging Service Request	(0040,2004)		Date on which the Imaging Service Request was issued by the requester.	*** Not Implemented ***
Issue Time of Imaging Service Request	(0040,2005)		Time at which the Imaging Service Request was issued by the requester.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
Placer Order Number / Imaging Service Request	(0040,2016)		The order number assigned to the Imaging Service Request by the party placing the order.	Appointment Placer Order Number (no UI)
Filler Order Number / Imaging Service Request	(0040,2017)		The order number assigned to the Imaging Service Request by the party filling the order.	Appointment Filler Order Number (no UI)
Order entered by ...	(0040,2008)		The person who entered the Imaging Service Request into an Information System.	*** Not Implemented ***
Order Enterer's Location	(0040,2009)		The location at which the Imaging Service Request was entered.	*** Not Implemented ***
Order Callback Phone Number	(0040,2010)		Telephone Number at which additional information can be retrieved.	*** Not Implemented ***
Admission ID	(0038,0010)		Identification number of the visit as assigned by the healthcare provider	*** Not Implemented ***
Issuer of Admission ID	(0038,0011)		Name of healthcare provider that issued the Admission ID	*** Not Implemented ***

A.2.17 Performed Procedure Step Relationship – C.4.13

Attribute Name	Tag	T	Description	Handling
Patient's Name	(0010,0010)		Patient's full legal name.	Patient First Name, Last Name, Middle Name
Patient ID	(0010,0020)		Primary hospital identification number or code for the patient.	Patient ID
Issuer of Patient ID	(0010,0021)		Identifier of the Assigning Authority that issued the Patient ID.	*** Not Implemented ***
Patient's Birth Date	(0010,0030)		Date of birth of the named patient	Patient Birth Date
Patient's Sex	(0010,0040)		Sex of the named Patient. Enumerated Values: M = male F = female O = other	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
Referenced Patient Sequence	(0008,1120)		Uniquely identifies the Patient SOP Instance.	*** Not Implemented ***
>Include 'SOP Instance Reference Macro' Table 10-11				
Service Episode ID	(0038,0060)		Identifier of the Service Episode as assigned by the healthcare provider	*** Not Implemented ***
Issuer of Service Episode ID	(0038,0061)		Name of healthcare provider that issued the Service Episode ID	*** Not Implemented ***
Service Episode Description	(0038,0062)		Description of the type of service episode.	*** Not Implemented ***
Scheduled Step Attributes Sequence	(0040,0270)		Sequence containing attributes that are related to the scheduling of the Procedure Step. The Sequence may have one or more Items.	*** Not Implemented ***
>Study Instance UID	(0020,000D)		Unique identifier for the Study.	Used to find Appointment
>Referenced Study Sequence	(0008,1110)		Uniquely identifies the Study SOP Instance associated with this Scheduled Procedure Step. This Sequence shall have only one Item.	*** Not Implemented ***
>>Include 'SOP Instance Reference Macro' Table 10-11				
>Accession Number	(0008,0050)		A departmental IS generated number that identifies the order for the Study.	*** Not Implemented ***
>Placer Order Number/Imaging Service Request	(0040,2016)		The order number assigned to the Imaging Service Request by the party placing the order.	*** Not Implemented ***
>Filler Order Number/Imaging Service Request	(0040,2017)		The order number assigned to the Imaging Service Request by the party filling the order.	*** Not Implemented ***
>Requested Procedure ID	(0040,1001)		Identifier of the related Requested Procedure.	Used to find Appointment

Attribute Name	Tag	T	Description	Handling
>Requested Procedure Description	(0032,1060)		Institution-generated administrative description or classification of Requested Procedure.	*** Not Implemented ***
>Requested Procedure Code Sequence	(0032,1064)		A sequence that conveys the Procedure Type of the requested procedure. The Requested Procedure Code Sequence shall contain only a single item.	*** Not Implemented ***
>>Include 'Code Sequence Macro' Table 8.8-1	No Baseline Context ID is defined.			*** Not Implemented ***
>Scheduled Procedure Step ID	(0040,0009)		Identifier of the related Scheduled Procedure Step.	*** Not Implemented ***
>Scheduled Procedure Step Description	(0040,0007)		Institution-generated description or classification of the Scheduled Procedure Step to be performed.	*** Not Implemented ***
>Scheduled Protocol Code Sequence	(0040,0008)		Sequence describing the Scheduled Protocol following a specific coding scheme. This sequence contains one or more Items.	*** Not Implemented ***
>>Include 'Code Sequence Macro' Table 8.8-1	No Baseline Context ID is defined.			*** Not Implemented ***
>>Protocol Context Sequence	(0040,0440)		Sequence that specifies the context for the Scheduled Protocol Code Sequence Item. One or more items may be included in this sequence. See Section C.4.10.1.	*** Not Implemented ***
>>>Include 'Content Item Macro' Table 10-2	No Baseline Template is defined.			*** Not Implemented ***
>>> Content Item Modifier Sequence	(0040,0441)		Sequence that specifies modifiers for a Protocol Context Content Item. One or more items may be included in this sequence. See Section C.4.10.1.	*** Not Implemented ***
>>>>Include 'Content Item Macro' Table 10-2	No Baseline Template is defined.			*** Not Implemented ***

A.2.18 Performed Procedure Step Information – C.4.14

Attribute Name	Tag	T	Description	Handling
Performed Station AE Title	(0040,0241)		AE title of the modality on which the Performed Procedure Step was performed.	Machine AE Title
Performed Station Name	(0040,0242)		An institution defined name for the modality on which the Performed Procedure Step was performed.	
Performed Location	(0040,0243)		Description of the location at which the Performed Procedure Step was performed.	*** Not Implemented ***
Performed Procedure Step Start Date	(0040,0244)		Date on which the Performed Procedure Step started. Note: This value may be used to determine the earliest date to use as the Study Date (0008,0020) in composite instances and in updated Modality Scheduled Procedure Steps in order to allow Study level attributes to have consistent values if additional Procedure Steps are performed.	*** Not Implemented ***
Performed Procedure Step Start Time	(0040,0245)		Time at which the Performed Procedure Step started. Note: This value may be used to determine the earliest time to use as the Study Time (0008,0030) in composite instances and in updated Modality Scheduled Procedure Steps in order to allow Study level attributes to have consistent values if additional Procedure Steps are performed.	*** Not Implemented ***
Performed Procedure Step ID	(0040,0253)		User or equipment generated identifier of that part of a Procedure that has been carried out within this step.	*** Not Implemented ***
Performed Procedure Step End Date	(0040,0250)		Date on which the Performed Procedure Step ended.	*** Not Implemented ***
Performed Procedure Step End Time	(0040,0251)		Time at which the Performed Procedure Step ended.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
Performed Procedure Step Status	(0040,0252)		Contains the state of the Performed Procedure Step. Enumerated Values: IN PROGRESS = Started but not complete DISCONTINUED = Canceled or unsuccessfully terminated COMPLETED = Successfully completed	Appointment Status
Performed Procedure Step Description	(0040,0254)		Institution-generated description or classification of the Procedure Step that was performed.	*** Not Implemented ***
Comments on the Performed Procedure Step	(0040,0280)		User-defined comments on the Performed Procedure Step.	*** Not Implemented ***
Performed Procedure Type Description	(0040,0255)		A description of the type of procedure performed.	*** Not Implemented ***
Procedure Code Sequence	(0008,1032)		A sequence that conveys the (single) type of procedure performed.	*** Not Implemented ***
>Include 'Code Sequence Macro' Table 8.8-1	No Baseline Context ID is defined.			*** Not Implemented ***
Performed Procedure Step Discontinuation Reason Code Sequence	(0040,0281)		The reason the Performed Procedure Step Status (0040,0252) was set to DISCONTINUED.	*** Not Implemented ***
>Include 'Code Sequence Macro' Table 8.8-1			Defined Context ID is 9300.	*** Not Implemented ***

A.2.19 Image Acquisition Results – C.4.15

Attribute Name	Tag	T	Description	Handling
Modality	(0008,0060)		Type of equipment that originally acquired the data used to create the images associated with this Modality Performed Procedure Step. See C.7.3.1.1.1 for Defined Terms. Note: A Modality value in the created SOP Instances may be different from the MPPS Modality value. For example, multiple series may have been created during the MPPS (images, waveforms, softcopy presentation states and/or structured reports) with SOP Instances in different series having different modality values.	*** Not Implemented ***
Study ID	(0020,0010)		User or equipment generated Study Identifier.	*** Not Implemented ***
Performed Protocol Code Sequence	(0040,0260)		Sequence describing the Protocol performed for this Procedure Step. This sequence may have zero or more Items.	Assign Procedure Code to Appointment. Procedure Code must be known, and each Procedure Code will only be assigned once.
>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Used to find Procedure Code
>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	*** Not Used ***
>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	*** Not Used ***
>Protocol Context Sequence	(0040,0440)		Sequence that specifies the context for the Performed Protocol Code Sequence Item. One or more items may be included in this sequence. See Section C.4.10.1.	*** Not Implemented ***
>>Include 'Content Item Macro' Table 10-2			No Baseline Template is defined.	*** Not Implemented ***
>> Content Item Modifier Sequence	(0040,0441)		Sequence that specifies modifiers for a Protocol Context Content Item. One or more items may be included in this sequence. See Section C.4.10.1.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
>>>Include 'Content Item Macro' Table 10-2			No Baseline Template is defined.	*** Not Implemented ***
Performed Series Sequence	(0040,0340)		Attributes of the Series that comprise this Modality Performed Procedure Step. The Sequence may have zero or more Items.	*** Not Implemented ***
>Performing Physician's Name	(0008,1050)		Name of the physician(s) administering this Series.	*** Not Implemented ***
>Performing Physician Identification Sequence	(0008,1052)		Identification of the physician(s) administering the Series. One or more items shall be included in this sequence. If more than one Item, the number and order shall correspond to the value of Performing Physician's Name (0008,1050), if present.	*** Not Implemented ***
>>Include 'Person Identification Macro' Table 10-1				*** Not Implemented ***
>Operators' Name	(0008,1070)		Name(s) of the operator(s) who supporting this Series.	*** Not Implemented ***
>Operator Identification Sequence	(0008,1072)		Identification of the operator(s) supporting the Series. One or more items shall be included in this sequence. If more than one Item, the number and order shall correspond to the value of Operators' Name (0008,1070), if present.	*** Not Implemented ***
>>Include 'Person Identification Macro' Table 10-1				*** Not Implemented ***
>Protocol Name	(0018,1030)		User-defined description of the conditions under which the Series was performed. Note: This attribute conveys series-specific protocol identification and may or may not be identical to the one presented in the Performed Protocol Code Sequence (0040,0260).	*** Not Implemented ***
>Series Instance UID	(0020,000E)		Unique Identifier of the Series.	*** Not Implemented ***
>Series Description	(0008,103E)		User provided description of the Series	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
>Retrieve AE Title	(0008,0054)		Title of the DICOM Application Entity where the Images and other Composite SOP Instances in this Series may be retrieved on the network. Note: The duration for which this location remains valid is unspecified.	*** Not Implemented ***
>Archive Requested	(0040,A494)		The instances in this series are expected to be archived in the long term archive. Defined Terms: NO, YES	*** Not Implemented ***
>Referenced Image Sequence	(0008,1140)		A Sequence that provides reference to Composite SOP Instances created during the acquisition of the procedure step. The sequence may have zero or more Items. Note: The use of Referenced Image Sequence is historical, and in this context it allows the reference of any Composite SOP Instance.	*** Not Implemented ***
>>Include 'SOP Instance Reference Macro' Table 10-11				*** Not Implemented ***
>Referenced Non-Image Composite SOP Instance Sequence	(0040,0220)		Uniquely identifies instances, other than images, of any SOP Class that conforms to the DICOM Composite IOD Information Model, such as Waveforms, Presentation States or Structured Reports, created during the acquisition of the procedure step, and that are not referenced in Referenced Image Sequence (0008,1140). The sequence may have zero or more Items.	*** Not Implemented ***
>>Include 'SOP Instance Reference Macro' Table 10-11				*** Not Implemented ***

A.2.20 Radiation Dose – C.4.16

Attribute Name	Tag	T	Description	Handling
Anatomic Structure, Space or Region Sequence	(0008,2229)		Anatomic structure, space or region that has been exposed to ionizing radiation. The sequence may have zero or one Items.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
>Include 'Code Sequence Macro' Table 8.8-1			No Baseline Context ID is defined.	*** Not Implemented ***
Total Time of Fluoroscopy	(0040,0300)		Total duration of X-Ray exposure during fluoroscopy in seconds (pedal time) during this Performed Procedure Step.	*** Not Implemented ***
Total Number of Exposures	(0040,0301)		Total number of exposures made during this Performed Procedure Step. The number includes non-digital and digital exposures.	*** Not Implemented ***
Distance Source to Detector	(0018,1110)		Distance in mm from the source to detector center. Note: This value is traditionally referred to as Source Image Receptor Distance (SID).	*** Not Implemented ***
Distance Source to Entrance	(0040,0306)		Distance in mm from the source to the surface of the patient closest to the source during this Performed Procedure Step. Note: This may be an estimated value based on assumptions about the patient's body size and habitus.	*** Not Implemented ***
Entrance Dose	(0040,0302)		Average entrance dose value measured in dGy at the surface of the patient during this Performed Procedure Step. Note: This may be an estimated value based on assumptions about the patient's body size and habitus.	*** Not Implemented ***
Entrance Dose in mGy	(0040,8302)		Average entrance dose value measured in mGy at the surface of the patient during this Performed Procedure Step. Note: This may be an estimated value based on assumptions about the patient's body size and habitus.	*** Not Implemented ***
Exposed Area	(0040,0303)		Typical dimension of the exposed area at the detector plane. If Rectangular: row dimension followed by column; if Round: diameter. Measured in mm. Notes: 1. This may be an estimated value based on assumptions about the patient's body size and habitus. 2. This attribute is used in the X-Ray Acquisition Dose Module with units in cm (see Section C 8.7.8 Table C.8-33).	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
Image and Fluoroscopy Area Dose Product	(0018,115E)		Total area-dose-product to which the patient was exposed, accumulated over the complete Performed Procedure Step and measured in dGy*cm*cm, including fluoroscopy. Notes: 1. The sum of the area dose product of all images of a Series or a Study may not result in the total area dose product to which the patient was exposed. 2. This may be an estimated value based on assumptions about the patient's body size and habitus.	*** Not Implemented ***
Comments on Radiation Dose	(0040,0310)		User-defined comments on any special conditions related to radiation dose encountered during this Performed Procedure Step.	*** Not Implemented ***
Exposure Dose Sequence	(0040,030E)		Exposure Dose Sequence will contain Total Number of Exposures (0040,0301) items plus an item for each fluoroscopy episode not already counted as an exposure.	*** Not Implemented ***
>Radiation Mode	(0018,115A)		Specifies X-Ray radiation mode. Enumerated Values: CONTINUOUS PULSED	*** Not Implemented ***
>KVp	(0018,0060)		Peak kilo voltage output of the x-ray generator used. An average in the case of fluoroscopy (continuous radiation mode).	*** Not Implemented ***
>X-Ray Tube Current in μ A	(0018,8151)		X-Ray Tube Current in μ A. An average in the case of fluoroscopy (continuous radiation mode).	*** Not Implemented ***
>Exposure Time	(0018,1150)		Time of x-ray exposure or fluoroscopy in msec.	*** Not Implemented ***
>Filter Type	(0018,1160)		Type of filter(s) inserted into the X-Ray beam (e.g. wedges). See C.8.7.10 and C.8.15.3.9 (for enhanced CT) for Defined Terms.	*** Not Implemented ***
>Filter Material	(0018,7050)		The X-Ray absorbing material used in the filter. May be multi-valued. See C.8.7.10 and C.8.15.3.9 (for enhanced CT) for Defined Terms.	*** Not Implemented ***
>Comments on Radiation Dose	(0040,0310)		User-defined comments on any special conditions related to radiation dose encountered during during the episode described by this Exposure Dose Sequence Item.	*** Not Implemented ***

A.2.21 Billing and Material Management Codes – C.4.17

Attribute Name	Tag	T	Description	Handling
Billing Procedure Step Sequence	(0040,0320)		Contains billing codes for the Procedure Type performed within the Procedure Step. The sequence may have zero or more Items.	Assign Procedure Code to Appointment. Procedure Code must be known and each Procedure Code will only be assigned once.
>Code Value	(0008,0100)	1C	See Section 8.1. Required if a sequence item is present.	Used to find Procedure Code
>Coding Scheme Designator	(0008,0102)	1C	See Section 8.2. Required if a sequence item is present.	*** Not Used ***
>Code Meaning	(0008,0104)	1C	See Section 8.2. Required if a sequence item is present and the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously.	*** Not Used ***
Film Consumption Sequence	(0040,0321)		Information about the film consumption for this Performed Procedure Step. The sequence may have zero or more Items.	*** Not Implemented ***
>Number of Films	(2100,0170)		Number of films actually printed.	*** Not Implemented ***
>Medium Type	(2000,0030)		Type(s) of medium on which images were printed. For Defined Terms see Table C.13-1.	*** Not Implemented ***
>Film Size ID	(2010,0050)		Size(s) of film on which images were printed. For Defined Terms see Table C.13-3.	*** Not Implemented ***
Billing Supplies and Devices Sequence	(0040,0324)		Chemicals, supplies and devices for billing used in the Performed Procedure Step. The sequence may have one or more Items.	*** Not Implemented ***
>Billing Item Sequence	(0040,0296)		Code values of chemicals, supplies or devices required for billing. The sequence may have zero or one Items.	*** Not Implemented ***
>>Include 'Code Sequence Macro' Table 8.8-1			No Baseline Context ID is defined.	*** Not Implemented ***
>Quantity Sequence	(0040,0293)		Sequence containing the quantity of used chemicals or devices. The sequence may have zero or one Items.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
>>Quantity	(0040,0294)		Numerical quantity value.	*** Not Implemented ***
>>Measuring Units Sequence	(0040,0295)		Unit of measurement. The sequence may have zero or one Items.	*** Not Implemented ***
>>>Include 'Code Sequence Macro' Table 8.8-1			Baseline Context ID is 82.	*** Not Implemented ***

A.2.22 Patient- C.7.1.1

Attribute Name	Tag	T	Description	Handling
Patient's Name	(0010,0010)	2	Patient's full name.	Patient First Name, Last Name, Middle Name, Honorific, Prefix
Patient ID	(0010,0020)	2	Primary hospital identification number or code for the patient.	ID1
Issuer of Patient ID	(0010,0021)	3	Identifier of the Assigning Authority that issued the Patient ID.	Patient Id Issuer
Patient's Birth Date	(0010,0030)	2	Birth date of the patient.	Birth Date
Patient's Sex	(0010,0040)	2	Sex of the named patient. Enumerated Values: M = male F = female O = other	Sex
Referenced Patient Sequence	(0008,1120)	3	A sequence that provides reference to a Patient SOP Class/Instance pair. Only a single Item shall be permitted in this Sequence.	*** Not Implemented ***
>Include SOP Instance Reference Macro Table 10-11				
Patient's Birth Time	(0010,0032)	3	Birth time of the Patient.	*** Not Implemented ***
Other Patient IDs	(0010,1000)	3	Other identification numbers or codes used to identify the patient.	ID2

Attribute Name	Tag	T	Description	Handling
Other Patient IDs Sequence	(0010,1002)	3	A sequence of identification numbers or codes used to identify the patient, which may or may not be human readable, and may or may not have been obtained from an implanted or attached device such as an RFID or barcode. If present, shall contain one or more items.	
>Patient ID	(0010,0020)	1	An identification number or code used to identify the patient.	Patient ID2 Patient Universal ID
>Issuer of Patient ID	(0010,0021)	1	Identifier of the Assigning Authority that issued the Patient ID.	Patient Id Issuer
>Type of Patient ID	(0010,0022)	1	The type of identifier in this item. Defined Terms: TEXT RFID BARCODE Note: The identifier is coded as a string regardless of the type, not as a binary value.	TEXT
Other Patient Names	(0010,1001)	3	Other names used to identify the patient.	*** Not Implemented ***
Ethnic Group	(0010,2160)	3	Ethnic group or race of the patient.	
Patient Comments	(0010,4000)	3	User-defined additional information about the patient.	
Patient Species Description	(0010,2201)	1C	The species of the patient. Required if the patient is an animal and if Patient Species Code Sequence (0010,2202) is not present. May be present otherwise.	*** Not Implemented ***
Patient Species Code Sequence	(0010,2202)	1C	The species of the patient. One Item shall be present. Required if the patient is an animal and if Patient Species Description (0010,2201) is not present. May be present otherwise.	*** Not Implemented ***
>Include 'Code Sequence Macro' Table 8.8-1			Defined Context ID is 7454.	
Patient Breed Description	(0010,2292)	2C	The breed of the patient. Required if the patient is an animal and if Patient Breed Code Sequence (0010,2293) is empty. May be present otherwise.	*** Not Implemented ***
Patient Breed Code Sequence	(0010,2293)	2C	The breed of the patient. Zero or more Items shall be present. Required if the patient is an animal.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
>Include 'Code Sequence Macro' Table 8.8-1			Defined Context ID is 7480.	
Breed Registration Sequence	(0010,2294)	2C	Information identifying an animal within a breed registry. Zero or more Items shall be present. Required if the patient is an animal.	*** Not Implemented ***
>Breed Registration Number	(0010,2295)	1	Identification number of an animal within the registry.	*** Not Implemented ***
>Breed Registry Code Sequence	(0010,2296)	1	Identification of the organization with which an animal is registered. One Item shall be present.	*** Not Implemented ***
>>Include 'Code Sequence Macro' Table 8.8-1			Defined Context ID is 7481	
Responsible Person	(0010,2297)	2C	Name of person with medical decision making authority for the patient. Required if the patient is an animal. May be present otherwise.	*** Not Implemented ***
Responsible Person Role	(0010,2298)	1C	Relationship of Responsible Person to the patient. Defined Terms: OWNER Required if Responsible Person is present and has a value.	*** Not Implemented ***
Responsible Organization	(0010,2299)	2C	Name of organization with medical decision making authority for the patient. Required if patient is an animal. May be present otherwise.	*** Not Implemented ***
Patient Identity Removed	(0012,0062)	3	The true identity of the patient has been removed from the Attributes and the Pixel Data Enumerated Values: YES NO	*** Not Implemented ***
De-identification Method	(0012,0063)	1C	A description or label of the mechanism or method use to remove the patient's identity. May be multi-valued if successive de-identification steps have been performed. Note: This may be used to describe the extent or thoroughness of the deidentification, for example whether or not the de-identification is for a "Limited Data Set" (as per HIPAA Privacy Rule). Required if Patient Identity Removed (0012,0062) is present and has a value of YES and De-identification Method Code Sequence (0012,0064) is not present.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
De-identification Method Code Sequence	(0012,0064)	1C	A code describing the mechanism or method use to remove the patient's identity. One or more Items shall be present. Multiple items are used if successive de-identification steps have been performed Required if Patient Identity Removed (0012,0062) is present and has a value of YES and De-identification Method (0012,0063) is not present.	*** Not Implemented ***
>Include Code Sequence Macro Table 8.8-1			No Baseline Context ID is defined.	

A.2.23 General Study- C.7.2.1

Attribute Name	Tag	T	Description	Handling
Study Instance UID	(0020,000D)	1	Unique identifier for the Study.	
Study Date	(0008,0020)	2	Date the Study started.	*** Not Implemented ***
Study Time	(0008,0030)	2	Time the Study started.	*** Not Implemented ***
Referring Physician's Name	(0008,0090)	2	Name of the patient's referring physician	*** Not Implemented ***
Referring Physician Identification Sequence	(0008,0096)	3	Identification of the patient's referring physician. Only a single item shall be permitted in this sequence.	*** Not Implemented ***
>Include 'Person Identification Macro' Table 10-1				*** Not Implemented ***
Study ID	(0020,0010)	2	User or equipment generated Study identifier.	*** Not Implemented ***
Accession Number	(0008,0050)	2	A RIS generated number that identifies the order for the Study.	*** Not Implemented ***
Study Description	(0008,1030)	3	Institution-generated description or classification of the Study (component) performed.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
Physician(s) of Record	(0008,1048)	3	Names of the physician(s) who are responsible for overall patient care at time of Study (see Section C.7.3.1 for Performing Physician)	*** Not Implemented ***
Physician(s) of Record Identification Sequence	(0008,1049)	3	Identification of the physician(s) who are responsible for overall patient care at time of Study. One or more items shall be included in this sequence. If more than one Item, the number and order shall correspond to the value of Physician(s) of Record (0008,1048), if present.	*** Not Implemented ***
>Include 'Person Identification Macro' Table 10-1				*** Not Implemented ***
Name of Physician(s) Reading Study	(0008,1060)	3	Names of the physician(s) reading the Study.	*** Not Implemented ***
Physician(s) Reading Study Identification Sequence	(0008,1062)	3	Identification of the physician(s) reading the Study. One or more items shall be included in this sequence. If more than one Item, the number and order shall correspond to the value of Name of Physician(s) Reading Study (0008,1060), if present.	*** Not Implemented ***
>Include 'Person Identification Macro' Table 10-1				*** Not Implemented ***
Referenced Study Sequence	(0008,1110)	3	A sequence that provides reference to a Study SOP Class/Instance pair. The sequence may have zero or more Items.	*** Not Implemented ***
>Include SOP Instance Reference Macro Table 10-11				*** Not Implemented ***
Procedure Code Sequence	(0008,1032)	3	A Sequence that conveys the type of procedure performed. One or more Items may be included in this Sequence.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
>Include 'Code Sequence Macro' Table 8.8-1 No.			Baseline Context ID is defined	*** Not Implemented ***

A.2.24 General Series- C.7.3.1

Attribute Name	Tag	T	Description	Handling
Modality	(0008,0060)	1	Type of equipment that originally acquired the data used to create the images in this Series. See C.7.3.1.1.1 for Defined Terms.	RT
Series Instance UID	(0020,000E)	1	Unique identifier of the Series.	
Series Number	(0020,0011)	2	A number that identifies this Series.	*** Not Implemented ***
Laterality	(0020,0060)	2C	Laterality of (paired) body part examined. Required if the body part examined is a paired structure and Image Laterality (0020,0062) or Frame Laterality (0020,9072) are not sent. Enumerated Values: R = right L = left Note: Some IODs support Image Laterality (0020,0062) at the Image level or Frame Laterality(0020,9072) at the Frame level in the Frame Anatomy functional group macro, which can provide a more comprehensive mechanism for specifying the laterality of the body part(s) being examined.	*** Not Implemented ***
Series Date	(0008,0021)	3	Date the Series started.	*** Not Implemented ***
Series Time	(0008,0031)	3	Time the Series started.	*** Not Implemented ***
Performing Physicians' Name	(0008,1050)	3	Name of the physician(s) administering the Series.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
Performing Physician Identification Sequence	(0008,1052)	3	Identification of the physician(s) administering the Series. One or more items shall be included in this sequence. If more than one Item, the number and order shall correspond to the value of Performing Physicians' Name (0008,1050), if present.	*** Not Implemented ***
>Include 'Person Identification Macro' Table 10-1				*** Not Implemented ***
Protocol Name	(0018,1030)	3	User-defined description of the conditions under which the Series was performed. Note: This attribute conveys series-specific protocol identification and may or may not be identical to the one presented in the Performed Protocol Code Sequence (0040,0260).	*** Not Implemented ***
Series Description	(0008,103E)	3	User provided description of the Series	*** Not Implemented ***
Operators' Name	(0008,1070)	3	Name(s) of the operator(s) supporting the Series.	*** Not Implemented ***
Operator Identification Sequence	(0008,1072)	3	Identification of the operator(s) supporting the Series. One or more items shall be included in this sequence. If more than one Item, the number and order shall correspond to the value of Operators' Name (0008,1070), if present.	*** Not Implemented ***
>Include 'Person Identification Macro' Table 10-1				*** Not Implemented ***
Referenced Performed Procedure Step Sequence	(0008,1111)	3	Uniquely identifies the Performed Procedure Step SOP Instance to which the Series is related (e.g. a Modality or General-Purpose Performed Procedure Step SOP Instance). The Sequence shall have zero or one Item.	*** Not Implemented ***
>Include SOP Instance Reference Macro Table 10-11				*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
Related Series Sequence	(0008,1250)	3	<p>Identification of Series significantly related to this Series. Zero or more Items may be present.</p> <p>Notes: 1. For example, for a combined CT and PET acquisition, the CT images and PET images would be in separate series that could crossreference each other with multiple purpose of reference codes meaning same anatomy, simultaneously acquired and same indication.</p> <p>2. The related series may have different Frames of Reference and hence require some sort of registration before spatial coordinates can be directly compared.</p> <p>3. This attribute is not intended for conveying localizer reference information, for which Referenced Image Sequence (0008,1140) should be used.</p>	*** Not Implemented ***
>Study Instance UID	(0020,000D)	1	Instance UID of Study to which the related Series belongs	*** Not Implemented ***
>Series Instance UID	(0020,000E)	1	Instance UID of Related Series	*** Not Implemented ***
>Purpose of Reference Code Sequence	(0040,A170)	2	Describes the purpose for which the reference is made. Zero or more Items may be present. When absent, implies that the reason for the reference is unknown.	*** Not Implemented ***
>>Include Code Sequence Macro Table 8.8-1			DCID 7210	*** Not Implemented ***
Body Part Examined	(0018,0015)	3	Text description of the part of the body examined. See PS 3.16 Annex on Correspondence of Anatomic Region Codes and Body Part Examined for Defined Terms Note: Some IODs support the Anatomic Region Sequence (0008,2218), which can provide a more comprehensive mechanism for specifying the body part being examined.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
Patient Position	(0018,5100)	2C	Patient position descriptor relative to the equipment. Required for CT and MR images; shall not be present if Patient Orientation Code Sequence (0054,0410) is present; may be present otherwise. See C.7.3.1.1.2 for Defined Terms and further explanation.	*** Not Implemented ***
Smallest Pixel Value in Series	(0028,0108)	3	The minimum value of all images in this Series.	*** Not Implemented ***
Largest Pixel Value in Series	(0028,0109)	3	The maximum value of all images in this Series.	*** Not Implemented ***
Request Attributes Sequence	(0040,0275)	3	Sequence that contains attributes from the Imaging Service Request. The sequence may have one or more Items.	*** Not Implemented ***
>Include Request Attributes Macro Table 10-9			No Baseline Context IDs defined	*** Not Implemented ***
Include Performed Procedure Step Summary Macro Table 10-16			No Baseline Context IDs defined	*** Not Implemented ***

A.2.25 General Equipment- C.7.5.1

Attribute Name	Tag	T	Description	Handling
Manufacturer	(0008,0070)	2	Manufacturer of the equipment that produced the composite instances.	*** Not Implemented ***
Institution Name	(0008,0080)	3	Institution where the equipment that produced the composite instances is located.	*** Not Implemented ***
Institution Address	(0008,0081)	3	Mailing address of the institution where the equipment that produced the composite instances is located.	*** Not Implemented ***
Station Name	(0008,1010)	3	User defined name identifying the machine that produced the composite instances.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
Institutional Department Name	(0008,1040)	3	Department in the institution where the equipment that produced the composite instances is located.	*** Not Implemented ***
Manufacturer's Model Name	(0008,1090)	3	Manufacturer's model name of the equipment that produced the composite instances.	*** Not Implemented ***
Device Serial Number	(0018,1000)	3	Manufacturer's serial number of the equipment that produced the composite instances. Note: This identifier corresponds to the device that actually created the images, such as a CR plate reader or a CT console, and may not be sufficient to identify all of the equipment in the imaging chain, such as the generator or gantry or plate.	*** Not Implemented ***
Software Versions	(0018,1020)	3	Manufacturer's designation of software version of the equipment that produced the composite instances.	*** Not Implemented ***
Gantry ID	(0018,1008)	3	Identifier of the gantry or positioner.	*** Not Implemented ***
Spatial Resolution	(0018,1050)	3	The inherent limiting resolution in mm of the acquisition equipment for high contrast objects for the data gathering and reconstruction technique chosen. If variable across the images of the series, the value at the image center.	*** Not Implemented ***
Date of Last Calibration	(0018,1200)	3	Date when the image acquisition device calibration was last changed in any way. Multiple entries may be used for additional calibrations at other times. See C.7.5.1.1.1 for further explanation.	*** Not Implemented ***
Time of Last Calibration	(0018,1201)	3	Time when the image acquisition device calibration was last changed in any way. Multiple entries may be used. See C.7.5.1.1.1 for further explanation.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
Pixel Padding Value	(0028,0120)	1C	<p>Single pixel value or one limit (inclusive) of a range of pixel values used in an image to pad to rectangular format or to signal background that may be suppressed. See C.7.5.1.1.2 for further explanation.</p> <p>Required if Pixel Padding Range Limit (0028,0121) is present. May be present otherwise.</p> <p>Note: The Value Representation of this Attribute is determined by the value of Pixel Representation (0028,0103).</p>	*** Not Implemented ***

A.2.26 RT Beams Delivery Instruction- C.8.8.aa

Attribute Name	Tag	T	Description	Handling
Beam Task Sequence	(0074,1020)	1	Specification of beams to be delivered and/or verified. One or more Items may be included in this sequence.	
>Beam Task Type	(0074,1022)	1	<p>Indication whether beam is to be verified, treated (delivered), or both.</p> <p>Enumerated Values: VERIFY = Beam verification only TREAT = Beam treatment only VERIFY_AND_TREAT = Beam verification and treatment</p>	TREAT
>Treatment Delivery Type	(300A,00CE)	1	<p>Delivery Type of treatment.</p> <p>Enumerated Values: TREATMENT = normal patient treatment CONTINUATION = continuation of interrupted treatment</p>	TREATMENT if the beam needs to be treated completely or CONTINUATION if the beam in the current Fraction was already partially treated

Attribute Name	Tag	T	Description	Handling
>Primary Dosimeter Unit	(300A,00B3)	1C	Measurement unit of machine dosimeter. Enumerated Values: MU = Monitor Unit MINUTE = minute NP = Number of Particles This value shall be the same as in the referenced RT Plan. It applies only to the Continuation Start Meterset (0074,0120) and Continuation End Meterset (0074,0121). Required if Delivery Type (300A,00CE) is CONTINUATION.	MU
>Continuation Start Meterset	(0074,0120)	1C	Meterset within Beam referenced by Referenced Beam Number (300C,0006) at which treatment delivery starts, in units specified by Primary Dosimeter Unit (300A,00B3). Required if Delivery Type (300A,00CE) is CONTINUATION.	For CONTINUATION: sum of all Actual MU for this Beam along the Treatment Records of the previous partial treatment.
>Continuation End Meterset	(0074,0121)	1C	Meterset within Beam referenced by Referenced Beam Number (300C,0006) at which treatment delivery ends, in units specified by Primary Dosimeter Unit (300A,00B3). Required if Delivery Type (300A,00CE) is CONTINUATION.	For CONTINUATION: Planned MU for this Beam
>Referenced RT Plan Sequence	(300C,0002)	1	Reference to a single RT Plan or RT Ion Plan SOP Instance (whose UID is also supplied in the Input Information Sequence – see PS3.4) containing all the Beams and the Fraction Group referenced in this SOP Instance.	Plan scheduled to be treated
>> Study Instance UID	(0020,000D)	1	Unique identifier for the Study	Study UID
>> Referenced Series Sequence	(0008,1115)	1	Sequence of Items where each Item includes the Attributes of a Series containing referenced Composite Object(s). One or more Items may be included in this sequence	

Attribute Name	Tag	T	Description	Handling
>>> Series Instance UID	(0020,000E)	1	Unique identifier of a Series that is part of this Study and contains the referenced Composite Object(s).	Series UID
>>> Retrieve AE Title	(0008,0054)	3	Title of the DICOM Application Entity where the Composite Object(s) may be retrieved on the network.	Archive AE Title configured for the Worklist Service
>>> Storage Media File-Set ID	(0088,0130)	3	The user or implementation specific human readable identifier that identifies the Storage Media on which the Composite Object (s) reside.	*** Not Implemented ***
>>> Storage Media File-Set UID	(0088,0140)	3	Uniquely identifies the Storage Media on which the Composite Object (s) reside.	*** Not Implemented ***
>>> Referenced SOP Sequence	(0008,1199)	1	References to Composite Object SOP Class/SOP Instance pairs that are part of the Study defined by Study Instance UID and the Series defined by Series Instance UID (0020,000E). One or more Items may be included in this sequence	
>>>> Referenced SOP Class UID	(0008,1150)	1	Uniquely identifies the referenced SOP Class.	SOP Class UID of RT Plan
>>>> Referenced SOP Instance UID	(0008,1155)	1	Uniquely identifies the referenced SOP Instance.	RT Plan UID
>>> Purpose of Reference Code Sequence	(0040,A170)	3	Describes the purpose for which the reference is made. One or more Items may be included in this sequence.	*** Not Implemented ***
>>>> Include 'Code Sequence Macro' Table 8.8-1			Baseline Context ID may be specified in Macro invocation.	*** Not Implemented ***
>>> Referenced Digital Signature Sequence	(0400,0402)	3	Sequence of references to Digital Signatures in the referenced SOP Instance. One or more Items may be present. Note: The Attributes in this sequence can be used to detect if the referenced SOP Instance has been altered.	*** Not Implemented ***
>>>> Digital Signature UID	(0400,0100)	1	The Unique Identifier of a Digital Signature held in the referenced SOP Instance.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
>>>> Signature	(0400,0120)	1	The Signature Value identified by the Digital Signature UID within the Referenced SOP Instance UID.	*** Not Implemented ***
>>> Referenced SOP Instance MAC Sequence	(0400,0403)	3	A MAC Calculation from data in the referenced SOP Instance that can be used as a data integrity check. Only a single Item shall be permitted in this Sequence. Note: This Attribute may be used in place of the Referenced Digital Signature Sequence Attribute (0400,0402), particularly if the SOP Instance does not have appropriate Digital Signatures that can be referenced.	*** Not Implemented ***
>>>> MAC Calculation Transfer Syntax UID	(0400,0010)	1	The Transfer Syntax UID used to encode the values of the Data Elements included in the MAC calculation. When computing the MAC, only Transfer Syntaxes that explicitly include the VR and use Little Endian encoding shall be used. Notes: 1. Certain Transfer Syntaxes, particularly those that are used with compressed data, allow the fragmentation of the pixel data to change. If such fragmentation changes, Digital Signatures generated with such Transfer Syntaxes could become invalid. 2. This does not constrain the transfer syntax used to transmit the object.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
>>>> MAC Algorithm	(0400,0015)	1	The algorithm used in generating the MAC. Defined Terms: RIPEMD160 MD5 SHA1 Note: Digital Signature Security Profiles (see PS 3.15) may require the use of a restricted subset of these terms.	*** Not Implemented ***
>>>> Data Elements Signed	(0400,0020)	1	A list of Data Element Tags in the order they appear at the top level of the referenced SOP Instance that identify the Data Elements used in creating the MAC. See Section C.12.1.1.3.1.1.	*** Not Implemented ***
>>>> MAC	(0400,0404)	1	The MAC generated as described in Section 12.2.1.1, but unencrypted and without inclusion of fields from the Digital Signatures Sequence. See Section C.12.1.1.3.1.2.	*** Not Implemented ***
>Current Fraction Number	(3008,0022)	1	The index of the fraction that is to be delivered or completed in this session. See C.8.8.aa.1.	For TREATMENT: Last Fraction Number + 1 For CONTINUATION: Fraction Number of the previous partial treatment
>Referenced Fraction Group Number	(300C,0022)	1C	Indicates which fraction group of the referenced plan is to be treated in the treatment session. Only one Fraction Group shall be specified per Delivery Instruction SOP Instance. Required if the referenced plan has more than one Fraction Group Sequence (300A,0070) item.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
>Referenced Beam Number	(300C,0006)	1	Uniquely identifies the Beam which is specified by Beam Number (300A,00C0) within Beam Sequence (300A,00B0) in RT Beams Module of referenced RT Plan or RT Ion Plan.	Beam Number
>Beam Order Index	(0074,1024)	3	Identifies required ordering of beam delivery, monotonically increasing by 1, starting from 1.	*** Not Implemented ***
>Table Top Vertical Adjusted Position	(0074,0126)	2	Adjusted Table Top Vertical position in the IEC TABLE TOP coordinate system in mm for patient setup. See C.8.8.aa.2.	*** Not Implemented ***
>Table Top Longitudinal Adjusted Position	(0074,0127)	2	Adjusted Table Top Longitudinal position in the IEC TABLE TOP coordinate system in mm for patient setup. See C.8.8.aa.2.	*** Not Implemented ***
>Table Top Lateral Adjusted Position	(0074,0128)	2	Adjusted Table Top Lateral position in the IEC TABLE TOP coordinate system in mm for patient setup. See C.8.8.aa.2.	*** Not Implemented ***
>Patient Support Adjusted Angle	(0074,102A)	2	Adjusted Patient Support angle for patient setup, i.e. orientation of the IEC PATIENT SUPPORT coordinate system with respect to the IEC FIXED REFERENCE coordinate system in degrees. See C.8.8.aa.2.	*** Not Implemented ***
>Table Top Eccentric Adjusted Angle	(0074,102B)	2	Adjusted Table Top (non-isocentric) angle for patient setup, i.e. orientation of the IEC TABLE TOP ECCENTRIC coordinate system with respect to the IEC PATIENT SUPPORT system in degrees. See C.8.8.aa.2.	*** Not Implemented ***
>Table Top Pitch Adjusted Angle	(0074,102C)	2	Adjusted Table Top Pitch Angle for patient setup, i.e. the rotation of the IEC TABLE TOP coordinate system about the X-axis of the IEC TABLE TOP coordinate system in degrees. See C.8.8.aa.2.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
>Table Top Roll Adjusted Angle	(0074,102D)	2	Adjusted Table Top Roll Angle for patient setup, i.e. the rotation of the IEC TABLE TOP coordinate system about the Y-axis of the IEC TABLE TOP coordinate system in degrees. See C.8.8.aa.2.	*** Not Implemented ***
>Table Top Vertical Setup Displacement	(300A,01D2)	2	Vertical Displacement in the IEC TABLE TOP coordinate system in mm relative to initial Setup Position, i.e. vertical offset between patient positioning performed using setup and treatment position.	*** Not Implemented ***
>Table Top Longitudinal Setup Displacement	(300A,01D4)	2	Longitudinal Displacement in the IEC TABLE TOP coordinate system in mm relative to initial Setup Position, i.e. longitudinal offset between patient positioning performed using setup and treatment position.	*** Not Implemented ***
>Table Top Lateral Setup Displacement	(300A,01D6)	2	Lateral Displacement in the IEC TABLE TOP coordinate system in mm relative to initial Setup Position, i.e. lateral offset between patient positioning performed using setup and treatment position.	*** Not Implemented ***
>Delivery Verification Image Sequence	(0074,1030)	2C	Beam verification images to be acquired for current beam. Required if Beam Task Type (0074,1022) is VERIFY or VERIFY_AND_TREAT. Only a single Item shall be permitted in this sequence if Beam Task Type (0074,1022) is VERIFY. One or more Items may be included in this sequence if Beam Task Type (0074,1022) is VERIFY_AND_TREAT.	*** Not Implemented ***
>>Verification Image Timing	(0074,1032)	1	Indicates the temporal relationship of the verification image with respect to the current treatment beam delivery. Value shall be DURING_BEAM for Beams with a Beam Task Type (0074,1022) of VERIFY. Enumerated Values: BEFORE_BEAM DURING_BEAM AFTER_BEAM	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
>>Start Cumulative Meterset Weight	(300C,0008)	1C	Cumulative Meterset Weight within current Beam at which image acquisition will start. Required if Verification Image Timing (0074,1032) is DURING_BEAM.	*** Not Implemented ***
>>Meterset Exposure	(3002,0032)	2C	Treatment machine Meterset duration over which image is to be acquired, specified in Monitor units (MU) or minutes as defined by Primary Dosimeter Unit (300A,00B3) specified in the Referenced RT Plan Sequence (300C,0002). Required if Verification Image Timing (0074,1032) is BEFORE_BEAM or AFTER_BEAM. See C.8.8.aa.3.	*** Not Implemented ***
>>End Cumulative Meterset Weight	(300C,0009)	2C	Cumulative Meterset Weight within current Beam at which image acquisition will end. Required if Verification Image Timing (0074,1032) is DURING_BEAM.	*** Not Implemented ***
>>Double Exposure Flag	(0074,1034)	1	Indicates whether the current verification image is a single or double exposure. Enumerated Values: SINGLE = single exposure DOUBLE = double exposure	*** Not Implemented ***
>>Double Exposure Ordering	(0074,1036)	1C	Indicates the ordering of the open (double exposure) field with respect to the primary (collimated) field in a double exposure. Defined terms: OPEN_FIRST = Open field first OPEN_SECOND = Open field second Required if Double Exposure Flag (0074,1034) is DOUBLE.	*** Not Implemented ***

Attribute Name	Tag	T	Description	Handling
>>Double Exposure Meterset	(0074,1038)	2C	If this field is present, an additional exposure with the indicated Meterset is requested. Required if Double Exposure Flag (0074,1034) is DOUBLE.	*** Not Implemented ***
>>Double Exposure Field Delta	(0074,103A)	2C	Offsets of field-defining edges in mm for the double exposure in the IEC BEAM LIMITING DEVICE coordinate system in the IEC order X1, X2, Y1, Y2. Negative values for X1 and Y1 indicate an enlarged field, negative values for X2 and Y2 indicate a reduced field. Required if Double Exposure Flag (0074,1034) is DOUBLE. See C.8.8.aa.4.	*** Not Implemented ***
>>X-Ray Image Receptor Translation	(3002,000D)	2	Position in (x,y,z) coordinates in mm of origin of the IEC X-RAY IMAGE RECEPTOR System in the IEC GANTRY coordinate system.	*** Not Implemented ***
>>Related Reference RT Image Sequence	(0074,1040)	3	Uniquely identifies Reference Images to which planned verification image is related. All items in this sequence shall be RT Image SOP Instances.	*** Not Implemented ***
>>>Include 'SOP Instance Reference Macro' Table 10-11				*** Not Implemented ***

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