

Integrating the Healthcare Enterprise



**IHE EYECARE
Technical Framework Supplement**

**Extensions to the Eye Care Workflow
Integration Profile**

Public Comment

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This is a supplement to the IHE Eye Care Technical Framework Rev. 3.6.

It is submitted for public comment between April 30, 2009 and May 31, 2009.

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Information about the IHE Eye Care domain may be found at: <http://www.ihe.net/domains/index.cfm>.

Information about the structure of IHE Technical Frameworks and Supplements may be found at: <http://www.ihe.net/about/process.cfm> and <http://www.ihe.net/profiles/index.cfm>.

The current version of the IHE Eye Care Technical Framework may be found at: http://www.ihe.net/technical_framework/index.cfm.

Editor's Note

This supplement describes the changes to the existing technical framework documents and where indicated amends text by addition (**bold underline**) or removal (~~**bold strikethrough**~~), as well as addition of large new sections introduced by editor's instructions to “add new text” or similar, which is not bolded or underlined for readability.

"Boxed" instructions like the sample below indicate to the volume editor how to integrate the relevant section(s) into the relevant Technical Framework volume:

<i>Replace Section X.X by the following:</i>
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Introduction

This supplement, IHE EYECARE Technical Framework Supplement – Eyecare Workflow Profile Extensions, specifies extensions to the existing IHE Eyecare Workflow Profile. Overviews of the extension are:

- Legacy Acquisition Modality Importer Actor – this extension is an additional actor to the Eyecare Workflow Integration Profile. It is used to integrate acquisition modalities that cannot support the required DICOM SOP Classes internally in its product (i.e. are not DICOM ready instruments). The integration of these legacy devices are based on an IHE-style workflow supporting DICOM MWL, MPPS, Storage Commitment and Storage which enables an efficient and safe workflow.
- When an order for a procedure is created, a health care provider may wish to include instructions to the technician. For example there might be instructions to tape the eyelids while performing a Visual Field or to concentrate on a specific region of the eye during the early stage of an angiogram, etc. This is accomplished utilizing the following transactions.
 - Instructions for Performing a Procedure- Placer Order Management [EYECARE-10] – this extension is an option to the Eyecare Workflow Integration Profile. It enables a health care provider to convey instructions for performing a procedure using the Order Placer and ensures this information is received and processed by the Order Filler. It is an extension to [RAD-2], utilizing the NTE segment for the HL7 ORM message.
 - Instructions for Performing a Procedure- Filler Order Management [EYECARE-11] – this extension is an option to the Eyecare Workflow Integration Profile. It enables a health care provider to convey instructions for performing a procedure using the Order Filler and ensures this information is received and processed by the Order Placer. It is an extension to [RAD-3], utilizing the NTE segment for the HL7 ORM message.
 - Procedure Instructions Option – this extension is an option to the Eyecare Workflow Integration Profile. It enables a physician to provide instructions for performing a procedure and ensures this information is displayed to the operator on a modality. It utilizes the DICOM Modality Worklist and is an extension to [EYECARE-1]. It involves the DSS/Order Filler, Acquisition Modality and Legacy Acquisition Modality Importer Actors.

Profile Abstract

The Eye Care Workflow Integration Profile (EYE CARE) describes mechanisms to manage and distribute the workflow within the eye clinic across the several types of equipment in a synchronized manner. Legacy Acquisition Modality Importer Actor , as an additional actor to the Eyecare Workflow Integration Profile, is used to integrate acquisition modalities that cannot support the required DICOM SOP Classes internally in its product (i.e. are not DICOM ready instruments). The integration of these legacy devices are based on an IHE-style workflow supporting DICOM MWL, MPPS, Storage Commitment and Storage which enables an efficient and safe workflow. The extension for instructions for performing a procedure allows for inclusion of instructions to the technician.

Open Issues and Questions

None

Closed Issues and Questions

#	Issue/ (Question)
1	<p>Imprecision of start time – From the modality perspective, the start time is difficult to obtain. A note was added to explain how the IN Progress is required by DICOM, however, for an Legacy AM is very difficult to obtain the actual start time and therefore may be incorrect.</p> <p>Note: It is difficult for implementations of a Legacy Acquisition Modality Importer Actor to manage the transition from starting a MPPS (i.e., MPPS N-CREATE with a status of IN_PROGRESS) to finishing a MPPS (i.e. MPPS N-SET with a status of COMPLETED or DISCONTINUED). This is because these Legacy Acquisition Modality Importer Actors often cannot know exactly when the modality starts and ends the procedure. Actually it may be typical to know only when the procedure is finished. The DICOM MPPS workflow requires the N-CREATE/N-SET commands be transmitted, thus the Legacy Acquisition Modality Importer Actor is required to send both DICOM commands even though it may only know when the procedure step was finished. Implementations receiving these DICOM commands should be aware that the MPPS start and end times may not be accurate.</p>
2	<p>Maintenance of instructions for performing a procedure.</p> <p>Although it is desirable to maintain the instructions for performing a procedure, the majority</p>

	of the group agreed that this would be too large a scope to include in this year's extension and that this information would be maintained in the electronic health record system. The actual instructions would be contained in an NTE, and a code would be created for source of comment.
3	<p>Placement of Instructions for Performing a Procedure</p> <p>After much discussion, the group determined that the best place would be in the NTE. The NTE segment is a common format for sending notes and comments. The element Source of Comment shall contain "LPI" to denote that the instruction is a Limited Procedure Instruction.</p>

Volume I – Integration Profiles

Glossary

1.7 Scope Additions for 2008-2009

Add the following bullet to the end of the bullet list in section 1.7

- **A supplement has been drafted in the 2009 development cycle of the Eye Care Domain. It will be the basis for the testing at IHE Connectathons beginning in 2009. The current IHE Technical Framework adds the following primary features to those of previous years: Added options to the Eye Care Workflow to support an additional actor used to integrate acquisition modalities that cannot support the required DICOM SOP Classes internally in its product, and to include instructions from the health care provider to the technician when creating an order for a procedure**

2.1 Dependencies among Integration Profiles

Amend the following section

2.2.1 Eye Care Workflow Integration Profile

The Eye Care Workflow Integration Profile establishes the continuity and integrity of basic patient and procedure data in the context of an eye care clinic and/or an integrated hospital workflow scenario. This profile deals specifically with consistent handling of patient identifiers and demographic data. This includes when specific procedure(s) have been manually ordered by a healthcare provider in addition to the scenario where an automatic eye care order has been placed. The automatic orders are created for procedures routinely performed on patients without a healthcare provider order and frequently prior to the patient being seen by a healthcare provider. Thus the purpose of the automatic order is not to provide legal authority for performing a procedure, but rather to provide data integrity. This profile specifies the scheduling and coordination of procedure data to a wide variety of diagnostic imaging and testing equipment, and its reliable storage in an image management system from where it is available to support subsequent workflow steps, such as reporting. It also provides the ability for the acquisition devices (such as diagnostic imaging, measuring, test equipment) to identify the actual procedure(s) that were performed. This enables further workflow steps such as automated billing for the procedure. **Options for a legacy acquisition modality importer, which interfaces to a non-DICOM ready modality and allows this modality**

to integrate into the Eye Care Workflow, and for instructions for performing a procedure are also defined.

2.3 Actors/Transactions

<i>Add Legacy Acquisition Modality Actor to Actor section 2.3 Actor Descriptions and update Performed Procedure Step Manager Text</i>

Legacy Acquisition Modality Importer – A system that interfaces to a non-DICOM ready modality in order to integrate that modality into the Eye Care workflow.

Performed Procedure Step Manager – A system that re-distributes the Modality Performed Procedure Step information from the Acquisition Modality and **Legacy Acquisition Modality Importer** to the Department System Scheduler/Order Filler and Image Manager.

2.4 Transactions Descriptions

<i>Add Legacy Acquisition Modality Importer Actor to various transactions in section 2.4 Transaction Descriptions</i>

Query Modality Worklist – Based on a query entered at the Acquisition Modality **or Legacy Acquisition Modality Importer**, a modality worklist is generated listing all the items that satisfy the query. This list of Scheduled Procedure Steps with selected demographic information is returned to the Acquisition Modality [EYECARE-1, derived from RAD-5].

Modality Procedure Step In Progress – An Acquisition Modality **or Legacy Acquisition Modality Importer** notifies the Performed Procedure Step Manager of the start of a new Procedure Step and the PPS Manager informs the Department System Scheduler/Order Filler and Image Manager. [RAD-6]

Modality Procedure Step Completed – An Acquisition Modality **or Legacy Acquisition Modality Importer** notifies the Performed Procedure Step Manager of the completion of a Procedure Step and the PPS Manager informs the Department System Scheduler/Order Filler and Image Manager. [EYECARE-6, derived from RAD-7]

Modality Images/Evidence Stored – An Acquisition Modality **or Legacy Acquisition Modality Importer** sends acquired or generated images, waveforms, or other evidence documents to the Image Archive. [EYECARE-2, derived from RAD-8]

Storage Commitment – A requestor (Acquisition Modality **or Legacy Acquisition Modality Importer**) requests that the Image Manager confirm ownership for the specified

DICOM objects (images, evidence documents, or any combination thereof) that the requestor stored in the Image Archive, thus allowing

Add Legacy Acquisition Modality Importer Actor to Table 2.3-1

Table 2.3-1. Integration Profile Actors

Integration Profile Actor	EYE CARE Workflow	Eye Care Charge Posting	Eye Care Evidence Document	Eye Care Displayable Report
.....
<u>Legacy Acquisition Modality Importer</u>	<u>X</u>	<u>X</u>		
.....			

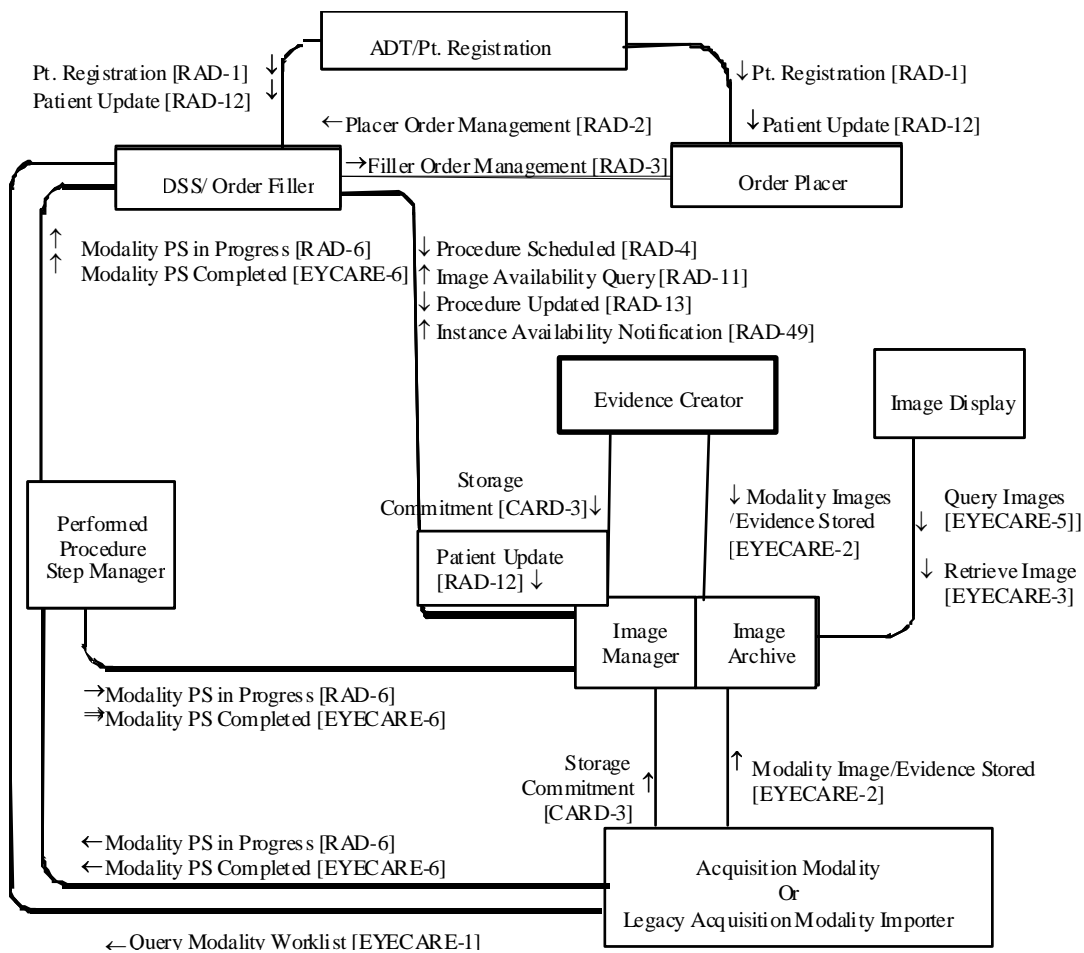
3 EYE CARE Workflow (EYECARE)

Amend the following section

The Eye Care Workflow Integration Profile establishes the continuity and integrity of basic patient and procedure data in the context of an eye clinic and/or an integrated hospital workflow scenario. This profile deals specifically with consistent handling of patient identifiers and demographic data. It also specifies the scheduling and coordination of procedure data to a wide variety of diagnostic imaging and testing equipment, and its reliable storage in an image management system from where it is available to support subsequent workflow steps, such as reporting. It also provides the ability for the acquisition devices to identify the actual procedure(s) that were performed. This enables further workflow steps such as automated billing. Options for a legacy acquisition modality importer, which interfaces to a non-DICOM ready modality and allows this modality to integrate into the Eye Care Workflow, and for instructions for performing a procedure are also defined.

3.1 Actors/Transactions

Update Figure 3.1-1 to include Legacy Acquisition Modality Importer Actor



Add Legacy Acquisition Modality Importer Actor to Table 3.1-1

Table 3.1-1. Eye Care Workflow - Actors and Transactions

Actors	Transactions	Optionality	Section
.....
Legacy Acquisition Modality Importer	<u>Query Modality Worklist [EYECARE-1]</u>	<u>R</u>	<u>EYECARE-TF 2: 4.1</u>
	<u>Modality Procedure Step In Progress [RAD-6]</u>	<u>R</u>	<u>RAD-TF 2: 4.6</u>
	<u>Modality Procedure Step Completed [EYECARE-6]</u>	<u>R</u>	<u>EYECARE-TF 2: 4.6</u>
	<u>Modality Images/Evidence Stored [EYECARE-2]</u>	<u>R</u>	<u>EYECARE-TF 2: 4.2</u>
	<u>Storage Commitment [CARD-3]</u>	<u>R</u>	<u>CARD-TF 2: 4.3</u>

3.2 Eye Care Workflow Integration Profile Options

Add Legacy Acquisition Modality Importer Actor to Table 3.2-1

Add Procedure Instructions Option to DSS/Order Filler, Acquisition Modality and Legacy Acquisition Modality Importer

Add [EYECARE-10] Option to Order Placer, DSS/Order Filler

Add [EYECARE-11] Option to Order Placer, DSS/Order Filler

Table 3.2-1: Eye Care Workflow - Actors and Options

Actor	Option Name	Optionality	Vol & Section
....
Order Placer	Appointment Notification [RAD-48]	O	RAD-TF 3: 4.48
	<u>Instructions for Performing a Procedure- Placer Order Management [EYECARE-10]</u>	<u>C</u> <u>If supported, [EYECARE-11] shall be supported</u>	<u>EYECARE-TF 2: 4.10</u>
	<u>Instructions for Performing a Procedure- Filler Order Management [EYECARE-11]</u>	<u>C</u> <u>If supported, [EYECARE-10] shall be supported</u>	<u>EYECARE-TF 2: 4.11</u>
Department System Scheduler/Order Filler	Billing and Material Management (see Note 1)	O	RAD-TF 2: 4.7
	Assisted Acquisition Protocol Setting	O	RAD-TF 2: 4.6
	PPS Exception Management	O	RAD-TF 2: 4.7
	Appointment Notification [RAD-48]	O	RAD-TF 3: 4.48
	Instance Availability Notification [RAD-49]	O	RAD-TF 3: 4.49
	Images Availability Query [RAD-11]	O	RAD-TF 2: 4.11

Actor	Option Name	Optionality	Vol & Section
	<u>Instructions for Performing a Procedure – Filler Order Management [EYECARE-11]</u>	<u>C</u> <u>If supported, Patient Instructions Option and [EYECARE-10] shall be supported</u>	<u>EYECARE-TF 2: 4.11</u>
	<u>Instructions for Performing a Procedure- Placer Order Management [EYECARE-10]</u>	<u>C</u> <u>If supported, Patient Instructions Option and [EYECARE-11] shall be supported</u>	<u>EYECARE-TF 2: 4.10</u>
	<u>Patient Instructions Option</u>	<u>C</u> <u>If supported, [EYECARE-10] and [EYECARE-11] shall be supported</u>	<u>EYECARE-TF 2: 4.1</u>
Acquisition Modality	Patient Based Worklist Query (see Note 2)	R	EYECARE-TF 2: 4.1
	Broad Worklist Query (see Note 2)	R	EYECARE-TF 2: 4.1
	Billing and Material Management (see Note 1)	O	RAD-TF 2: 4.7
	Assisted Acquisition Protocol Setting	O	RAD-TF 2: 4.6
	PPS Exception Management	O	RAD-TF 2: 4.7
	Eye Care Image Option	C See Section 3.2.1	EYECARE-TF 2: 4.2
	Encapsulated PDF Option for Evidence Documents	C See Section 3.2.1	EYECARE-TF 2: 4.2
	Eye Care Measurement Option	C See Section 3.2.1	EYECARE-TF 2: 4.2
	Relative Image Position Coding Option	O	EYECARE-TF 2:4.2
	Stereo Relationship Option	O	EYECARE-TF 2:4.2
	<u>Patient Instructions Options</u>	<u>O</u>	<u>EYECARE-TF 2: 4.1</u>

Actor	Option Name	Optionality	Vol & Section
<u>Legacy Acquisition Modality Importer</u>	<u>Patient Based Worklist Query (see Note 2)</u>	<u>R</u>	<u>EYECARE-TF 2: 4.1</u>
	<u>Legacy Acquisition Modality Importer Storage</u>	<u>R</u>	<u>EYECARE-TF 2: 4.2</u>
	<u>Broad Worklist Query (see Note 2)</u>	<u>R</u>	<u>EYECARE-TF 2: 4.1</u>
	<u>Billing and Material Management (see Note 1)</u>	<u>O</u>	<u>RAD-TF 2: 4.7</u>
	<u>Assisted Acquisition Protocol Setting</u>	<u>O</u>	<u>RAD-TF 2: 4.6</u>
	<u>PPS Exception Management</u>	<u>O</u>	<u>RAD-TF 2: 4.7</u>
	<u>Relative Image Position Coding Option</u>	<u>O</u>	<u>EYECARE-TF 2:4.2</u>
	<u>Stereo Relationship Option</u>	<u>O</u>	<u>EYECARE-TF 2:4.2</u>
	<u>Patient Instructions Options</u>	<u>O</u>	<u>EYECARE-TF 2: 4.1</u>

Update Note under table 3.2-1

Note-2: The Radiology TF requires that the Acquisition Modality support at least one of the Worklist Query choices (i.e. Patient and Broad). Eye Care requires support for both options **for the Acquisition Modality and Legacy Acquisition Modality Importer.**

Add Section 3.2.5

3.2.5 Legacy Acquisition Modality Importer Storage

The DICOM Standard defines certain Image and Measurement Storage SOP Classes that are applicable to EYECARE instruments such as ophthalmic photography, ultrasound, ophthalmic tomography images, refractive measurements, etc., see EYECARE TF: 2, 4.2.5 for the complete list of SOP Classes.

Acquisition Modality Actors for whom a DICOM Image Storage SOP Class or a DICOM Measurement Storage SOP Classes is defined are required to support the associated DICOM SOP Class. However, the Legacy Acquisition Modality Importer Actor may support the association

Storage SOP Classes or support the DICOM Secondary Capture and/or DICOM Encapsulated PDF SOP Classes. See EYECARE TF: 2, 4.2.11 for the complete specification.

Add Legacy Acquisition Modality Importer Actor to section 3.3.1 and renumber section headings in order to add Procedure Instructions Option

3.3.1 Extension to Query Modality Worklist for Eye Care [EYECARE-1]

3.3.1.1 Issuer of Patient ID

The ADT/Patient Registration actor transmits information regarding the assigning authority (issuer) of the Patient ID to the DSS/OF Actor, which is defined in [RAD-1], see RAD-TF 2: 4.1. However, [RAD-5] (see RAD-TF 2: 4.5), does not required the DICOM attribute “Issuer of Patient ID” be filled in by the DSS/OF actor if asked by the Acquisition Modality **or Legacy Acquisition Modality Importer (Legacy AMI)** during a Modality Worklist query. This extension requires support for this attribute, see EYECARE-TF 2: 4.1 for complete specifications.

Add Section 3.3.1.2 Procedure Instructions Option

3.3.1.2 Procedure Instructions Option

When an order for a procedure is created, a health care provider may wish to include instructions to the technician. For example there might be instructions to tape the eyelids while performing a Visual Field or to concentrate on a specific region of the eye during the early stage of an angiogram, etc.

This is accomplished when an Order Placer and/or Order Filler Actor transmits HL7 ORM messages which are defined in [EYECARE-10] and [EYECARE-11], see EYECARE-TF 2: 4.10 and EYECARE-TF 2: 4.11 for complete specifications.

If instructions for a procedure are provided, the DSS/OF transmits these instructions to the Acquisition Modality or Legacy Acquisition Modality Importer during a Modality Worklist query using the DICOM attribute “Requested Procedure Comments”. The Acquisition Modality or Legacy Acquisition Modality Importer) displays the instructions to the technician prior to performing the procedure. This option requires support for this attribute, see EYECARE-TF 2: 4.1 for complete specifications.

3.3 Eye Care Workflow Process Flow

Modify Figures 3.3-1 and 3.3-2 and the associated text

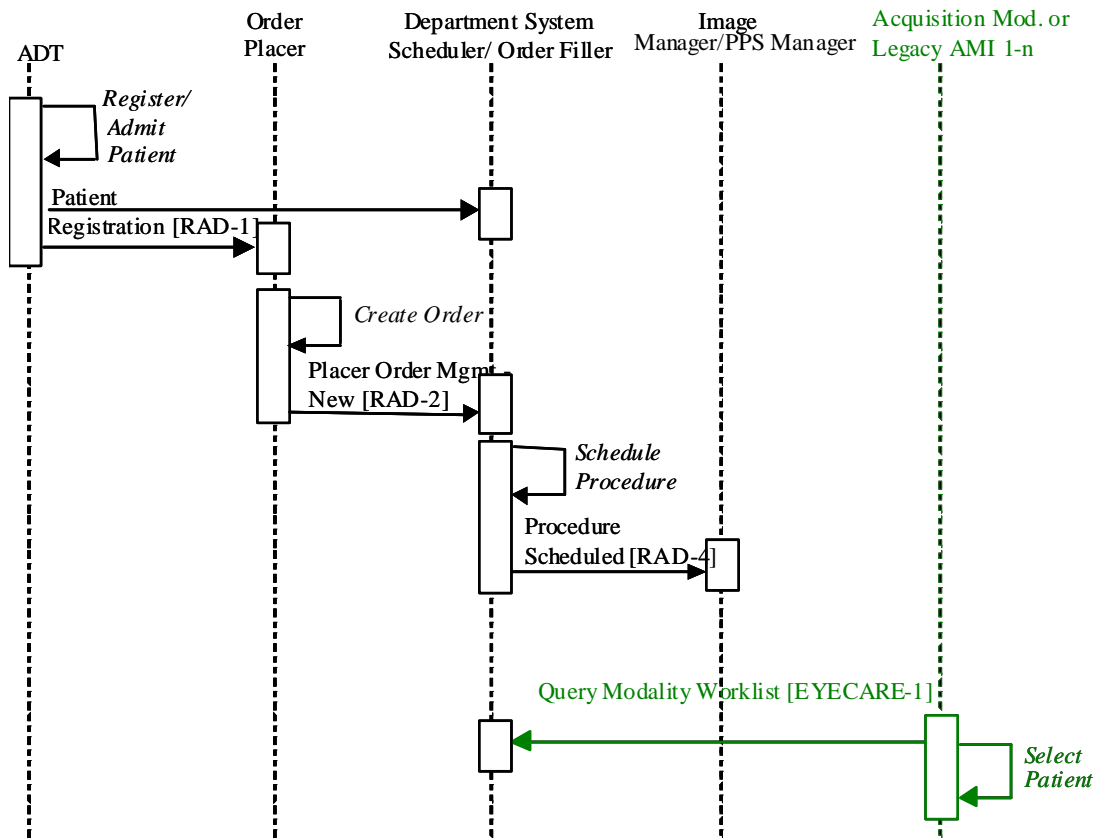


Figure 3.3-1. Workflow: Administrative Process Flow

- Schedule Procedure:** The DSS/OF associates the order with one or more Requested Procedures that have to be performed to satisfy the order. Each Requested Procedure prescribes a number of actions that have to be performed by Acquisition Modalities **and Legacy Acquisition Modality Importers**. Actions are specified in Scheduled Procedure Steps (SPS) based on timing and sequencing, and on modality. Scheduled Procedure Steps are scheduled, i.e., assigned a time slot and performing resource (modality), and are made available for Modality Worklist Query.
- Query Modality Worklist:** The Modality Worklist (MWL) query may be broad (get a list of scheduled procedures from which one will be selected), or patient-specific (provided with sufficient query keys to get back the scheduled procedure for a single patient). Eye Care procedures may be performed on multiple Acquisition Modalities **or Legacy Acquisition Modality Importers** therefore, multiple devices may perform the queries.

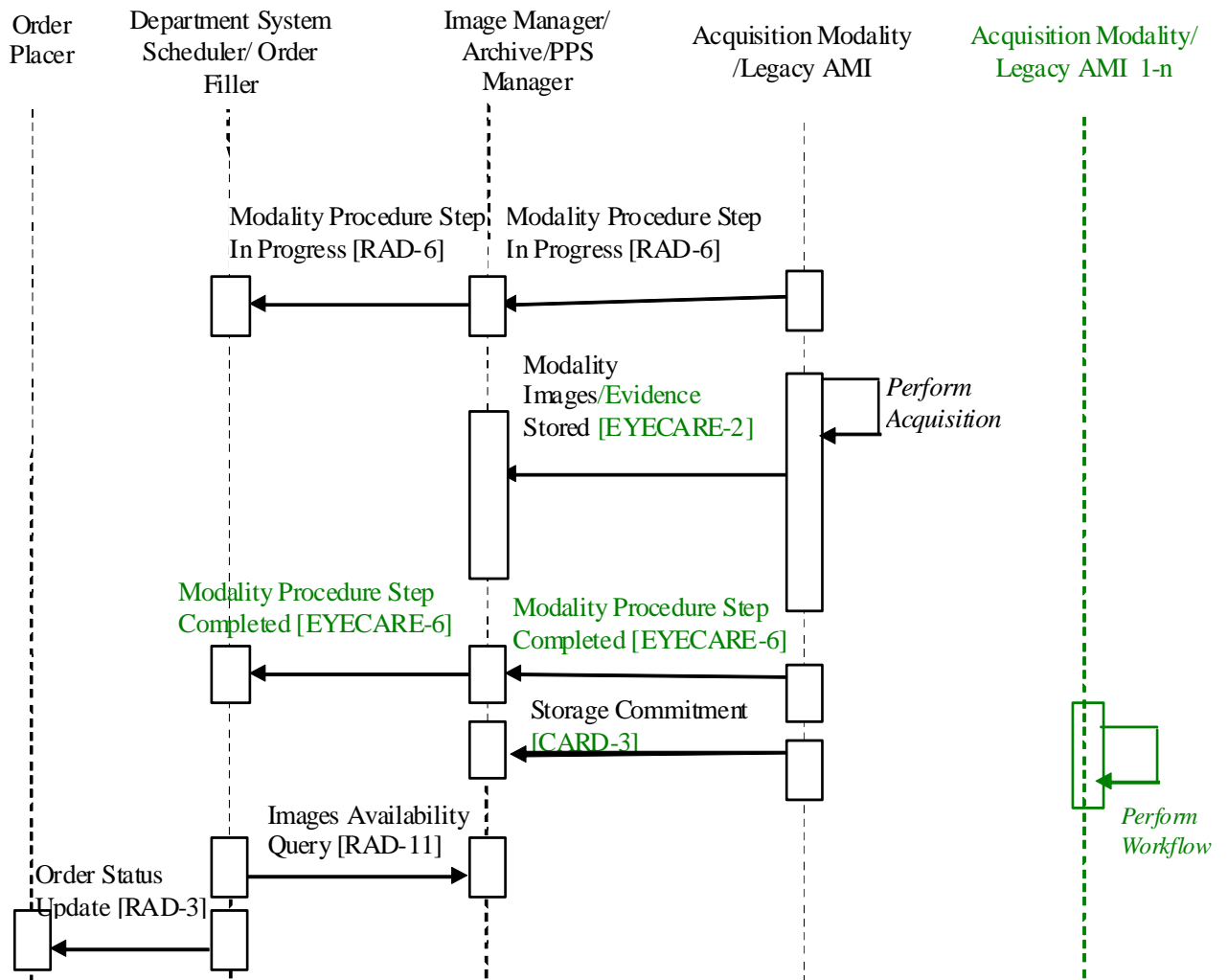


Figure 3.3-2. Workflow: Procedure Performance Process Flow

The following should be noted in relation to the Procedure Performance process flow:

- *Modality Procedure Step In Progress*: This allows the Acquisition Modalities **and Legacy Acquisition Modality Importers** to specify that they have started the procedure step which is linked to the information provided in the Query Modality Worklist transaction.
- *Modality Procedure Step Complete and End Procedure*: Modality Procedure Step Complete also includes Modality Procedure Step Discontinued. The simple transmission of a Complete or Discontinued does not indicate that **an Acquisition Modality or Legacy Acquisition Modality Importer** is then available, due to multi-step procedures (diagnostic images, evidence documents) and multi-modality cross-dependencies. It is a function of the DSS/OF

(outside the scope of this document) to determine when to end the procedure step, and declare the **Acquisition Modality or Legacy Acquisition Modality Importer** ~~modality~~ resources are available for another procedure. As part of this transaction, EYECARE-6 (an extension to RAD-7) requires the **Acquisition Modality or Legacy Acquisition Modality Importer** ~~modality~~ accurately convey the Performed Protocol Code Sequence. This requirement enables the ability to create automatic billing claims for products implementing the *Charge Posting Integration Profile*.

- *Storage Commitment:* The Image Manager/Archive accepts responsibility for stored images and evidence, allowing the **Acquisition Modality or Legacy Acquisition Modality Importer** ~~modality~~ to delete the data from its local storage. The Image Manager/Archive shall support devices that may be intermittently connected to the network and temporarily unable to receive Storage Commitment messages.

Add Legacy Acquisition Modality Importer Actor to section 3.4.1

3.4.1 Workflow Example with Manual Procedure Order

The patient has been registered in an ADT/Patient Registration actor, a healthcare provider has written a procedure order manually, and a procedure step has been scheduled. The technician uses the Acquisition Modality **or Legacy Acquisition Modality Importer** to query for a worklist. This may be either a patient query (using parameters to identify the patient uniquely), or a broad query (for all procedure steps scheduled for the modality). The modalities use the DICOM modality worklist service to query the DSS/OF, which responds with a worklist. This is displayed on the modality.

Add Legacy Acquisition Modality Importer Actor to section 3.4.2

3.4.2 Where the Procedure Ordered is an Automatic Eye Care Order

....

The patient has been registered in an ADT/Patient Registration actor, and a number of automatic orders are generated by the Order Placer or DSS/OF (i.e. an automatic eye care order is placed). The technician uses the Acquisition Modality **or Legacy Acquisition Modality Importer** actor to query the DSS/OF for a worklist. This may be either a patient query (using parameters to uniquely identify the patient), or a broad query (for all procedure steps scheduled for the modality). This is displayed on the modality.

Modify Figures 3.6-1 thru 3.6.8 and the associated text

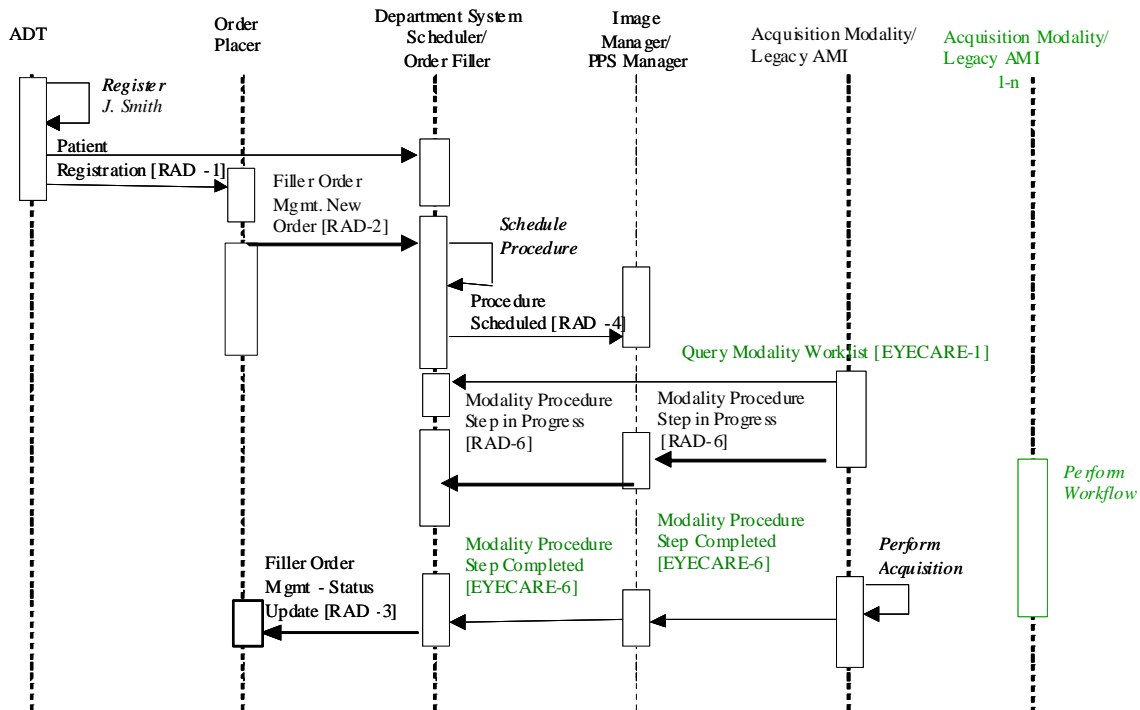


Figure 3.6-1. Patient Registered at ADT and Ordered at the Order Placer – Case E1

Significant Transactions (see also Section 3.3):

- In order to provide billing information for the DSS/OF, the Acquisition Modality **and Legacy Acquisition Modality Importer** is required to support the ability to convey the Performed Protocol Code Sequence as defined in EYECARE-6

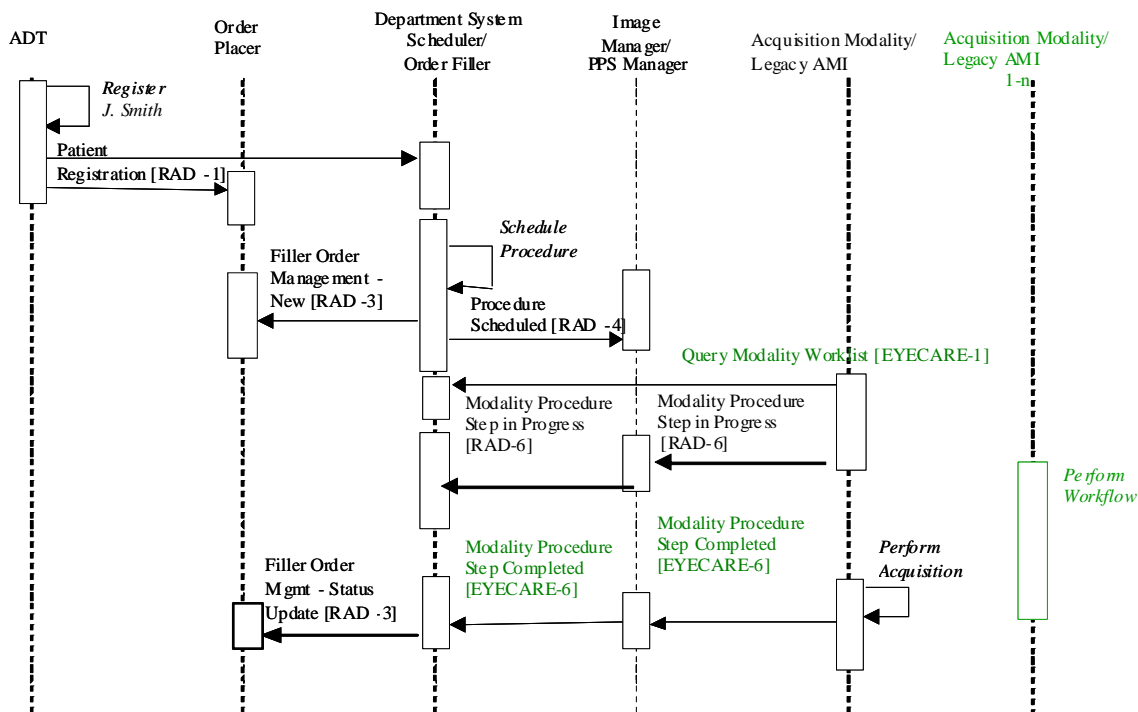


Figure 3.6-2. Patient Registered at ADT and Ordered at DSS/OF – Case E2

3.6.3 Case E3: Unidentified Patient Registered at ADT but Completed at Modality Prior to Order

As in cases 1 and 2, this uses a permanent Patient ID generated by the ADT. However, no order entry or scheduling takes place before the Acquisition Modality **or Legacy Acquisition Modality Importer** performs the procedure. A permanent Patient ID and a temporary name are manually entered at the Acquisition Modality (typically, from a card) and conveyed to the Department System Scheduler/Order Filler and the Image Manager by the Acquisition Modality **or Legacy Acquisition Modality Importer**. Subsequently, the Department System Scheduler/Order Filler generates and submits an order to the Order Placer. When the patient information is reconciled, the ADT sends the Patient Update messages to both the Order Placer and the Department System Scheduler/Order Filler. The Department System Scheduler/Order Filler sends a Patient Update message to the Image Manager.

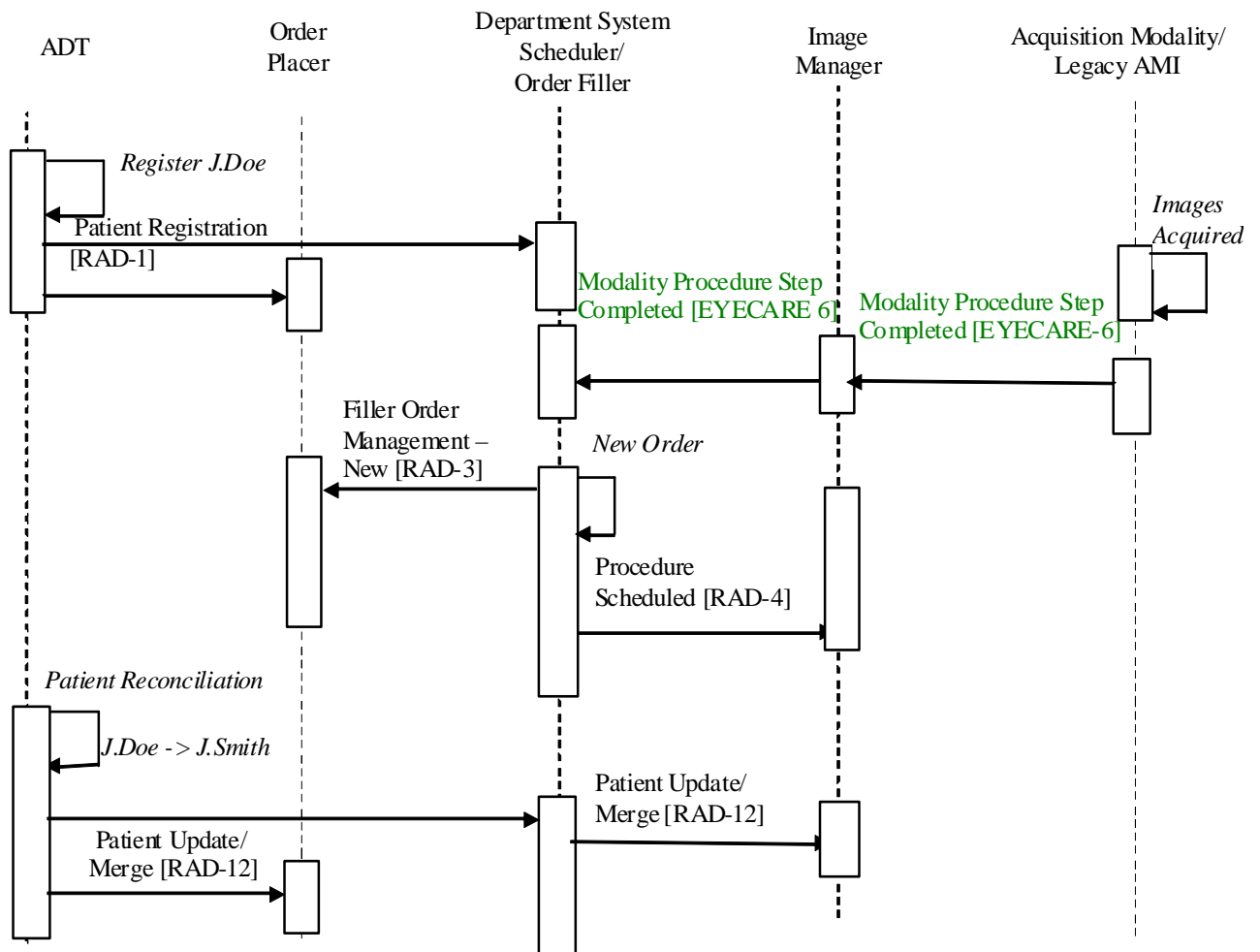


Figure 3.6.3-1 Unidentified Patient – Case E3

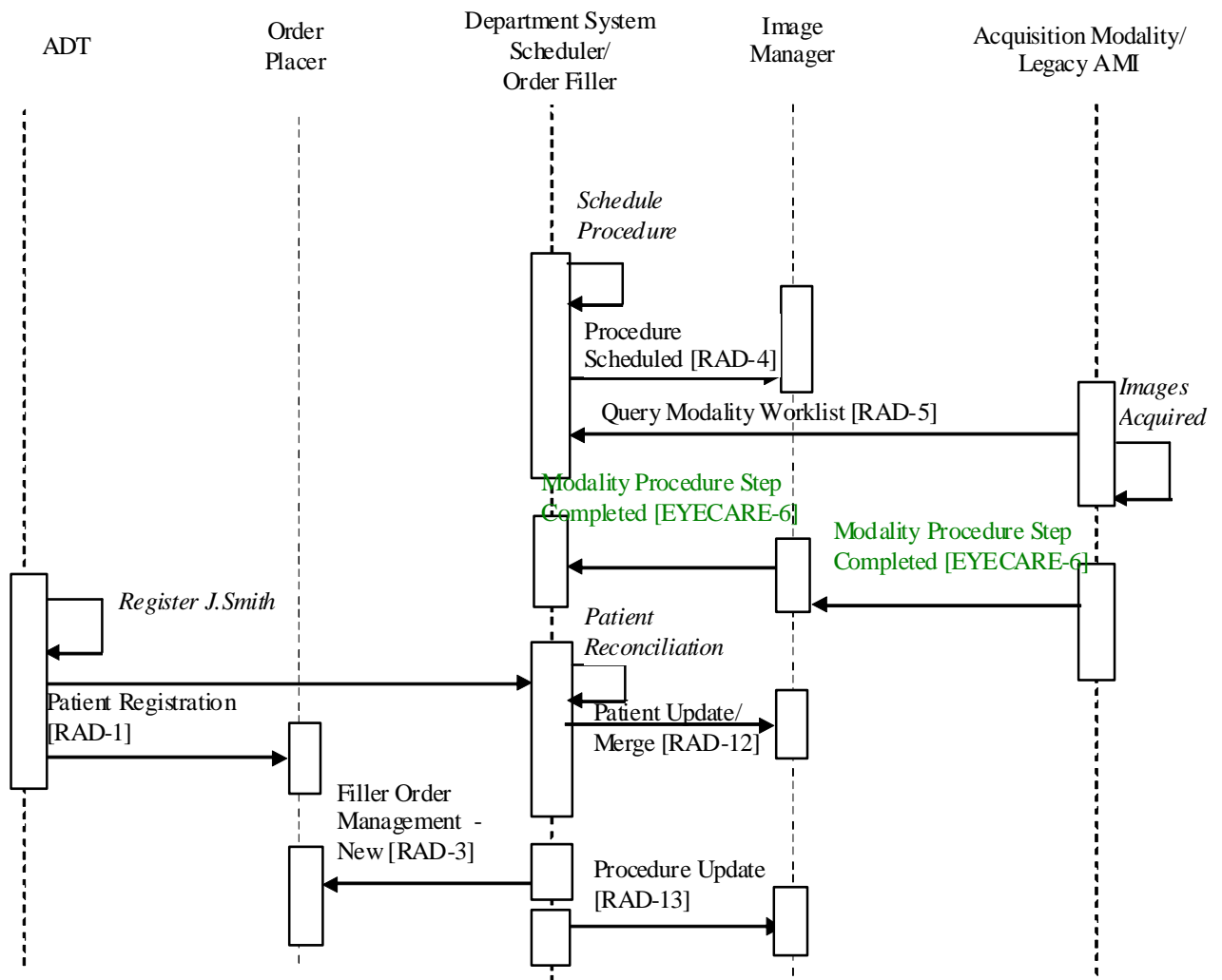


Figure 3.6.4-1 Unidentified Patient– Case E4

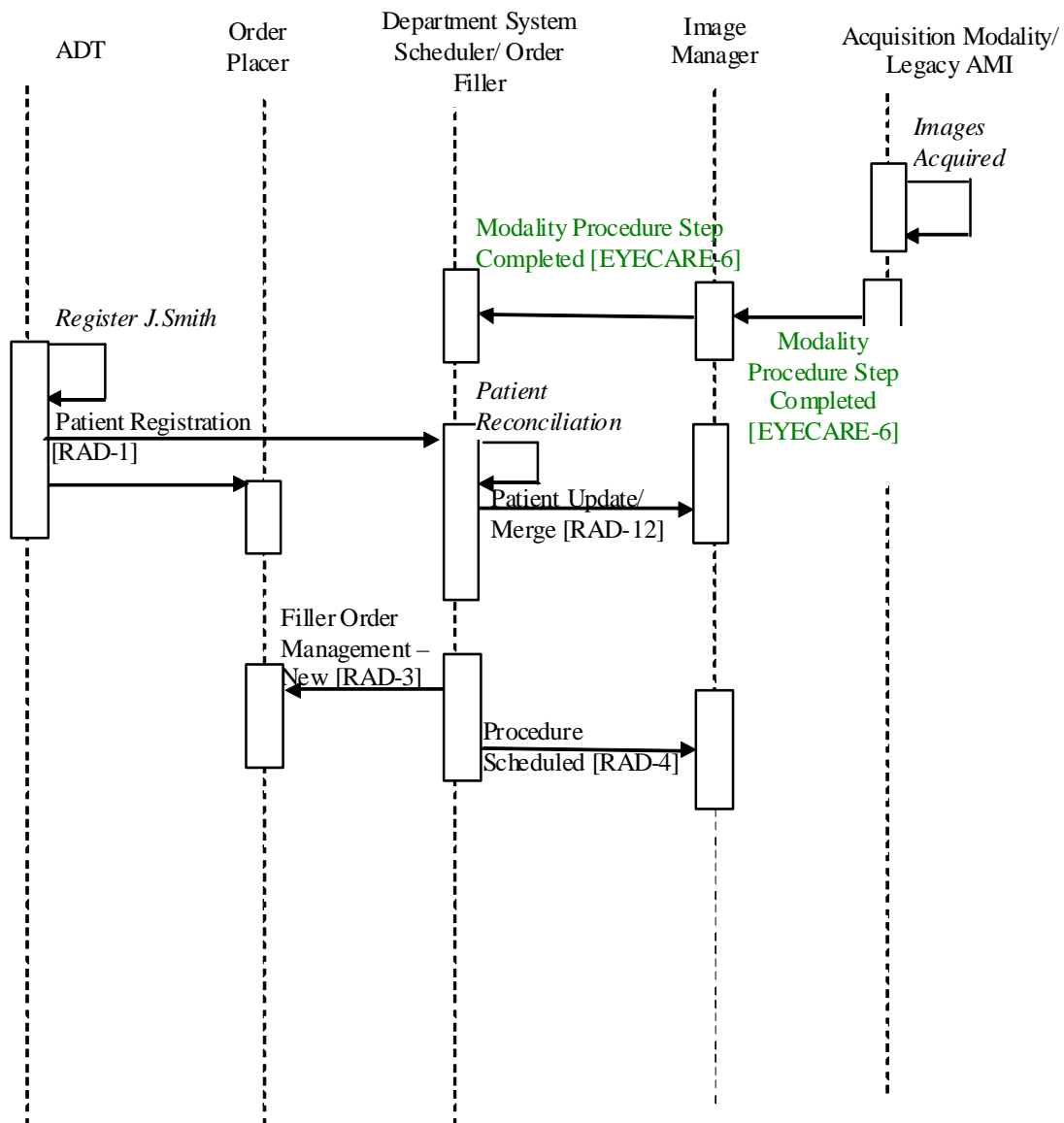


Figure 3.6.5-1 Unidentified Patient – Case E5

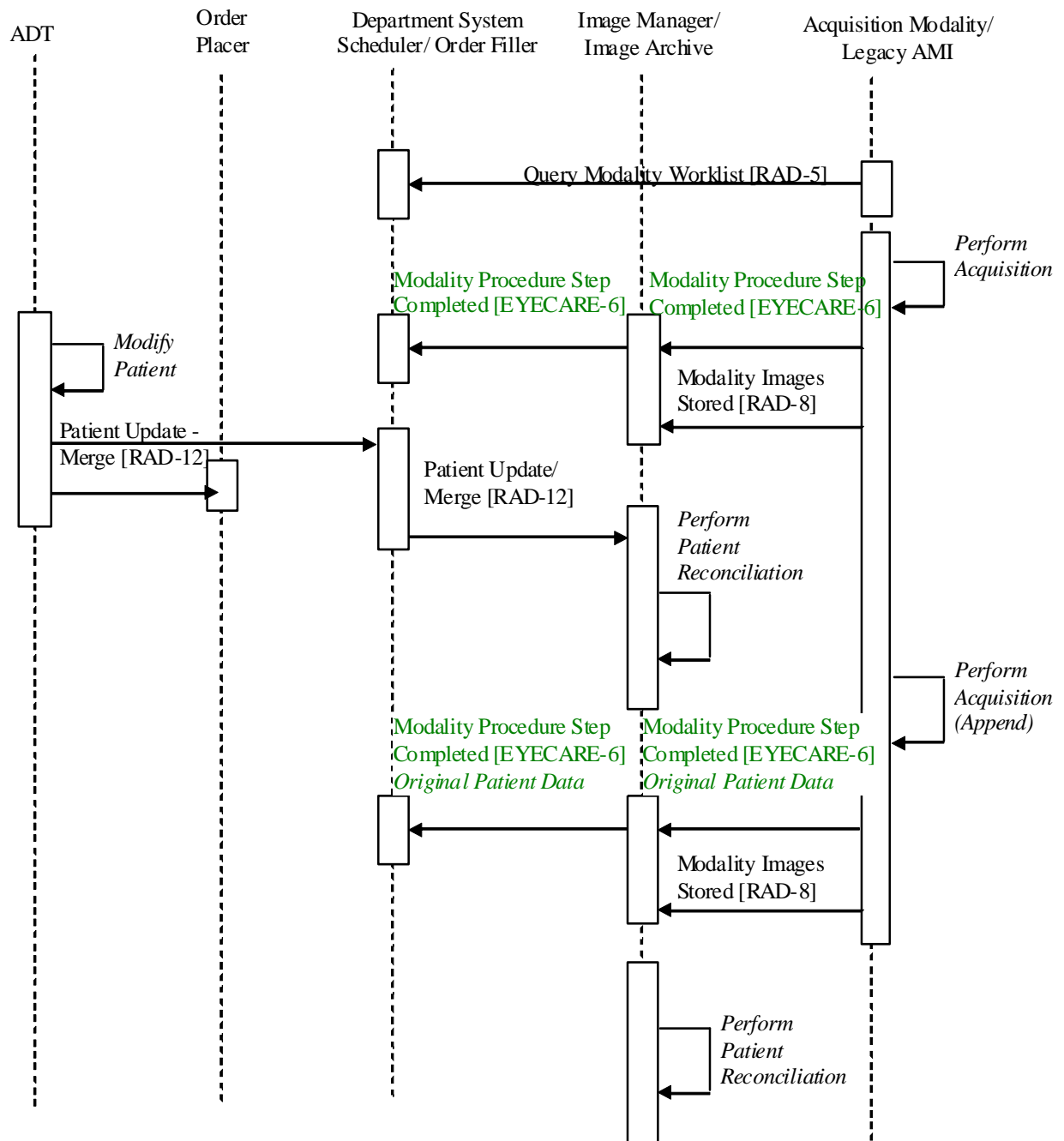


Figure 3.6.6-1 Patient Information Reconciliation During Image Acquisition

Add new section 3.6.8 for Use Case Example - Instructions for Procedures

3.6.8 Instructions for Procedures – Optional Workflow

Clinical Context: When an order for a procedure is created, the health care provider may include instructions to the technician, for example, to convey an instruction to tape the eyelids while performing a Visual Field.

IHE Context: This use case describes the process flow where the DSS/Order Filler generates an Order with procedure instructions.

The Order Filler conveys the instructions to the Order Placer (using HL7 ORM message) and to Modalities using DICOM Modality Worklist.

Note: The Order Placer Actor can also generate Orders; however, in Eye Care, it is typically the Order Filler that performs this transaction. Thus, this use case only focuses on the Order being generated by the Order Filler.

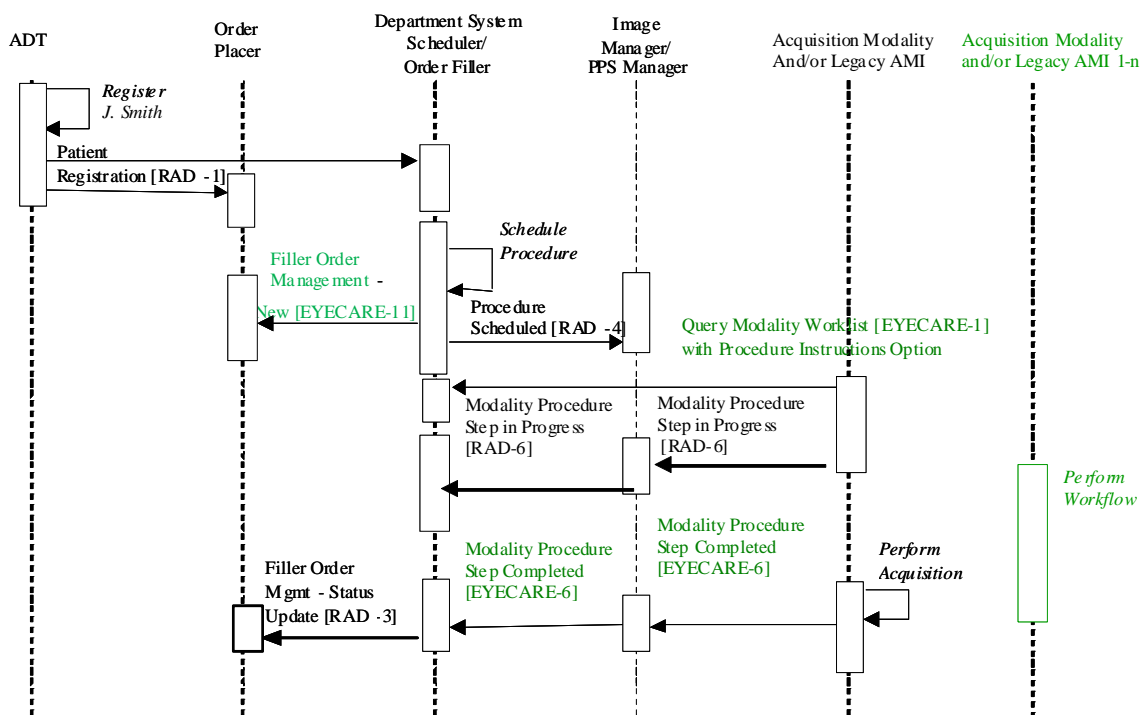


Figure 3.6-8. Procedure Instructions Provided by DSS/Order Filler

Significant Transactions:

- A Filler Order Management (New Order) transaction [EYECARE-11] is sent from DSS/Order Filler to the Order Placer. This is an extension to [RAD-3] which requires support for the NTE segment in the ORM message to convey procedure instructions.
- The Query Modality Worklist transaction [EYECARE-1] with the Procedure Instructions Option supported is sent from the DSS/Order Filler to Acquisition Modality and Legacy Acquisition Modality Importer Actors using the DICOM Modality Worklist query. The Requested Procedure Comments attribute is used to convey the health care provider's procedure instructions.

4.1 Actor/Transactions

Add Legacy Acquisition Modality Importer Actor to Actor section 4.1 Actor Descriptions and update Performed Procedure Step Manager Text (Charge Posting Profile)

Legacy Acquisition Modality Importer – A system that interfaces to a non-DICOM ready modality in order to integrate that modality into the Eye Care Workflow. The Legacy Acquisition Modality Importer is responsible for returning performed protocol code information as part of Eye Care Workflow.

Performed Procedure Step Manager – A system that re-distributes the Modality Performed Procedure Step information from the Acquisition Modality or Legacy Acquisition Modality Importer to the Department System Scheduler/Order Filler and Image Manager.

Add Legacy Acquisition Modality Importer Actor to Figure 4.1-1

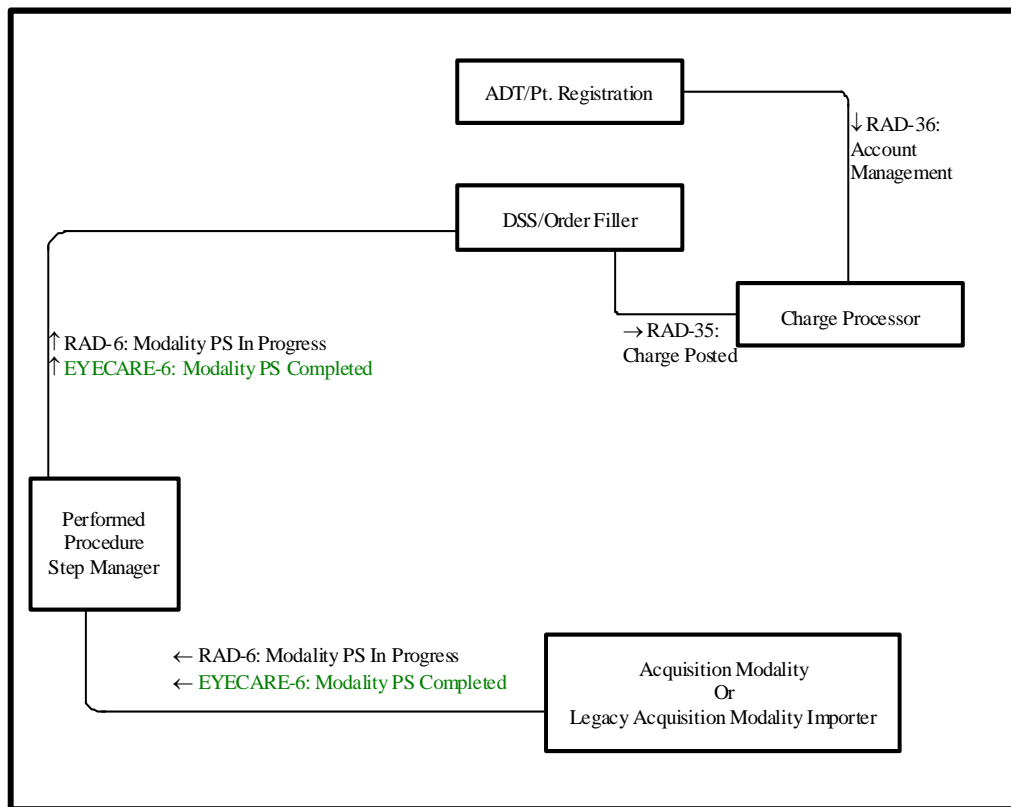


Figure 4.1-1. Eye Care Charge Posting Transaction Diagram

Add Legacy Acquisition Modality Importer Actor to Table 4.1-1

Table 4.1-1. Charge Posting – Actors and Transactions

Actors	Transactions	Optionality	Section
....
<u>Legacy Acquisition Modality Importer</u>	<u>Modality Procedure Step In Progress</u> <u>[RAD-6]</u>	<u>R</u>	<u>RAD-TF 2: 4.6</u>
	<u>Modality Procedure Step Completed</u> <u>[EYECARE-6]</u>	<u>R</u>	<u>EYECARE -TF 2: 4.6</u>

Add Legacy Acquisition Modality Importer Actor to Table 4.2-1

Table 4.2-1 Eye Care Charge Posting – Actors and Options

Actor	Options
.....
<u>Legacy Acquisition Modality Importer</u>	<u>No options defined</u>

Add Legacy Acquisition Modality Importer Actor to Figure 4.3-1

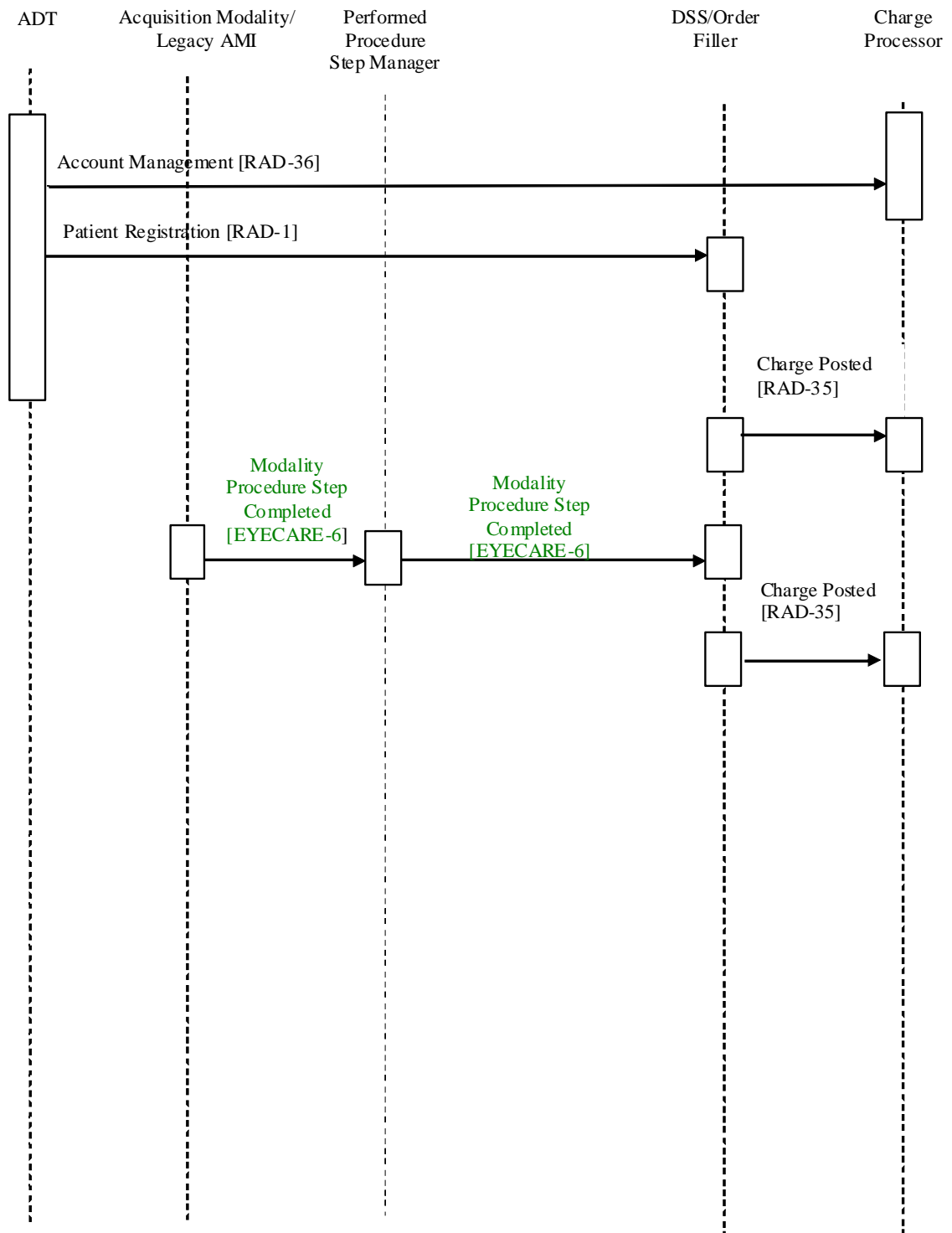


Figure 4.3-1 Eye Care Charge Posting Process Flow

Add Legacy Acquisition Modality Importer Actor to text in section 4.3.2.1

4.3.2.1 New Patient Appointment

.....

After the above procedures are completed, the Acquisition Modality **or Legacy Acquisition Modality Importer** transmits the Modality Performed Procedure Step Completed [EYECARE6] as shown in figure 4.3-1. This transaction includes the Performed Protocol Code Sequence which provides the DSS/OF the needed information to map the protocols to the procedures and CPT codes to automatically sends charges to the Charge Processor.

.....

Add Legacy Acquisition Modality Importer Actor to text in Annex A, A.3.2, A.3.3

A.3.2 Example of how IHE Could Be Used for this Use Case

.....

The DSS/OF creates the device specific DICOM Modality Worklists automatically (i.e. no user interface needed) in response to the ADT messages for a Patient Visit. The DSS/OF creates an HL7 ORM message and conveys this to the Order Placer and also makes these DICOM Modality Worklists available to the Acquisition Modalities **and Legacy Acquisition Modality Importers** at the time the patient arrives in the clinic, (triggered by an A04 Out-Patient Registration ADT message) or based upon the scheduled appointment time. This would typically be the choice of the clinic.....

A.3.3 Continued Use Case Example With Manual Orders

.....

Each Requested Procedure prescribes a number of actions that have to be performed by an Acquisition Modality **or Legacy Acquisition Modality Importer**. Actions are specified in Scheduled Procedure Steps (SPS) based on timing and sequencing, and on modality. Scheduled Procedure Steps are scheduled, i.e., assigned a time slot and performing resource (modality), and are made available via DICOM MWL.

....

X.4 Eye Care Workflow Security Considerations

There are no known security considerations known at this time.

Appendix A: <Appendix A> Actor Summary Definitions

Legacy Acquisition Modality Importer – A system that interfaces to a non-DICOM ready modality in order to integrate that modality into the Eye Care workflow.

Appendix B: <Appendix B> Transaction Summary Definitions

A Filler Order Management (New Order) transaction [EYECARE-11] is sent from DSS/Order Filler to the Order Placer. This is an extension to [RAD-3] which requires support for the NTE segment in the ORM message to convey procedure instructions.

The Query Modality Worklist transaction [EYECARE-1] with the Procedure Instructions Option supported is sent from the DSS/Order Filler to Acquisition Modality and Legacy Acquisition Modality Importer Actors using the DICOM Modality Worklist query. The Requested Procedure Comments attribute is used to convey the health care provider's procedure instructions.

Volume 2 – Transactions Modifications

4.1 Query Modality Worklist [EYECARE-1]

This section corresponds to Query Modality Worklist Transaction of the IHE Eye Care Technical Framework. Query Modality Worklist transaction is used by Acquisition Modality and Legacy Acquisition Modality Importer Actors, and the Department System Scheduler/Order Filler Actor.

Add Legacy Acquisition Modality Importer to note in section 4.1, Query Modality Worklist [EYECARE-1]

Note-1: The Radiology TF requires that the Acquisition Modality **or Legacy Acquisition Modality Importer** support at least one of the Worklist Query choices (i.e. Patient and/or Broad). Eye Care requires support for both options. See EYECARE-TF 1:3.2.

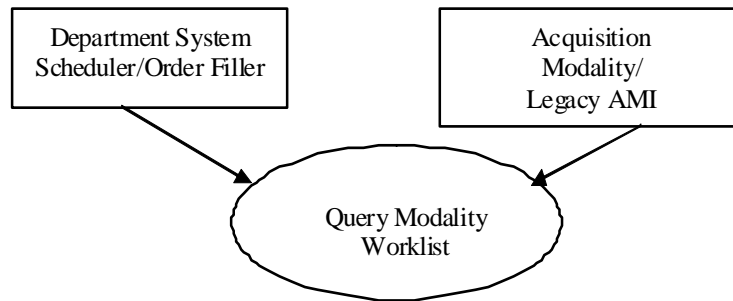
Add Legacy Acquisition Modality Importer to text in section of 4.1.1

4.1.1 Scope

This transaction takes place at the Acquisition Modality **or the Legacy Acquisition Modality Importer** at the point of scan/acquisition. When a patient arrives for the scheduled procedure, the user performing the procedure must examine key information elements as they relate to the procedure, the correctness of the procedure that has been ordered, and comments that may have been entered by the referring healthcare provider. The user at the Acquisition Modality **or the Legacy Acquisition Modality Importer** uses the DICOM Modality Worklist to query the Department System Scheduler/Order Filler for Scheduled Procedure Steps. The list is downloaded to the ~~Acquisition Modality~~ **modality** and the user verifies the information on the ~~Acquisition Modality~~ **modality console**. In the Modality/Evidence Images Stored transaction this information will be included in the header of the generated objects (See RAD-TF 2: 4.8 and RAD-TF 2: Appendix A).

Add Legacy Acquisition Modality Importer to figure and text in section of 4.1.2

4.1.2 Use Case Roles



Actor: Acquisition Modality and **Legacy Acquisition Modality Importer**

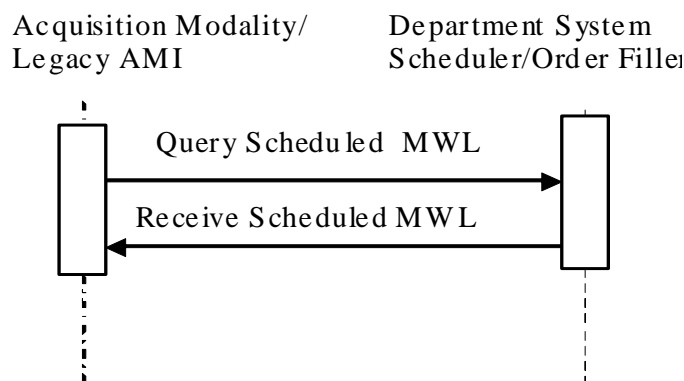
Role: Responsible for requesting and receiving data from the Department System Scheduler/Order Filler, with the ability to validate the data and correct some discrepancies.

Actor: Department System Scheduler/Order Filler

Role: Responsible for accepting requests for MWL from an **Acquisition Modality or Legacy Acquisition Modality Importer**, performing the query, and sending the response back.

Add Legacy Acquisition Modality Importer to figure and text in section of 4.1.4

4.1.4 Interaction Diagram



4.1.4.1.1 Trigger Events

The patient arrives at the ~~Acquisition Modality~~ **modality** for a procedure.

4.1.4.1.2 Message Semantics

The Acquisition Modality **or Legacy Acquisition Modality Importer** uses the C-FIND Request of the DICOM Modality Worklist SOP Class to query for the worklist from the Department

System Scheduler/Order Filler (DSS/Order Filler). The Acquisition Modality **or Legacy Acquisition Modality Importer** performs the SCU role, and the DSS/Order Filler performs the SCP role. The types of queries specified are defined in the RAD-TF 2: 4.5.

4.1.5 Issuer of Patient ID

The ADT/Patient Registration actor transmits information regarding the assigning authority (issuer) of the Patient ID to the DSS/Order Filler Actor; this is defined in [RAD-1], see RAD-TF 2: 4.1). However, [RAD-5] (see RAD-TF 2: 4.5), does not required the DICOM attribute “Issuer of Patient ID” be filled in by the DSS/Order Filler actor if asked by the Acquisition Modality **or Legacy Acquisition Modality Importer during** a Modality Worklist query. This extension requires support for this attribute. See EYECARE-TF 1: 3.3.1 for use case explanation.

.....

Note: The Acquisition Modality **and Legacy Acquisition Modality Importer actors** ~~is~~ **are** not required to ask for the Issuer of Patient ID in its query; however, if ~~it does~~ **they do** ask for the attribute, the DSS/Order Filler is required to return a valid value in the response.

Add section 4.1.6 Procedure Instructions Options

4.1.6 Procedure Instructions Option

When an order for a procedure is created, a health care provider may wish to include instructions to the technician. For example there might be instructions to tape the eyelids while performing a Visual Field or to concentrate on a specific region of the eye during the early stage of an angiogram, etc.

This is accomplished when an Order Placer and/or Order Filler Actor transmits HL7 ORM messages which are defined in [EYECARE-10] and [EYECARE-11], see EYECARE-TF 2: 4.10 and EYECARE-TF 2: 4.11 for complete specifications.

If instructions for a procedure are provided, the DSS/OF shall convey these instructions to the Acquisition Modality or Legacy Acquisition Modality Importer during a Modality Worklist query using the DICOM attribute “Requested Procedure Comments”. The Acquisition Modality and/or Legacy Acquisition Modality Importer Actors shall display the instructions to the technician prior to performing the procedure.

Table 4.1.6-1 Return and Matching Keys for Modality Worklist

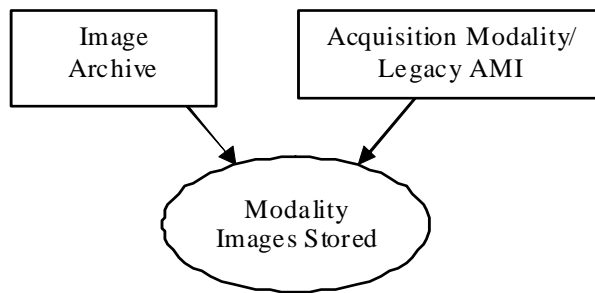
Attribute Name	Tag	Query Keys Matching		Query Keys Return	
		SCU	SCP	SCU	SCP
Requested Procedure Comments					
Requested Procedure Comments	(0040,1400)	O	O	R+	R+

Add Legacy Acquisition Modality Importer to figure and text in section of 4.2.1

4.2.1 Scope

In the Modality Images/Evidence Stored transaction, the Acquisition Modality **or Legacy Acquisition Modality Importer** sends the acquired images/evidence documents to the Image Archive. The information provided from the Modality Worklist transaction (see RAD-TF 2: 4.5) shall be included in the headers of the generated images.

4.2.2 Use Case Roles



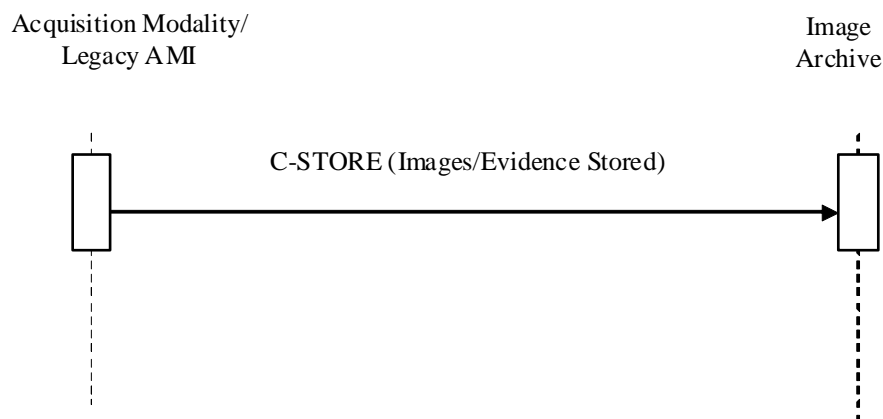
Actor: Acquisition Modality or Legacy Acquisition Modality Importer

Role: Transmit acquired image/evidence documents data to Image Archive.

Actor: Image Archive

Role: Accept and store images/evidence documents from Acquisition Modalities and Legacy Acquisition Modality Importer.

4.2.4 Interaction Diagram



4.2.4.1.1 Trigger Events

The Acquisition Modality or Legacy Acquisition Modality Importer can transfer images/evidence documents to the Image Archive sequentially within one or more DICOM associations, as the images/evidence documents become available or collectively.

4.2.4.1.1.1 Study UIDs and Series UIDs

.....

For consistency, IHE specifies that derived and/or reconstructed images shall be stored in a separate series from the acquired images from which they were derived/reconstructed, regardless of whether they are derived/reconstructed on the Acquisition Modality **or Legacy Acquisition Modality Importer** or an Evidence Creator.

4.2.2.4.1.2 Message Semantics

The Acquisition Modality **and Legacy Acquisition Modality Importer** uses the DICOM C-STORE message to transfer the images/evidence documents. The Acquisition Modality **or Legacy Acquisition Modality Importer** is the DICOM Storage SCU and the Image Archive is the DICOM Storage SCP.

....

4.2.4.1.3 Issuer of Patient ID into Stored Images or Evidence Documents

EYECARE-1 defines the ability for Acquisition Modalities **and Legacy Acquisition Modality Importers** to query for the attribute Issuer of Patient ID using DICOM Modality Worklist, see section 4.1 for the specification. This section defines the requirement that this attribute be placed in the images and/or evidence documents if obtained via the query worklist.

If an Acquisition Modality **or Legacy Acquisition Modality Importer** actor obtains a valid value for the attribute Issuer Of Patient ID (0010,00210) via the Query Worklist Transaction, it shall include this attribute in any images and/or evidence documents it creates related to this specific patient.

<i>Add section 4.2.11</i>

4.2.11 Legacy Modality Actor Storage

Legacy Modality Actors provide IHE integration capabilities to Eyecare acquisition instruments that are not DICOM compatible. The storage requirements are very similar to Acquisition Modalities, however it may not be possible to obtain the acquisitions internal data and may have to interface via framegrabber, printer ports and other mechanism (this is not defined in IHE). Thus, they may also support DICOM SOP Classes that “capture” data from other devices.

Legacy Acquisition Modality Importer Actors shall support at least one of the SOP Classes defined in tables 4.2.5-1 and/or 4.2.7-1 and/or 4.2.11-1.

Table 4.2.11-1. Legacy Acquisition Modality Importer Actor Capture SOP Classes

SOP Class UID	SOP Class Name
1.2.840.10008.5.1.4.1.1.104.1	Encapsulated PDF Storage
1.2.840.10008.5.1.4.1.1.7	Secondary Capture Image Storage
1.2.840.10008.5.1.4.1.1.7.2	Multi-frame Grayscale Byte Secondary Capture Image Storage
1.2.840.10008.5.1.4.1.1.7.3	Multi-frame Grayscale Word Secondary Capture Image Storage
1.2.840.10008.5.1.4.1.1.7.4	Multi-frame True Color Secondary Capture Image Storage

Eyecare modalities typically create three types of storage objects, image, measurement, and/or report based.

- IHE recommends that Legacy Acquisition Modality Importer Actor support a SOP Class from table 4.2.5-1 for image based objects and table 4.2.7-1 for measurement based objects.
- When this is not feasible, IHE recommends supporting one of the Secondary Capture Image Storage SOP Classes (see table 4.2.11-1) for image based objects and the Encapsulated PDF Storage SOP Class for measurement/report/text based objects. When supporting Encapsulated PDF, it is highly recommended that the format of the document is PDF/A.

<i>Add Legacy Acquisition Modality Importer to figure and text in section of 4.6</i>
--

4.6 Modality Procedure Step Completed/Discontinued [EYECARE-6]

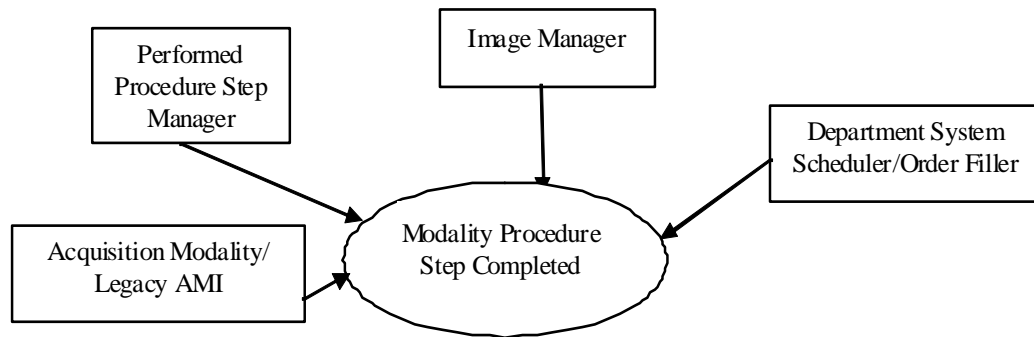
This transaction is identical to Modality Procedure Step Completed [RAD-7] (see RAD-TF 2: 4.7), with the additional requirement that that Acquisition Modalities **or Legacy Acquisition Modality Importer** conveys the attribute Performed Protocol Code Sequence in the MPPS message. The Department System Scheduler/Order Filler, Image Manager, Performed Procedure Step Manager and Acquisition Modality actors use transaction EYECARE-6.

4.6.1 Scope

This transaction includes a message from the Acquisition Modality **or Legacy Acquisition Modality Importer** to the Performed Procedure Step Manager, which in turn issues messages to the DSS/Order Filler and the Image Manager that the Performed Procedure Step has been completed. Information is not being released for billing at this point but a code may be assigned. The Image Manager may need the information to co-locate images of the same study. The

Modality Procedure Step Completed message does not necessarily mean that the set of images is complete or available for retrieval.

4.6.2 Use Case Roles



Actor: Department System Scheduler/Order Filler.

Role: Receives the PPS information forwarded by the PPS Manager.

Actor: Image Manager.

Role: Receives the PPS information forwarded by the PPS Manager.

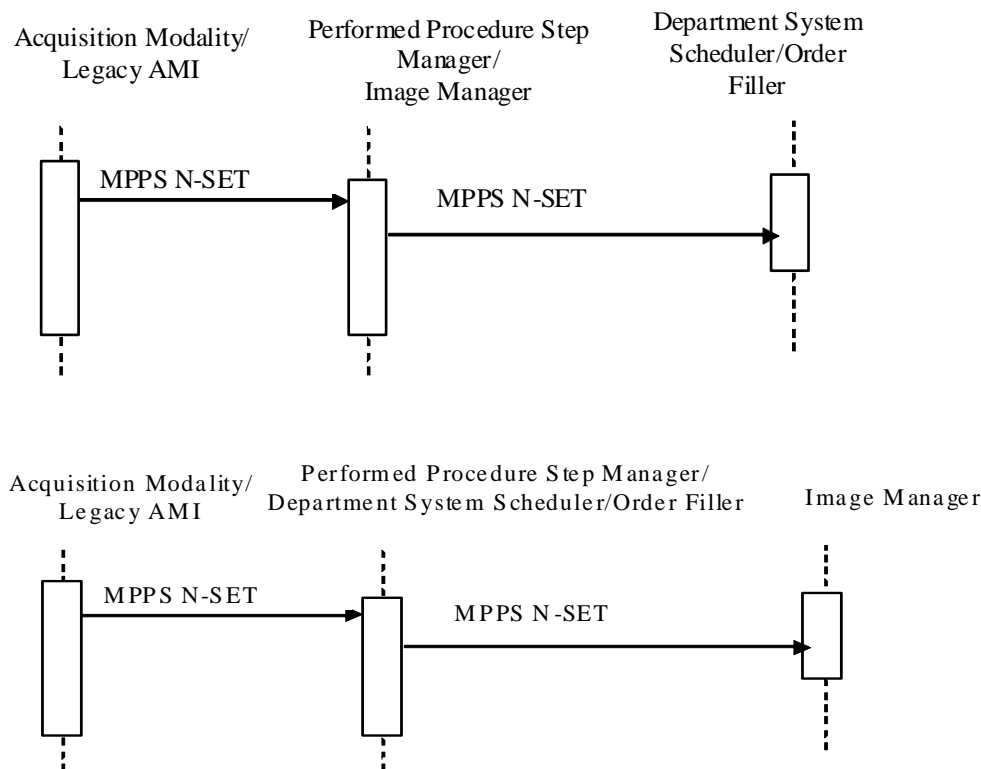
Actor: Acquisition Modality or Legacy Acquisition Modality Importer

Role: Informs the Performed Procedure Step Manager that a particular Performed Procedure Step is completed.

Actor: Performed Procedure Step Manager.

Role: Accepts Performed Procedure Step information from an Acquisition Modality or Legacy Acquisition Modality Importer and transmits it to the Department System Scheduler/Order Filler and Image Manager.

4.6.4 Interaction Diagram



Note: The diagram above shows the sequencing of messages for the Modality Performed Procedure Step SOP Class. Acquisition Modalities and Legacy Acquisition Modality Importers will also implement the Storage and Storage Commitment classes. The timing relationship between PPS messages and Storage and Storage Commitment messages is not specified. That is, PPS messages may occur before or after storage requests.

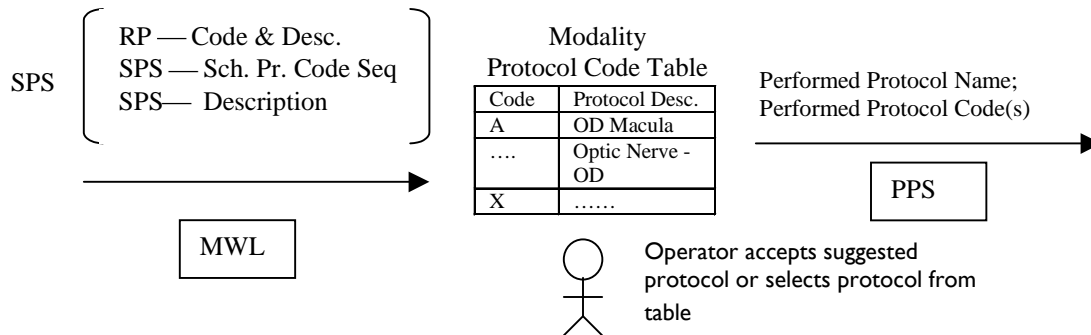
4.6.4.1 Modality Procedure Step Completed/Discontinued [EYECARE-6]

RAD-7 defines the requirements and options for supporting Modality Procedure Step Completed/Discontinued. This transaction is a simple extension to RAD-7 as it adds the additional requirement that Acquisition Modalities and Legacy Acquisition Modality Importers convey the attribute Performed Protocol Code Sequence in the MPPS message.

Department System Scheduler/Order Filler, Image Manager, Performed Procedure Step Manager, and Acquisition Modality and Legacy Acquisition Modality Importer actors are required to support RAD-7 as defined in RAD-TF 2: 4.7 with the following extensions.

4.6.4.2 Performed Protocol Code Sequence

A Modality Protocol Table shall be configured on ~~the~~ Acquisition Modality and **Legacy Acquisition Modality Importer** Actors. This table shall be synchronized with the Image Manager and the Department System Scheduler/Order Filler Actors.



Upon obtaining a MWL from the Department System Scheduler/Order Filler the Acquisition Modality **or Legacy Acquisition Modality Importer** is required to display the attributes Scheduled Protocol Code Sequence and Scheduled Procedure Step Description (this requirement is part of RAD-5 and [EYECARE-1]).

For this requirement, the modality operator shall either accept/select the protocol, proposed in attribute Scheduled Protocol Code Sequence, or select an alternative protocol defined in the list of possibilities from Modality Protocol Table. The operator shall not manually enter the attributes (i.e. type in the protocol code) of the acquisition protocol but use the list from the Modality Protocol Table. This simplifies the operator's work on the modality and enables a better management of the protocols used in an imaging department. The Acquisition Modality **or Legacy Acquisition Modality Importer** actor shall provide the selected protocol code value in the attribute Performed Protocol Code Sequence in addition to the Protocol Name. This feature facilitates the role of the Department System Scheduler/Order Filler within the Charge Posting Integration Profile.

This feature does not define a specific codification of acquisition protocols. The involved actors, Department System Scheduler, Acquisition Modality, **Legacy Acquisition Modality Importer** and Image Manager/Archive shall be configurable in order to support the codification scheme selected or defined by the healthcare enterprise.

4.6.4.3 Trigger Event

Operator completes procedure step from the ~~Acquisition Modality~~ **modality** console.

4.6.4.4 Message Semantics

The Acquisition Modality **or Legacy Acquisition Modality Importer** uses the Modality Performed Procedure Step SOP Class (N-SET service) to inform the Performed Procedure Step Manager that a specific Performed Procedure Step has been completed or discontinued. The

Acquisition Modality **or Legacy Acquisition Modality Importer** may use the MPPS N-SET service to send intermediate updates of the Performed Procedure Step information.

The final N-SET has either the MPPS status of "COMPLETED" or "DISCONTINUED". The Performed Procedure Step Manager sends corresponding N-SETs to the Department System Scheduler/Order Filler and Image Manager.

When an N-SET is issued with a "DISCONTINUED" status, one or more Series of Instances may be referenced, if images were created and sent. Those Instances shall be Stored and Storage Committed

Along with other information, the Acquisition Modality **or Legacy Acquisition Modality Importer** shall transmit information about the protocol it used to produce the SOP instances to the recipients. See Protocol Handling in section RAD-TF 2: 4.6.4.1.2.4 for detailed discussion of this issue.

Note: It is difficult for implementations of a Legacy Acquisition Modality Importer Actor to manage the transition from starting a MPPS (i.e., MPPS N-CREATE with a status of IN PROGRESS) to finishing a MPPS (i.e. MPPS N-SET with a status of COMPLETED or DISCONTINUED). This is because these Legacy Acquisition Modality Importer Actors often cannot know exactly when the modality starts and ends the procedure. Actually it may be typical to know only when the procedure is finished. The DICOM MPPS workflow requires the N-CREATE/N-SET commands be transmitted, thus the Legacy Acquisition Modality Importer Actor is required to send both DICOM commands even though it may only know when the procedure step was finished. Implementations receiving these DICOM commands should be aware that the MPPS start and end times may not be accurate.

<i>Add 4.10 Instructions for Performing a Procedure – Order Placer Management [EYECARE -10]</i>

4.10 Instructions for Performing a Procedure- Placer Order Management [EYECARE-10]

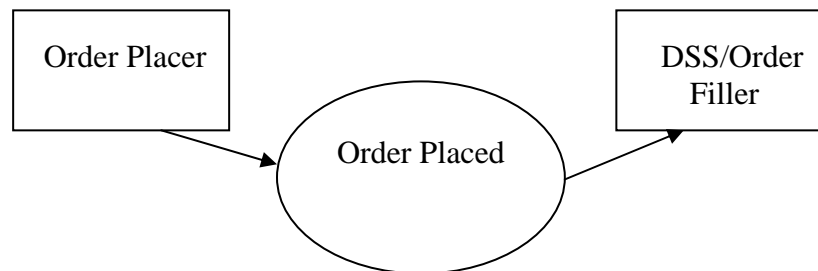
This transaction is based upon Placer Order Management [RAD-2] (see RAD-TF 2 4.2), with the extension to transmit healthcare provider instructions to the technician prior to performing a procedure.

4.10.1 Scope

This transaction is used by the Order Placer to place a new order to the Order Filler Actor (it also supports the ability to cancel an order). During the creation of a new order, a health care provider may wish to include instructions to the technician. For example there might be instructions to tape

the eyelids while performing a Visual Field or to concentrate on a specific region of the eye during the early stage of an angiogram, etc.

4.10.2 Use Case Roles



Actor: Order Placer

Role: Places orders. Cancels orders as necessary.

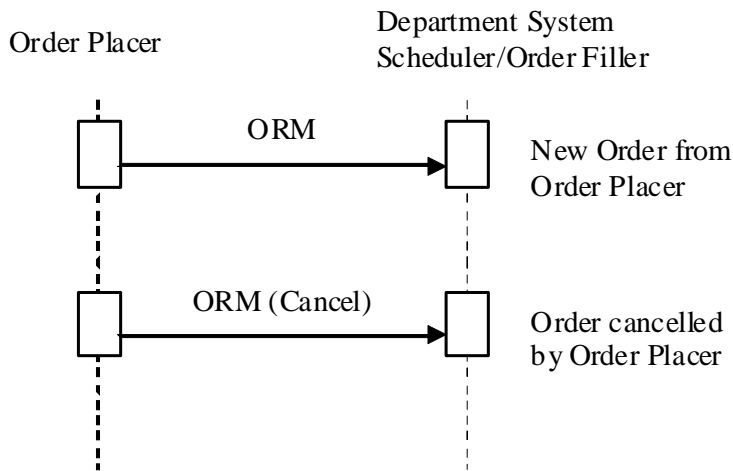
Actor: DSS/OF

Role: Receives and processes (fills) orders. Receives order cancelations.

4.10.3 Referenced Standards

HL7 2.3.1 Chapter 4

4.10.4 Interaction Diagrams



4.10.4.1 – Order Management – New Order from Order Placer

4.10.4.1.1 Trigger Events

ORM – The Order Placer places a new order for the DSS/Order Filler that may contain specific procedure instructions to the technician performing the procedure.

4.10.4.1.2 Message Semantics

When an order is created, the Order Placer provides a mechanism for the healthcare provider to enter free text instructions to the technician who will be performing the procedure. The Order Placer transmits these instructions using the NTE segment of the ORM HL7 message to the DSS/OF (i.e. the NTE segment becomes mandatory when instructions are provided).

The message semantics are as defined in [RAD-2] (see RAD-TF 2 4.2) with the extension for supporting the HL7 NTE segment to provide textual instructions.

For this [EYECARE-10] extension, the table in RAD-TF 2: 4.2.4.1.2 shall be extended as defined by table 4.10.4.1.2-1 below.

Table 4.10.4.1.2-1 – HL7 ORM Message

ORM	General Order Message	Chapter in HL7 v2.3.1
NTE	Notes and Comments (for Detail)	2 Required if instructions are

		provided. It may be present otherwise.
--	--	--

4.10.4.1.2.1 NTE - Notes and Comments Segment

The NTE segment is a common format for sending notes and comments. The element Source of Comment shall contain “LPI” to denote that the instruction is a Limited Procedure Instruction.

Although the NTE Comment Element allows for 64K, the length shall be limited to 10,240 characters to accommodate the DICOM Modality Worklist Requested Procedure Comments attribute length to which this value maps (see Procedure Instructions Option in [EYECARE-1]).

Table 4.10.4.1.2.1-1 NTE attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	SI	O			00096	Set ID - NTE
2	8	ID	R2		0105	00097	Source of Comment
3	10,240	FT	R2	Y		00098	Comment
4	60	CE	O			01318	Comment Type

Modified Table 0105 Source of comment

Table	Code	Code Meaning
0105	LPI	Limited Procedure Instruction

4.10.4.1.3 Expected Actions

The expected actions are defined in RAD-TF 2: 4.2, with the following extension.

The Order Placer Actor shall provide a mechanism to convey procedure instructions and if provided, these instructions shall be included in the ORM Message, within the NTE segment directly following each relative procedure detail (OBR) segment. The DSS/OF shall be able to process the NTE segment for use in further transactions.

Note: The DSS/Order Filler uses the Procedure Instructions Option in [EYECARE-1] to convey the instructions to the Acquisition Modality or Legacy Acquisition Modality Importer actor using DICOM Modality Worklist. The Acquisition Modality or Legacy Modality Acquisition Importer actor will then display the instruction to the technician.

Add 4.11 Instructions for Performing a Procedure – Filler Order Management [EYECARE-11]

4.11 Instructions for Performing a Procedure- Filler Order Management [EYECARE-11]

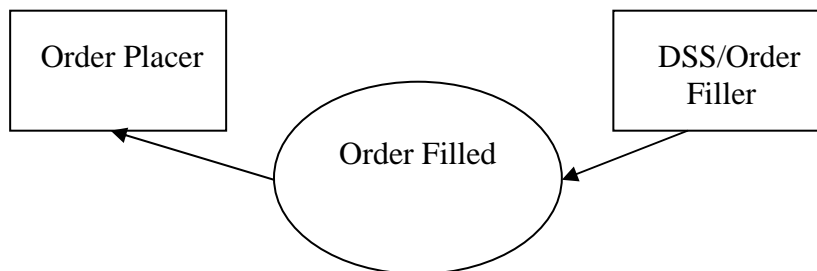
This transaction is based upon Filler Order Management [RAD-3] (see RAD-TF 2 4.3), with the extension to transmit healthcare provider instructions to the technician prior to performing a procedure.

4.11.1 Scope

This transaction is used by the Order Filler to inform the Order Placer about the orders it creates and cancels, including the status of the orders it is fulfilling. If the Order Filler needs to change an order, it has to do so as a combination of Order Cancel followed by New Order.

During the creation of a new order, a health care provider may wish to include instructions to the technician. For example there might be instructions to tape the eyelids while performing a Visual Field or to concentrate on a specific region of the eye during the early stage of an angiogram, etc.

4.11.2 Use Case Roles



Actor: Order Placer

Role: Receives new order and order cancellation requests from Order Filler. Receives Order Status updates from Order Filler.

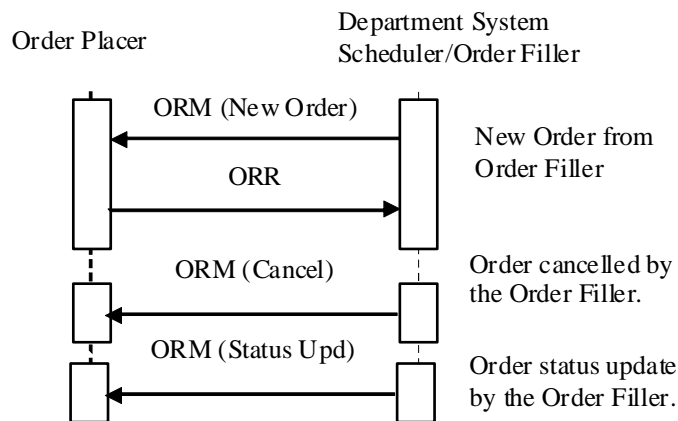
Actor: Department System Scheduler/Order Filler

Role: Creates new or cancels existing orders; sends notifications of order status to the Order Placer.

4.11.3 Referenced Standards

HL7 2.3.1 Chapters 4

4.11.4 Interaction Diagrams



4.11.4.1 – Filler Order Management – New Order from Order Filler

4.11.4.1.1 Trigger Events

ORM - Department system Scheduler/Order Filler places an order that may contain specific procedure instructions to the technician performing the procedure.

4.11.4.1.2 Message Semantics

When an order is created, the DSS/Order Filler provides a mechanism for the healthcare provider to enter free text instructions to the technician who will be performing the procedure. The DSS/Order Filler transmits these instructions using the NTE segment of the ORM HL7 message to the DSS/OF (i.e. the NTE segment becomes mandatory when instructions are provided).

The message semantics are as defined in [RAD-3] (see RAD-TF 2 4.3) with the extension for supporting the HL7 NTE segment to provide textual instructions.

For this [EYECARE-11] extension, the table in RAD-TF 2: 4.3.4.1.2 shall be extended as defined by table 4.11.4.1.2-1 below.

Table 4.11.4.1.2-1 – HL7 ORM Message

ORM	General Order Message	Chapter in HL7 v2.3.1
NTE	Notes and Comments (for Detail)	2 Required if instructions are provided. It may be present otherwise.

4.11.4.1.2.1 NTE - Notes and Comments Segment

The NTE segment is a common format for sending notes and comments. The element Source of Comment shall contain “LPI” to denote that the instruction is a Limited Procedure Instruction.

Although the NTE Comment Element allows for 64K, the length shall be limited to 10,240 characters to accommodate the DICOM Modality Worklist Requested Procedure Comments attribute length to which this value maps (see Procedure Instructions Option in [EYECARE-1]).

Table 4.11.4.1.2.1-1 NTE attributes

SEQ	LEN	DT	OPT	RP/ #	TBL#	ITEM #	ELEMENT NAME
1	4	SI	O			00096	Set ID - NTE
2	8	ID	R2		0105	00097	Source of Comment
3	10,240	FT	R2	Y		00098	Comment
4	60	CE	O			01318	Comment Type

Modified Table 0105 Source of comment

Table	Code	Code Meaning
0105	LPI	Limited Procedure Instruction

4.11.4.1.3 Expected Actions

The expected actions are defined in RAD-TF 2: 4.3, with the following extension.

The DSS/Order Filler Actor shall provide a mechanism to convey procedure instructions and if provided, these instructions shall be included in the ORM Message, within the NTE segment directly following each relative procedure detail (OBR) segment. The Order Placer shall be able to process the NTE segment.

Note: The DSS/Order Filler uses the Procedure Instructions Option in [EYECARE-1] to convey the instructions to the Acquisition Modality or Legacy Acquisition Modality Importer actor using DICOM Modality Worklist. The Acquisition Modality or Legacy Modality Acquisition Importer actor will then display the instruction to the technician.

4.Y.1. Security Considerations

There are no known security considerations at this time.

4.Y.1.1 Security Audit Considerations

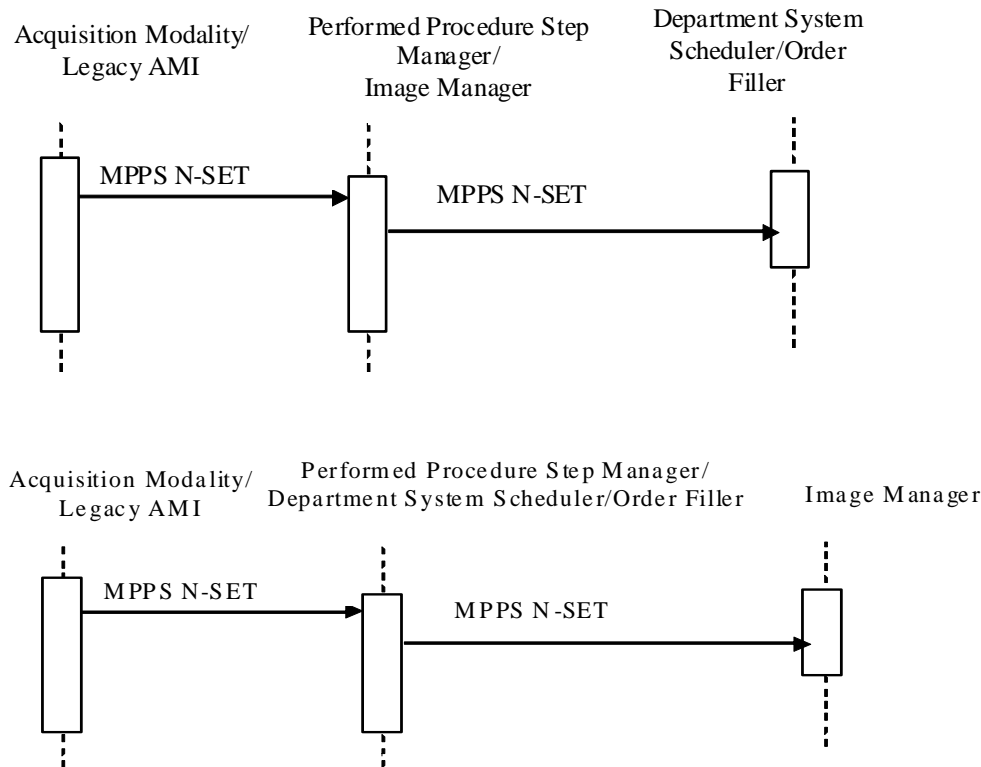
There are no specific ATNA security audit event associated with these transactions

4.Y.1.1 (a) Actor Specific Security Considerations

There are no specific considerations specific to Actors.

APPENDIX A DETAILED INTERACTION DIAGRAMS

4.6.4 Interaction Diagram



Note: The diagram above shows the sequencing of messages for the Modality Performed Procedure Step SOP Class. Acquisition Modalities **and Legacy Acquisition Modality Importers** will also implement the Storage and Storage Commitment classes. The timing relationship between PPS messages and Storage and Storage Commitment messages is not specified. That is, PPS messages may occur before or after storage requests.

4.11.4 Interaction Diagrams

