

Integrating the Healthcare Enterprise



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**IHE IT Infrastructure
Technical Framework**

Volume 3

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**Cross-Transaction Specifications and Content
Specifications**

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4.0 Metadata used in Document Sharing profiles

85 This section describes the metadata that is used in IHE profiles designed for sharing documents (Document Sharing profiles). The Document Sharing profiles are implementing the Document Sharing concept outlined in the ITI whitepaper entitled *Health Information Exchange: Enabling Document Sharing Using IHE Profiles* available on the IHE website (http://ihe.net/Technical_Frameworks/#IT). This section assumes understanding of the concepts presented in the white paper.

90 ITI Document Sharing profiles which use this metadata include:

- Cross-Enterprise Document Sharing (XDS.b)
- Cross-Enterprise Document Reliable Interchange (XDR)
- Cross-Enterprise Document Media Interchange (XDM)
- 95 • Multi-Patient Queries (MPQ)
- Cross-Community Access (XCA)

It is likely that future ITI profiles will also use Document Sharing metadata. Profiles from IHE domains other than ITI that use or constrain this metadata are not listed here. Those profiles will document their use of this metadata.

100 Document Sharing profiles manage two aspects of the documents being shared, the metadata about the document and the contents of the document.

Metadata encodes the properties of Documents, the environments they come from, circumstances of their submission, terms to reference in queries, and grouping with other Documents. If you think of a document as a book in a library, the index card in the library's card catalog is the document metadata.

105 A Document is a byte sequence managed by actors in one or more IHE Document Sharing profiles. There is no concept of equivalent Documents. If the byte sequence is different, then the Documents are different.

110 Note that this definition of a Document is stricter than document definitions in DICOM^{®1}, HL7, HL7 CDA^{®2}, XML, and elsewhere. Those standards have concepts like "insignificant whitespace". Documents with different byte sequences, that those standards consider equivalent, will be treated as different Documents by IHE Document Sharing.

This stricter definition of a Document enables the Document Sharing actors to manage any document format, without the need to include a parser that understands the details of all the

¹ DICOM is the registered trademark of the National Electrical Manufacturers Association for its standards publications relating to digital communications of medical information.

² HL7 and CDA are the registered trademarks of Health Level Seven International and the use does not constitute endorsement by HL7.

115 different document formats. It also enables most document indexing, registration, etc. to be done using metadata alone, without examining the document contents.

Section 4 first explains the metadata at a conceptual level (Section 4.1), then at an implementation level (Section 4.2) and then provides some profile- and transaction-specific metadata constraints and considerations (Section 4.3).

120 Content Profiles may impose restrictions on metadata attributes. See Section 5 for the restrictions imposed by ITI Content Profiles.

4.1 Abstract Metadata Model

The metadata used in Document Sharing profiles is characterized by three types of objects and two types of Associations. In Figure 4.1-1, the three objects types and two Association types are depicted using UML to show their relationships. The three object types are:

- SubmissionSet – metadata describing a collection of Folders, DocumentEntries, and Associations submitted together.
- Folder – metadata describing a collection of related DocumentEntries.
- DocumentEntry – metadata describing a Document.

130 The two Association types are:

- HasMember – represents membership of an object in a collection. The four variations of HasMember are described in Section 4.1.2.
- Relationship – represents a relationship (such as a transform) between two Documents (represented by DocumentEntries). The Relationship associations are described in

135

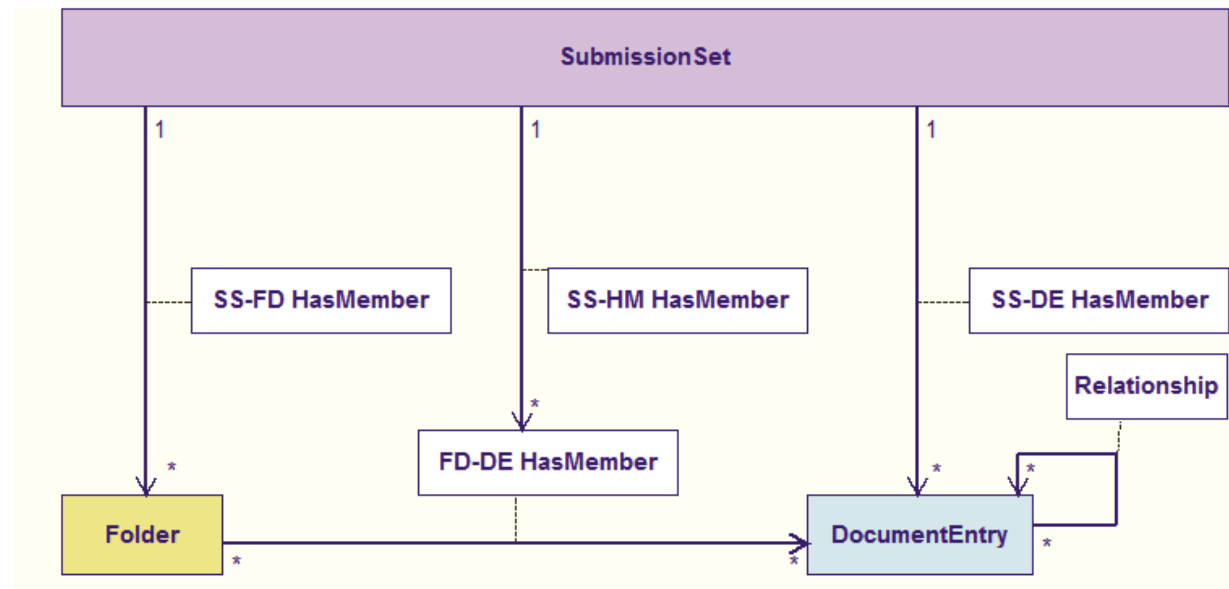


Figure 4.1-1: Document Sharing Objects and Associations

4.1.1 Metadata Object Types

140 There are three metadata object types supported by the Document Sharing metadata, as seen in Figure 4.1-1:

- SubmissionSet
- Folder
- DocumentEntry

145 **SubmissionSet** – The SubmissionSet can be thought of as the packing slip of a postal package. The details of the submission of DocumentEntries, Folders, and Associations are captured in the SubmissionSet object. The creating entity of each submission must group the DocumentEntries, Folders and Associations into a unique SubmissionSet. The Document Sharing profiles ensure that the documents are treated as a unit for submission purposes – either all of the documents arrive at their destination, or none of them do. An example of the use of a Submission Set is packaging all documents related to a care episode at the end of the hospital stay. The EHR
150 system can submit the package. If the submission fails, none of the documents made it to their destination, and a retry is possible.

SubmissionsSets, once submitted, are a permanent record of the collection of submitted content.
155 DocumentEntries may be bundled into a SubmissionSet by a human, machine, or process. For example, a laboratory machine might automatically submit results associated with a given lab order when they are ready, rather than waiting for a human to bundle them. SubmissionSets may contain DocumentEntries for multiple patients, but there are specific limitations on how this is done.

160 A SubmissionSet shall be the source of at least one Association of type SS-FD HasMember, SS-HM HasMember, and/or SS-DE HasMember.

Folder – A Folder is a logical collection of DocumentEntries that are related in some way, such as to a clinical use case. A Folder is an arbitrary grouping relationship. Folders may be updated by multiple SubmissionSets sent from multiple departments that are submitting their
165 DocumentEntry objects at different times. For example, a Folder may be used to collect the DocumentEntry objects for the patient’s documents that relate to an exam event, such as the exam request and prior results as well as the eventual exam results. As the exam results become available, the DocumentEntry objects can be added to the Folder for the exam records.

All DocumentEntries in a Folder shall be for the same patient.

170 The metadata structure discussed in this volume only specifies how to describe a Folder, and imposes no requirements for when or how a Folder should be used. Additional detail on when and how to use a Folder may be described in IHE profiles.

DocumentEntry – DocumentEntry is a metadata object representing a document. This metadata object does not contain the contents of the document; instead it contains attributes describing the
175 document.

Details on how documents and metadata are managed depend on the requirements in a particular Document Sharing Profile.

For example, in XDS, a Stable DocumentEntry is the logical representation in the Registry of the Document that the Source submitted to a Repository. An entire document’s contents can
180 constitute several megabytes, but can be described in a few kilobytes of metadata. The DocumentEntry metadata that describes the document are sufficient for the purposes of storing, organizing and locating documents for retrieval. Submitting a Stable DocumentEntry to a Registry in lieu of submitting the document creates a separation of concerns, allowing the Registry to specialize in indexing, while the Repository manages document storage.

185 There are two DocumentEntry Types: Stable DocumentEntry and On-Demand Document Entry. The following sections describe these types in detail.

- **Stable Document Entry**

A Stable Document Entry contains metadata about an already created document available for retrieval. Each Stable DocumentEntry represents a single document. This document is
190 stable because the contents have been effectively combined in the exact representation that will be returned in a Retrieve Document Set. A Stable Document Entry is an XDSDocument Entry with objectType equal to the UUID for Stable (see Section 4.2.5.2 for the UUID) and availabilityStatus equal to Approved or Deprecated. All metadata fields contain valid values.

195 The uniqueID metadata attribute of a Stable DocumentEntry identifies the specific document associated with the entry. It is used in a retrieve request to identify which specific document should be retrieved.

200 If the document returned on a retrieve request is CDA, it will have in the ClinicalDocument/id field in the HL7 CDA R2 document header the same value as the value of the DocumentEntry uniqueId.

- **On-Demand Document Entry**

205 An On-Demand Document Entry provides a unique identifier which can be used to create an on-demand document which collects the latest, most recent available information at the time of retrieval. On-Demand Document Entries never reflect actual document content, but rather the potential for a document with the characteristics described in the metadata of the entry. An On-Demand DocumentEntry has objectType equal to the UUID for On-Demand (see Section 4.2.5.2 for the UUID) and availabilityStatus equal to Approved or Deprecated. An On-Demand Document Entry may be replaced and deprecated. If an On-Demand Document Entry is deprecated, the retrieval of that
210 uniqueID may not have the most recent information and should return an error.

The uniqueID associated with an On-Demand Document Entry will never represent an actual document. A retrieve request specifying an On-Demand Document Entry uniqueID will return content identified by a uniqueID different than the specified uniqueID.

215 Every On-Demand Document Entry with the same uniqueID will refer to the same potential content. Actual content depends on the time of retrieval. The On-Demand Document Entry uniqueID is valid for as long as the entry has availabilityStatus equal to Approved. The holder of the uniqueID may re-use it in a retrieve request to get the latest information, without the need for an additional query.

220 When a retrieve request is received specifying an On-Demand Document Entry uniqueID, the responder may choose to persist the document generated as a result and allow the requestor future access to the metadata and document. This capability is declared through the Persistence of Retrieved Documents Option on the On-Demand Document Source and Responding Gateway Actors. The persistence refers not only to the saving of the content for re-use, but more specifically, to the ability of the requester to
225 use retrieve to access that exact, possibly now historic, content and use a query to get metadata about the content.

Unless otherwise specified in a transaction, On-Demand DocumentEntry objects shall not be included in the transaction.

4.1.2 Association Types

230 Associations represent a link from the source object to a target object. Association objects describe all aspects of this link including references to source and target objects, the specific variant or name of the Association, and status and version information.

There are two types of Associations: HasMember and Relationship.

- **HasMember**- defines a membership relationship between two objects. There are four
235 variants of the HasMember Association depending on the types of the source and target object, see Figure 4.1-1.

SS-FD HasMember: An association from a SubmissionSet to a Folder identifies the Folder as a member of that SubmissionSet. It identifies the Submission Set that contained the initial creation of the Folder.

240 FD-DE HasMember: An association from a Folder to a DocumentEntry identifies that DocumentEntry as a member of that Folder. Folders have a many-to-many relationship to DocumentEntries (i.e., one folder may be linked to many DocumentEntries, and one DocumentEntry may be linked to many folders).

245 SS-HM HasMember: An association from a SubmissionSet to a FD-DE HasMember Association identifies that FD-DE HasMember as a member of that SubmissionSet. This makes it possible to identify the Submission Set in which the link between the Folder and the DocumentEntry was created.

250 SS-DE HasMember: An association from a SubmissionSet to a DocumentEntry identifies the DocumentEntry as a member of that SubmissionSet. The association between the SubmissionSet and the DocumentEntry provides information about the submission of the Documents. With this association of a DocumentEntry, you can find the Submission Set and know when the document was submitted, who the author of the submission was, and other information contained in the attributes of that SubmissionSet.

- 255
- **Relationship** – defines an association between two DocumentEntry objects. There are five variants based on the type of relationship between the DocumentEntry objects.
 - Replace – indicates the replacement of a previous document with a new document.
 - Transform - indicates the transformation of a previous document into a new document.
 - Append – indicates a new document that appends to the contents of a previous document.
- 260
- Transform and Replace – indicates a transformed replacement of a previous document with a new document.
 - Signs – indicates a new document is a signature for a previous document, as in new document signs previous document.

4.1.3 Metadata Attributes

265 Each metadata object holds attributes used for a variety of purposes. This section outlines the variety of purposes metadata attributes serve as well as a general description of each attribute. Detail about the coding of attributes is described in Section 4.2.3.

4.1.3.1 The Purpose of Metadata Attributes (Informative)

270 Metadata attributes can be categorized according to specific document-handling purposes. Each metadata attribute typically has more than one purpose, although some have only one. Metadata in the Document Sharing profiles has one or more of these purposes.

- **Patient Identity** – Attributes that describe the subject of the document. This includes patient Id, patient name, and other demographics.

- 275 • **Provenance** – Attributes that describe where the document comes from. These items are highly influenced by medical records regulations. This includes human author, identification of system that authored, the organization that authored, predecessor documents, successor documents, and the pathway that the document took.
- 280 • **Security & Privacy** – Attributes that are used by Privacy and Security rules to appropriately control the document. These values enable conformance to Privacy and Security regulations. These characteristics would be those referenced in Privacy or Security rules. These characteristics would also be used to protect against security risks to confidentiality, integrity, and availability.
- 285 • **Descriptive** – Attributes that are used to describe the clinical value, so they are expressly healthcare-specific. These values are critical for query models and enable workflows in all exchange models. The number of attributes in this category is kept to minimum so the metadata does not simply duplicate the document, and to keep disclosure risk to a minimum. Thus, the metadata attribute values tend to be from a small set of codes. Because this category is close to the clinical values it tends to have few mandatory attributes, allowing policy to choose to not populate. For healthcare documents, this is typically very closely associated with the clinical workflows but also must recognize other uses of healthcare documents such as quality reporting, public health reporting, authorized clinical research, patient access, etc.
- 290 • **Object Lifecycle** – Attributes that describe the current lifecycle state of the document including relationships to other documents. This would include classic lifecycle states of created, published, replaced, transformed, and deprecated.
- 295 • **Exchange** -- Attributes that enable the transfer of the document for both push type transfers, and pull type transfers. These attributes are used for low-level automated processing of the document. These attributes are not the workflow routing, but rather the administrative overhead necessary to make the transfer. This includes the document unique Id, location, size, MIME types, and document format.
- 300

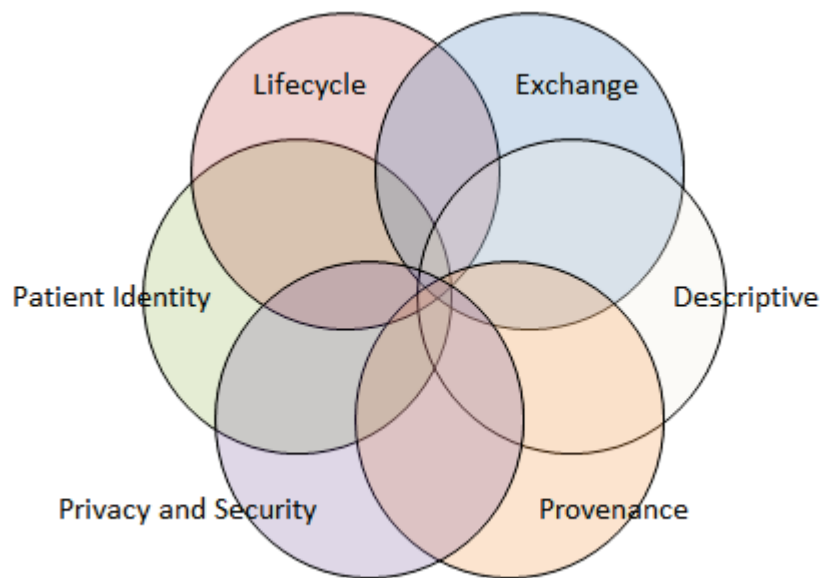


Figure 4.1.3.1-1: Pictorial of Overlapping Document Sharing Metadata Purpose

305 All metadata attributes describe the document and are not a replacement for the document. Not all metadata attributes are always required; indeed, some metadata attributes would be used only for specific uses. Care has been taken to limit the metadata to the minimum metadata attributes necessary to achieve the goal. Each metadata element was assessed for risks posed by exposing it as metadata. All metadata attributes are defined to assure that when the element is needed that it be consistently assigned and processed.

4.1.3.2 DocumentEntry Metadata Attributes

Table 4.1.3.2-1 provides a conceptual view of the metadata attributes associated with a DocumentEntry object. The table describes each attribute and provides a mapping between the attribute and the purposes that attribute is designed to support. The full DocumentEntry metadata attribute definition, including data type and coding is in Section 4.2.3.2.

Table 4.1.3.2-1: DocumentEntry Metadata Attribute Definition

DocumentEntry Metadata Attribute	Description	Patient Identity	Provenance	Security & Privacy	Descriptive	Object Lifecycle	Exchange
author	The humans and/or machines that authored the document. This attribute contains the sub-attributes: authorInstitution, authorPerson, authorRole, authorSpecialty and authorTelecommunication.		X	X	X		X
availabilityStatus	The lifecycle status of the DocumentEntry			X		X	
classCode	The code specifying the high-level use classification of the document type (e.g., Report, Summary, Images, Treatment Plan, Patient Preferences, Workflow).			X	X		
comments	Comments associated with the document.				X		
confidentialityCode	The code specifying the level of confidentiality of the document.			X			
creationTime	The time the author created the document.		X	X	X	X	
entryUUID	A globally unique identifier used to manage the entry.			X	X	X	X
eventCodeList	This list of codes represents the main clinical acts, such as a colonoscopy or an appendectomy, being documented.			X	X		
formatCode	The code specifying the detailed technical format of the document.				X		X
hash	The hash of the contents of the document.			X			
healthcareFacility TypeCode	This code represents the type of organizational setting of the clinical encounter during which the documented act occurred.		X	X	X		
homeCommunityId	A globally unique identifier for a community.						X
languageCode	Specifies the human language of character data in the document.				X		
legalAuthenticator	Represents a participant within an authorInstitution who has legally authenticated or attested the document.		X	X		X	
limitedMetadata	Indicates whether the DocumentEntry was created using the less rigorous requirements of metadata as		X		X	X	X

DocumentEntry Metadata Attribute	Description	Patient identity	Provenance	Security & Privacy	Descriptive	Object Lifecycle	Exchange
	defined for the Metadata-Limited Document Source.						
mimeType	MIME type of the document.				X		X
objectType	The type of DocumentEntry (e.g., On-Demand DocumentEntry).						X
patientId	The patientId represents the subject of care of the document.	X		X	X		
practiceSettingCode	The code specifying the clinical specialty where the act that resulted in the document was performed (e.g., Family Practice, Laboratory, Radiology).		X	X	X		
referenceIdList	A list of identifiers related to the document		X	X		X	
repositoryUniqueId	The globally unique identifier of the repository where the document can be accessed.			X			X
serviceStartTime	The start time of the service being documented.			X	X		
serviceStopTime	The stop time of the service being documented.			X	X		
size	Size in bytes of the document.			X			X
sourcePatientId	The sourcePatientId represents the subject of care's medical record identifier (e.g., Patient Id) in the local patient identifier domain of the creating entity.	X	X	X			
sourcePatientInfo	This attribute contains demographic information of the source patient to whose medical record this document belongs.	X	X				
title	The title of the document.				X		
typeCode	The code specifying the precise type of document from the user perspective (e.g., LOINC code).				X		
uniqueId	Globally unique identifier assigned to the document by its creator.			X			X
URI	The URI for the document.						X

4.1.3.3 SubmissionSet Metadata Attributes

320 Table 4.1.3.3-1 provides a conceptual view of the metadata attributes associated with a SubmissionSet object. The table describes each attribute and provides a mapping between the attribute and the purposes that attribute is designed to support. The full SubmissionSet metadata attribute definition, including data type and coding is in Section 4.2.3.3.

Table 4.1.3.3-1: SubmissionSet Metadata Attribute Definition

Submission Set Metadata Attribute	Description	Patient Identity	Provenance	Security & Privacy	Descriptive	Object Lifecycle	Exchange
author	The humans and/or machines that authored the SubmissionSet. This attribute contains the sub-attributes: authorInstitution, authorPerson, authorRole, authorSpecialty, authorTelecommunication.		X	X	X		
availabilityStatus	The lifecycle status of the SubmissionSet.				X	X	
comments	Comments associated with the SubmissionSet.				X		
contentTypeCode	The code specifying the type of clinical activity that resulted in placing the associated content in the SubmissionSet.		X	X	X		
entryUUID	A globally unique identifier used to manage the entry.			X	X		X
homeCommunityId	A globally unique identifier for a community.						X
intendedRecipient	The organizations or persons for whom the SubmissionSet is intended.			X			X
limitedMetadata	A flag that the associated SubmissionSet was created using the less rigorous metadata requirements as defined for the Metadata-Limited Document Source.		X		X	X	X
patientId	The patientId represents the primary subject of care of the SubmissionSet.	X		X	X		
sourceId	Identifier of the entity that contributed the SubmissionSet.		X	X	X		
submissionTime	Point in time at the creating entity when the SubmissionSet was created.			X	X	X	
title	The title of the SubmissionSet.				X		
uniqueId	Globally unique identifier for the SubmissionSet assigned by the creating entity.			X			X

4.1.3.4 Folder Metadata Attributes

325 Table 4.1.3.4-1 provides a conceptual view of the metadata attributes associated with a Folder object. The table describes each attribute and provides a mapping between the attribute and the purposes that attribute is designed to support. The full Folder metadata attribute definition, including data type and coding is in Section 4.2.3.4.

Table 4.1.3.4-1: Folder Metadata Attribute Definition

Folder Metadata Attribute	Description	Patient Identity	Provenance	Security & Privacy	Descriptive	Object Lifecycle	Exchange
availabilityStatus	The lifecycle status of the Folder.			X	X	X	
codeList	The set of codes specifying the type of clinical activities that resulted in placing DocumentEntry objects in the Folder.		X	X	X		
comments	Comments associated with the Folder.				X		
entryUUID	A globally unique identifier used to manage the entry.			X	X		X
homeCommunityId	A globally unique identifier for a community.						X
lastUpdateTime	Most recent point in time that the Folder has been modified.			X		X	
limitedMetadata	A flag that the associated Folder was created using the less rigorous metadata requirements as defined for the Metadata-Limited Document Source.		X		X	X	X
patientId	The patientId represents the primary subject of care of the Folder.	X		X	X		
title	The title of the Folder.				X		
uniqueId	Globally unique identifier for the Folder.			X			X

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4.1.4 Submission Request

A Submission Request is a collection of metadata transferred between one Document Sharing Actor and another. A Submission Request shall contain:

1. One SubmissionSet object
- 335 2. At least one of the following:
 - a. One or more DocumentEntry objects
 - b. One or more Folder objects
 - c. One or more FD-DE HasMember Associations

3. For each object in (2), one HasMember Association linking the SubmissionSet in (1) to that object.

4. Zero or more Relationship Associations

Individual transactions or profiles may impose restrictions on the content.

4.2 ebRIM Representation

This section details the representation of the metadata objects and their attributes using classes provided by OASIS ebXML RegRep 3.0 specification at <http://docs.oasis-open.org/regrep/v3.0/regrep-3.0-os.zip>.

The Electronic Business using eXtensible Markup Language (ebXML) Registry and Repository (RegRep) specification describes a way to implement registry and repository servers and clients using standard interfaces, protocols and an information model for publishing, management, discovery and retrieval of arbitrary content and metadata that describes it.

The ebXML RegRep specification is made of two parts:

- **ebRIM:** The "ebXML Registry Information Model version 3.0" (ebRIM) defines the types of metadata and content that can be stored in an ebXML Registry.
- **ebRS:** The "ebXML Registry Services Specification version 3.0" (ebRS) defines the services and protocols for an ebXML Registry.

IHE highly constrains the use of ebRIM and ebRS in Document Sharing profiles to fit the requirements for expression of metadata objects and to communicate the objects between actors. This section focuses on expression of the objects, and IHE transactions and profiles detail the communication.

When document sharing was first introduced in IHE, XDS was the only document sharing model. In the initial XDS Profile, the Document Registry could be implemented as an adaptor to an ebXML Registry. As such, all XDS content is valid in terms of the ebRIM, but XDS introduces additional restrictions on the data that may be transmitted. Only a limited number of the classes in ebRIM are supported by XDS and the contents and semantics of those classes are further restricted. While an XDS Registry may be implemented as an adaptor to an ebXML Registry, or without an underlying ebXML Registry, it should not be assumed that features available from a pure ebXML Registry are available in an IHE environment. Features of an ebXML Registry should be considered as not available unless they are explicitly defined by individual IHE profiles.

Now that document sharing in IHE has grown beyond the XDS model, Document Sharing metadata applies to profiles beyond XDS. In those other environments, it is highly unlikely to be implemented using an ebXML Registry.

IHE excludes the requirements found in ebRIM 3.0 Section 2.5.9 which state that "each RegistryObject instance MUST have a life cycle status indicator." For some RegistryObjects the life cycle status indicator is required by IHE, and this requirement is stated within IHE's

description of use of the object. For other objects, where a requirement is not explicitly stated by IHE, the life cycle status indicator is optional.

IHE Technical Framework documentation conventionally refers to the ebRIM namespace using the “rim:” prefix, for example rim:ExtrinsicObject, rim:RegistryPackage, rim:Slot, rim:Classification, etc.

Table 4.2-1: ebRIM/Document Sharing Correspondence

Document Sharing Object/Association	ebRIM class
DocumentEntry	rim:ExtrinsicObject
SubmissionSet	rim:RegistryPackage
Folder	
MemberOf	rim:Association
Relationship	

The DocumentEntry object type is modeled through the rim:ExtrinsicObject class.

The SubmissionSet and Folder object types are conveyed through the rim:RegistryPackage class. Since the ebRIM standard does not allow for subclassing the RegistryPackage class, these two objects are implemented as rim:RegistryPackages. A rim:Classification is used to distinguish between the SubmissionSet and Folder object types.

The HasMember and Relationship Association concepts are conveyed through the rim:Association class.

4.2.1 Metadata Object Types

4.2.1.1 DocumentEntry

The DocumentEntry does not contain the contents of the document; instead it contains attributes describing the document. Further details regarding the DocumentEntry object type can be found in Section 4.1.1.

Figure 4.2.1.1-1 represents the DocumentEntry and its attributes. Detailed descriptions of all the attributes of a DocumentEntry are described in Section 4.2.3.2.

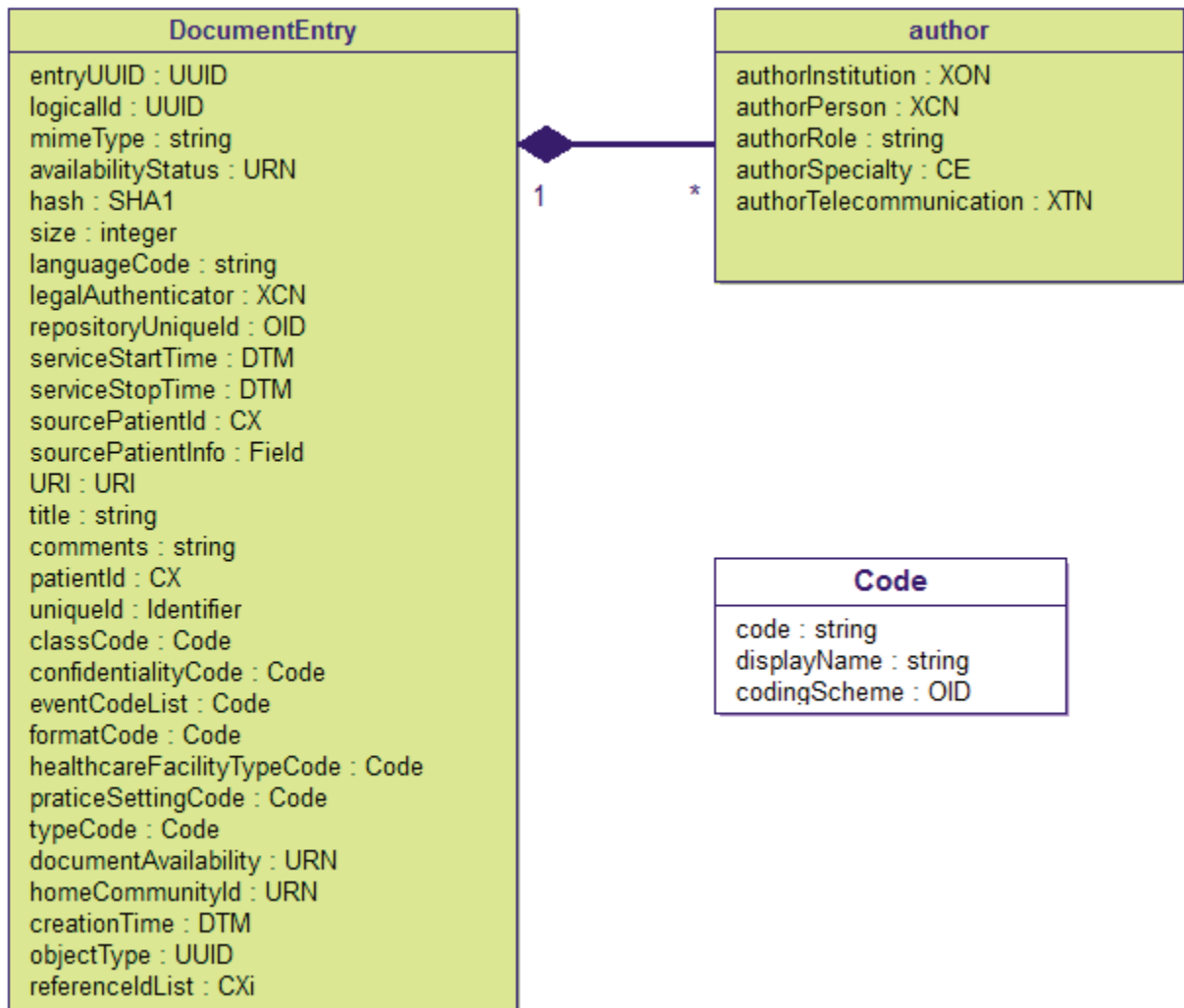


Figure 4.2.1.1-1: DocumentEntry Metadata Attributes (Informative)

400 The abstract concept of a DocumentEntry is expressed through an ebRIM RegistryPackage classified as a DocumentEntry.

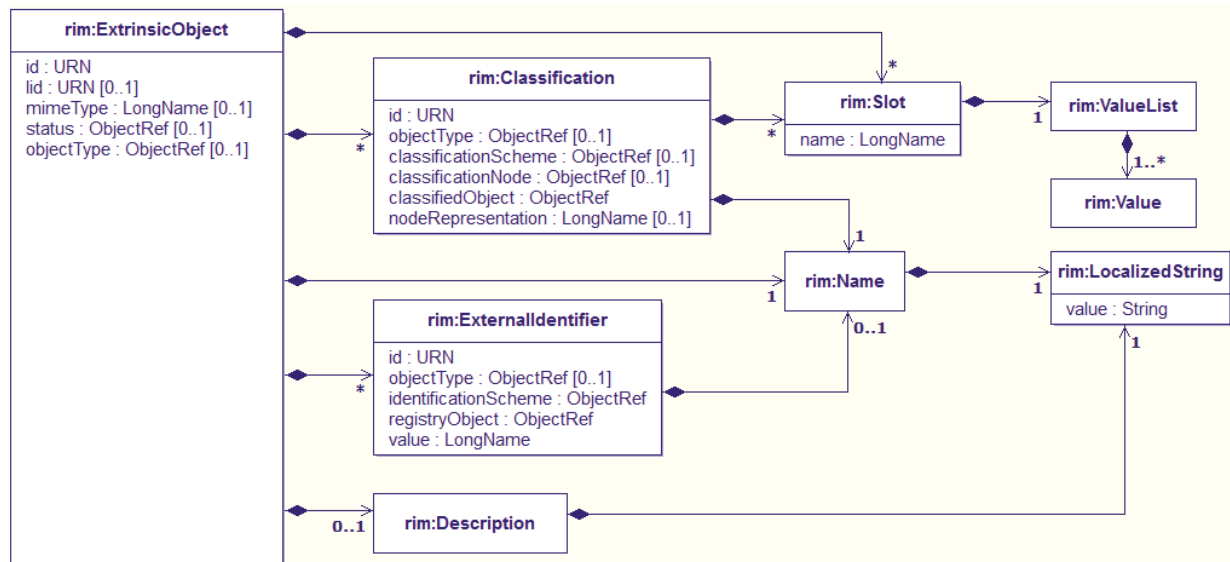


Figure 4.2.1.1-2: UML diagram for rim:ExtrinsicObject (Informative)

Figure 4.2.1.1-2 represents rim:ExtrinsicObject as a structure made of classes and attributes of the ebRIM subset used for Document Sharing. This diagram is read from left to right and rim:ExtrinsicObject is considered as the root class.

The expression of the DocumentEntry is done by mapping the abstract DocumentEntry metadata attributes into rim:ExtrinsicObject class attributes, elements and other associated classes. This mapping uses, wherever possible, the parts of rim:ExtrinsicObject as intended (such as Name, Description and ExternalIdentifier), and holds the healthcare specific attributes in general purpose Slots or Classifications.

Requirements for matching SubmissionSet.patientId to included or referenced DocumentEntries' patientId are detailed in Section 4.2.2.1.1.

4.2.1.1.1 DocumentEntry types

As described in Section 4.1.1, there are two DocumentEntry types: Stable Document Entry and On-Demand Document Entry. A Stable Document Entry is an XDSDocumentEntry with objectType equal to the UUID for Stable (see Section 4.2.5.2 for the UUID). An On-Demand DocumentEntry has an objectType equal to the UUID for on-demand (see Section 4.2.5.2 for the UUID). Each Stable DocumentEntry represents a single document which is identified by the uniqueId attribute.

4.2.1.2 SubmissionSet

The abstract concept of a SubmissionSet is expressed through an ebRIM RegistryPackage classified as a SubmissionSet. The SubmissionSet bundles DocumentEntry, Folder and

Association objects for submission. Further details regarding the SubmissionSet object type can be found in Section 4.1.1.

425

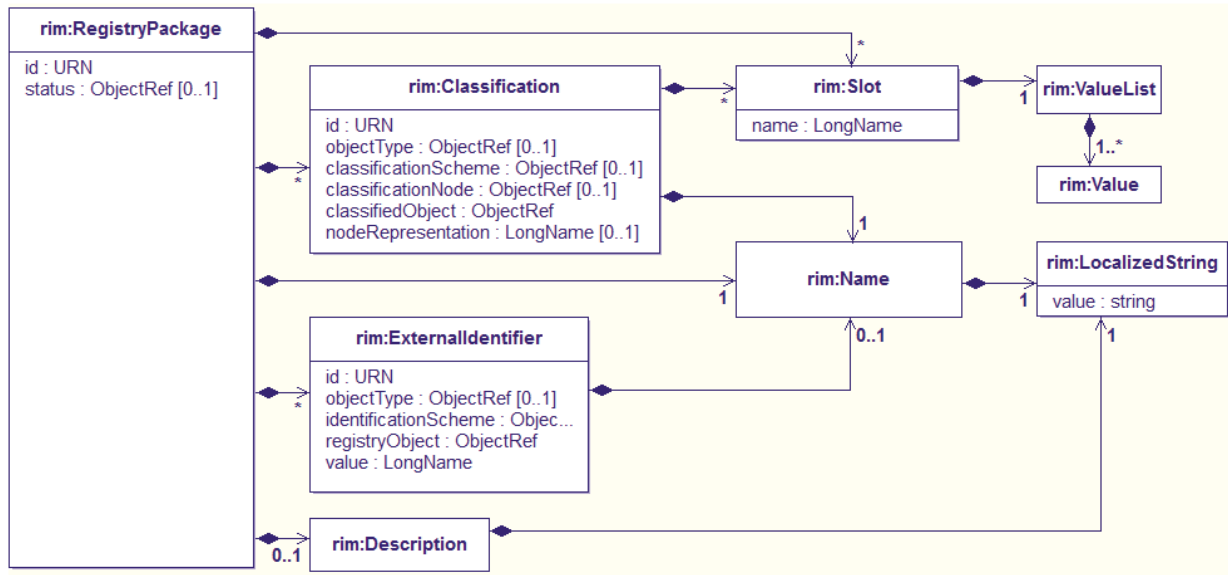


Figure 4.2.1.2-1: UML diagram for SubmissionSet (Informative)

This expression is done by mapping the abstract SubmissionSet metadata attributes into, wherever possible, the parts of RegistryPackage as intended and holding the healthcare-specific attributes in general-purpose Slots and Classification. An ebRIM Classification class is used to identify a RegistryPackage as a SubmissionSet versus a Folder.

430

A SubmissionSet has a set of attributes that are described in Section 4.1.3.3 SubmissionSet Metadata.

SubmissionSets exist for two reasons:

435

1. To support atomic submissions
2. To provide a permanent record of:
 - the existence and status of the submission
 - the Folders and DocumentEntry objects and Associations included in the submission

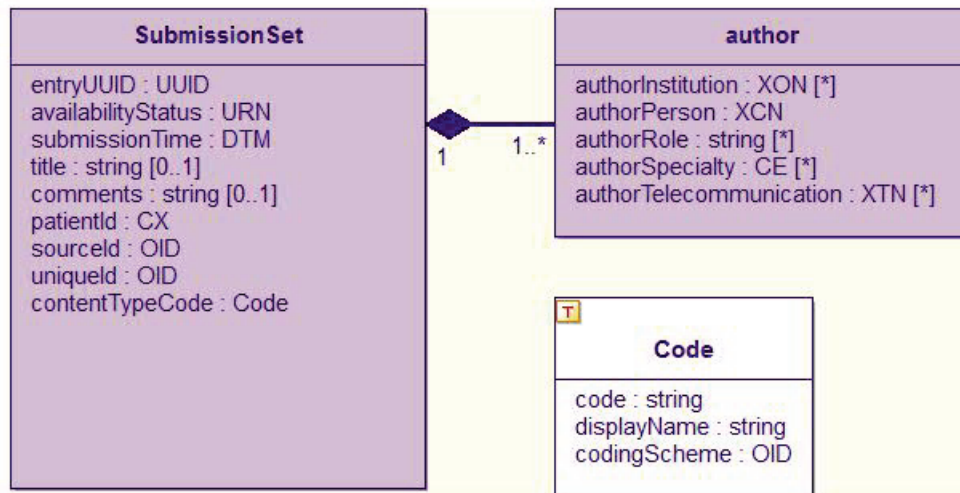


Figure 4.2.1.2-2: SubmissionSet Metadata Attributes (Informative)

The value of the patientId attribute of the DocumentEntry objects that a SubmissionSet contains shall match the value of the patientId attribute on the SubmissionSet itself.

Requirements for matching the value of SubmissionSet.patientId to the value of Patient Id in referenced DocumentEntry objects are detailed in Section 4.2.2.1.1.

Once the SubmissionSet has been submitted, no further associations to or from the SubmissionSet shall be created later on.

4.2.1.2.1 Creating a SubmissionSet object from a RegistryPackage element

A SubmissionSet object shall be created from a RegistryPackage element by labeling it with a Classification of type urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd. A receiver of metadata shall accept the Classification element encoded within the RegistryPackage element or on the same level as the RegistryPackage. The following XML example demonstrates these two valid approaches to encoding the Classification.

Classification encoded inside the RegistryPackage object

```

<RegistryPackage id="SubmissionSetId">
  <rim:Classification
    classifiedObject="SubmissionSetId"
    classificationNode="urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd"
    id="urn:uuid:1d4d08bc-85cc-4596-8fdc-4b5410a6feae"
    objectType="urn:oasis:names:tc:ebxml-
    regrep:ObjectType:RegistryObject:Classification"
  />
</RegistryPackage>

```

Classification encoded outside the RegistryPackage object

```
<RegistryPackage id="SubmissionSetId">
</RegistryPackage>
<rim:Classification
  classifiedObject="SubmissionSetId"
  classificationNode="urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd"
  id="urn:uuid:1d4d08bc-85cc-4596-8fdc-4b5410a6feae"
  objectType="urn:oasis:names:tc:ebxml-
  regrep:ObjectType:RegistryObject:Classification"
/>
```

Item	Description
Classification/@classifiedObject	The @id attribute of the RegistryPackage being classified.
Classification/@classificationNode	A fixed value identifying the type of object the RegistryPackage represents. Accepted values: urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd
Classification/@id	Symbolic id or UUID identifying this Classification. See Section 4.2.3.1.5 for details.
Classification/@objectType	Fixed value as specified by ebRIM. Optional upon submission of objects, required upon retrieval. If set, the value shall be "urn:oasis:names:tc:ebxml-regrep:ObjectType:RegistryObject:Classification".

4.2.1.3 Folder

The abstract concept of a Folder is expressed through an ebRIM RegistryPackage classified as Folder (see the UML representation of the ebRIM RegistryPackage, Figure 4.2.1.2-1). A Folder is used to bundle DocumentEntry objects. Further details regarding the Folder object type can be found in Section 4.1.1.

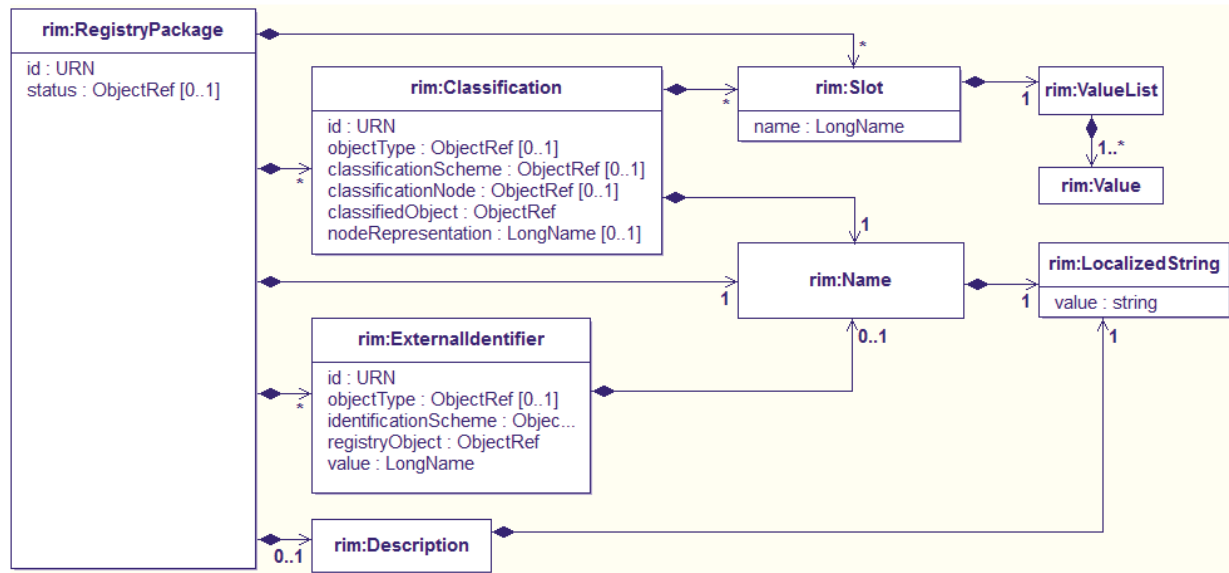


Figure 4.2.1.3-1: UML diagram for Folder (Informative)

This expression is done by mapping the abstract Folder metadata attributes into, wherever possible, the parts of RegistryPackage as intended, and holds the healthcare-specific attributes in general purpose Slots and Classifications. An ebRIM Classification class is used to identify a RegistryPackage as a Folder versus a SubmissionSet.

Folders shall not be nested inside other Folders. The value of the patientId attribute of the DocumentEntry objects it contains shall match the value of the patientId attribute on the folder itself.

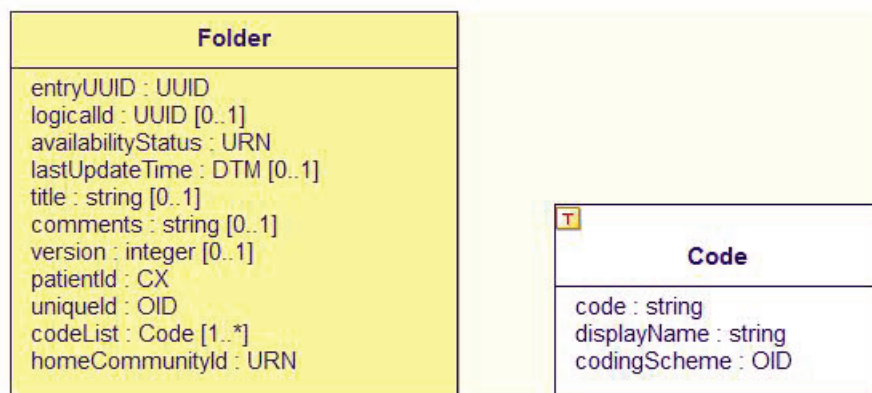


Figure 4.2.1.3-2: Folder Metadata Attributes (Informative)

4.2.1.3.1 Creating a Folder object from a RegistryPackage element

A Folder object shall be created from a RegistryPackage element by labeling it with a Classification of type urn:uuid:d9d542f3-6cc4-48b6-8870-ea235fbc94c2. A receiver of

495 metadata shall accept the Classification element encoded within the RegistryPackage element or on the same level. The following XML example demonstrates these two valid approaches to encoding the Classification.

Classification encoded inside the RegistryPackage object

```
500 <...>
    <RegistryPackage id="Fol">
    <!-- Classify registry package Fol as being a Folder -->
    <Classification
505       classificationNode="urn:uuid:d9d542f3-6cc4-48b6-8870-ea235fbc94c2"
       classifiedObject="Fol"
       id="IdExample_066"
       objectType="urn:oasis:names:tc:ebxml-
       regrep:ObjectType:RegistryObject:Classification"
510     />
    </RegistryPackage>
    <...>
```

Classification encoded outside the RegistryPackage object

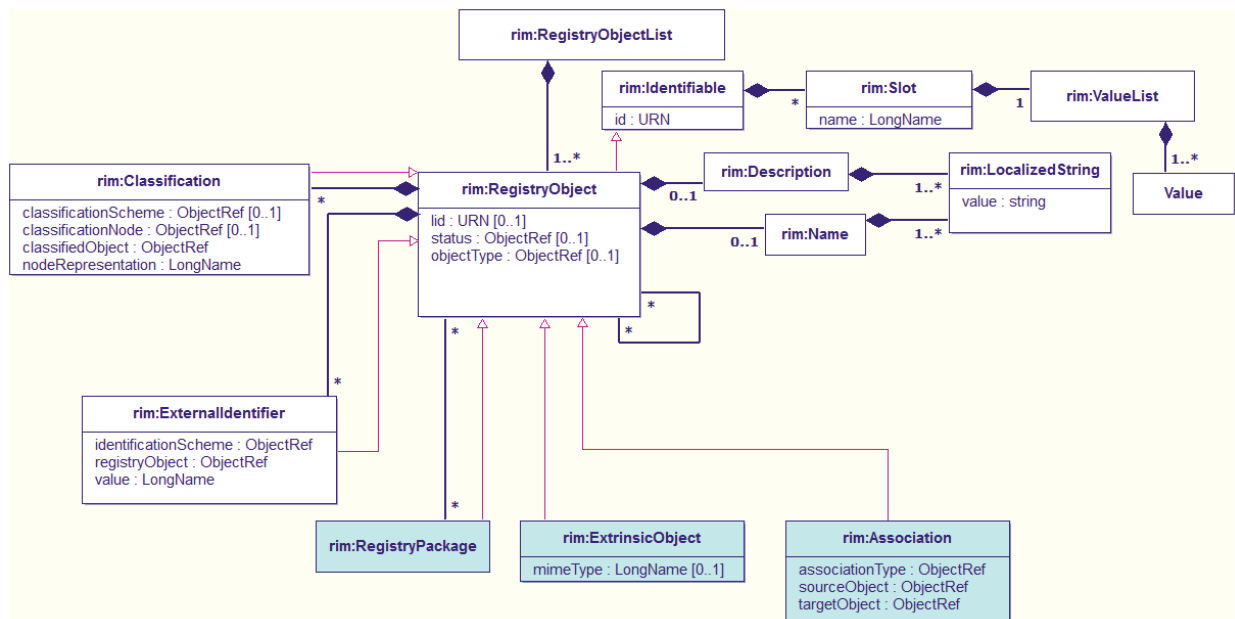
```
515 <RegistryPackage id="Fol">
    ...
    </RegistryPackage>
    <!-- Classify registry package as Folder -->
    <Classification
520       classificationNode="urn:uuid:d9d542f3-6cc4-48b6-8870-ea235fbc94c2"
       classifiedObject="Fol"
       id="IdExample_066"
       objectType="urn:oasis:names:tc:ebXML-
       regrep:ObjectType:RegistryObject:Classification"
525     />
    <...>
```

Item	Description
Classification/@classifiedObject	The @id attribute of the RegistryPackage being classified.
Classification/@classificationNode	A fixed value identifying the type of object the RegistryPackage represents. Accepted values: Folder: urn:uuid:d9d542f3-6cc4-48b6-8870-ea235fbc94c2
Classification/@id	Symbolic id or UUID identifying this Classification. See Section 4.2.3.1.5 for details.
Classification/@objectType	Fixed value as specified by ebRIM. Optional upon submission of objects, required upon retrieval. If set, the value shall be "urn:oasis:names:tc:ebxml-regrep:ObjectType:RegistryObject:Classification".

4.2.1.4 Registry Object List

530 In submission requests and query responses, a Registry Object List contains a list of Folders, SubmissionSets, DocumentEntry objects and Associations.

Figure 4.2.1.4-1 shows in detail the content of the rim:RegistryObjectList used to exchange Document Sharing metadata; a subset of the ebXML Registry Information Model (ebRIM).



535 **Figure 4.2.1.4-1: Registry Object List (Informative)**

The following XML example demonstrates the encoding of several metadata objects grouped within a rim:RegistryObjectList:

540

```
<rim:RegistryObjectList>
  <rim:RegistryPackage id="SubmissionSet01"> ... </rim:RegistryPackage>
  <rim:Association id="Document01InSubmissionSet01" ... />
  <rim:ExtrinsicObject id="Document01"> ... </rim:ExtrinsicObject>
</rim:RegistryObjectList>
```

4.2.1.5 Submission Request

545 See Section 4.1.4 for a definition of Submission Request. The Submission Request is implemented as an <lcm:SubmitObjectsRequest>.

The <lcm:SubmitObjectsRequest> element shall contain one <rim:RegistryObjectList> element.

The <rim:RegistryObjectList> element shall contain:

- One rim:RegistryPackage for the Submission Set

- 550
- One rim:ExtrinsicObject for each DocumentEntry in the Submission Request
 - One rim:Association for each Association in the Submission Request
 - One rim:RegistryPackage for each Folder in the Submission Request

The rim:RegistryObjectList may also contain rim:Classification elements that identify the RegistryPackage elements as a SubmissionSet or Folder. See Sections 4.2.1.2.1 and 4.2.1.3.1.

- 555 A full XML Schema Document for the XDS types is available online: see ITI TF-2x: Appendix W.

Any id attributes or references to other objects in the submission may contain valid UUIDs or symbolic ids (see Section 4.2.3.1.5). References to objects that are not contained in the submission request must be in UUID format.

560 **4.2.2 Association Types**

All relationships between metadata objects are handled through Associations. An Association is an object that describes a named relationship between two metadata objects. These relationships are used to form submissions and express some query responses. The relationship between the DocumentEntry and the Document it represents is made with the DocumentEntry.uniqueId attribute, and not an Association since the Document is not a metadata object.

- 565

Associations can be used to build relationships between:

- A SubmissionSet and a DocumentEntry – SS-DE HasMember
 - A SubmissionSet and a Folder – SS-FD HasMember
 - A Folder and a DocumentEntry – FD-DE HasMember
- 570
- A SubmissionSet and an Association – SS-HM HasMember
 - A DocumentEntry and another DocumentEntry – Relationship

Once deprecated, a DocumentEntry shall not be referenced by future associations.

- 575 The abstract concept of a HasMember or Relationship Association is expressed through an ebRIM Association illustrated in the diagram below. This expression is done by mapping the abstract Association metadata attributes into Association class attributes and other associated classes. Further details regarding the Association object type can be found in Section 4.1.2.

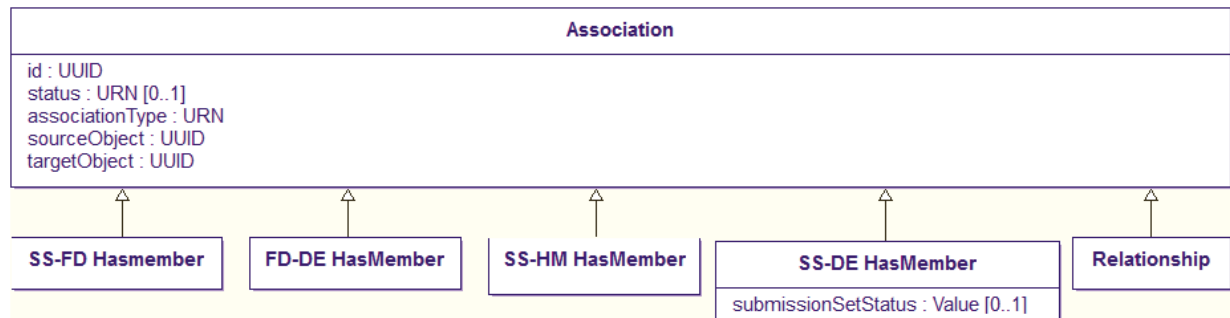


Figure 4.2.2-1: Association (Informative)

580 Figure 4.2.2-1 represents the attributes of an Association. This diagram demonstrates that the
various HasMember and Relationship Associations inherit the attributes from the Association
class, and that the SS-DE HasMember (SubmissionSet to DocumentEntry) also has the
submissionSetStatus metadata attribute in addition to the Association class attributes. All
Associations shall have an id (entryUUID) attribute. It may have UUID or symbolic format
585 depending on where they are used. Symbolic format is allowable only in submissions.

Associations have three other required attributes (see Figure 4.2.2-1):

- sourceObject
- targetObject
- associationType

590 These attributes can be thought to make a small sentence:

- sourceObject AssociationType targetObject

The sentence is composed of noun-verb-object for example:

- Folder HasMember DocumentEntry

Graphically this example Association looks like:

595

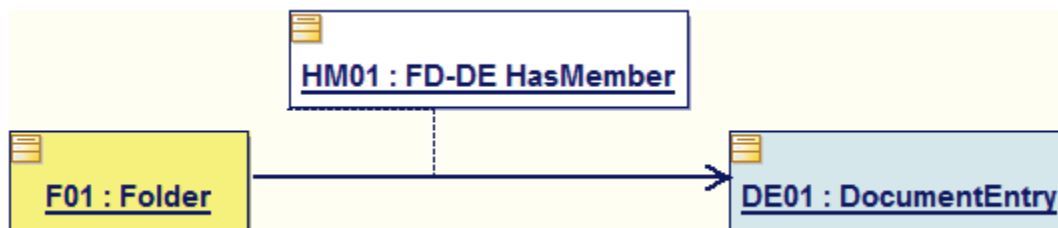


Figure 4.2.2-2: Folder HasMember DocumentEntry (Informative)

Association Type formatting

600 An Association type shall be specified as a URN.

The sourceObject and targetObject are UUID or symbolic format depending on where they are used. Symbolic format is allowable only in submissions. The status attribute shall not be submitted but shall be returned from queries.

The valid Association types are specified in the following table.

605 **Table 4.2.2-1: Association Types**

Meaning	Association Type
Membership in a Registry Package (SubmissionSet or Folder)	urn:oasis:names:tc:ebxml-regrep:AssociationType:HasMember
Replace	urn:ihe:iti:2007:AssociationType:RPLC
Transformation	urn:ihe:iti:2007:AssociationType:XFRM
Addendum	urn:ihe:iti:2007:AssociationType:APND
Replace with Transformation	urn:ihe:iti:2007:AssociationType:XFRM_RPLC
Digital Signature	urn:ihe:iti:2007:AssociationType:signs
Snapshot of On-Demand document entry	urn:ihe:iti:2010:AssociationType:IsSnapshotOf

Example of basic Association

610

```
<rim:Association
  id="urn:uuid:95e9115b-3d90-46ae-9610-ed34fd683d96"
  status="urn:oasis:names:tc:ebxml-regrep:StatusType:Approved"
  associationType="urn:ihe:iti:2007:AssociationType:RPLC"
  sourceObject="urn:uuid:3cce0135-cedb-4a26-ba00-8698ee8dde04"
  targetObject="urn:uuid:e0985823-dc50-45a5-a6c8-a11a829893bd"/>
```

4.2.2.1 HasMember

615 In the Document Sharing abstract metadata model, many different relationships are defined between SubmissionSet, DocumentEntry and Folder objects. In this section, each of these relationships is given its own name, like SS-DE HasMember - SubmissionSetHasMemberDocumentEntry. In the underlying ebRIM model, all of these relationships are created using the ebRIM HasMember Association type.

620 Note: There are four variants of the HasMember Association. See Section 4.1.2 for an overview.

4.2.2.1.1 SS-DE HasMember

HasMember - a DocumentEntry shall be submitted as part of a SubmissionSet by connecting the objects with a HasMember Association. This is shown as SS-DE HasMember in Figure 4.1-1.

DocumentEntries may be included in a SubmissionSet in two ways: inclusion by value and inclusion by reference.

SubmissionSet Association labeling

Two types of Association labels are defined: original (submission by value), or reference (Submission by reference). This enables finding the SubmissionSet that first submitted the document.

Submission of an original Document (inclusion by value)

When the creating entity has a new document to be submitted, it shall submit a DocumentEntry by value in the SubmissionSet. This means that the DocumentEntry (and corresponding Document) are part of the submission. The HasMember Association shall contain a Slot with the name SubmissionSetStatus with the value set to **Original**.

All DocumentEntries submitted in a SubmissionSet, included by value, shall have their patientId attribute set to the same value. The value of the SubmissionSet.patientId attribute shall match the value of the DocumentEntry.patientId attribute. The metadata of this submission contains the SubmissionSet, the DocumentEntry, and the original SS-DE HasMember Association connecting them.

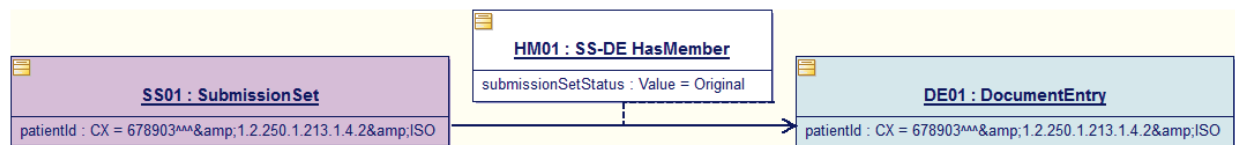


Figure 4.2.2.1.1-1: SubmissionSet HasMember DocumentEntry (Informative)

When submitting an existing document by value:

- The targetObject shall contain the Id of the DocumentEntry object.
- The sourceObject shall contain the Id of the SubmissionSet object

The following XML example demonstrates how to encode a submission by value.

```
<rim:Association
  associationType="urn:oasis:names:tc:ebxml-
  regrep:AssociationType:HasMember"
  sourceObject="SubmissionSet01"
  targetObject="Document01">
  <rim:Slot name="SubmissionSetStatus">
    <rim:ValueList>
      <rim:Value>Original</rim:Value>
    </rim:ValueList>
  </rim:Slot>
</rim:Association>
```

Submission of a reference to an existing Document (inclusion by reference)

Existing documents can be referenced by a SubmissionSet. This means that the DocumentEntry (and corresponding Document) are not part of the submission; they have been previously submitted and already exist in the receiving actor. Documents that were submitted in a previous SubmissionSet may be referenced by subsequent SubmissionSets. In this case, the HasMember Association shall contain a Slot with the name SubmissionSetStatus with the value set to **Reference**.

The value of the SubmissionSet.patientId attribute is not required to match the value of the DocumentEntry.patientId attribute of a DocumentEntry included by reference. The metadata of this submission contains the SubmissionSet. The SS-DE HasMember Association with the 'Value=Reference' connects the SubmissionSet to a DocumentEntry already present in the receiving actor.

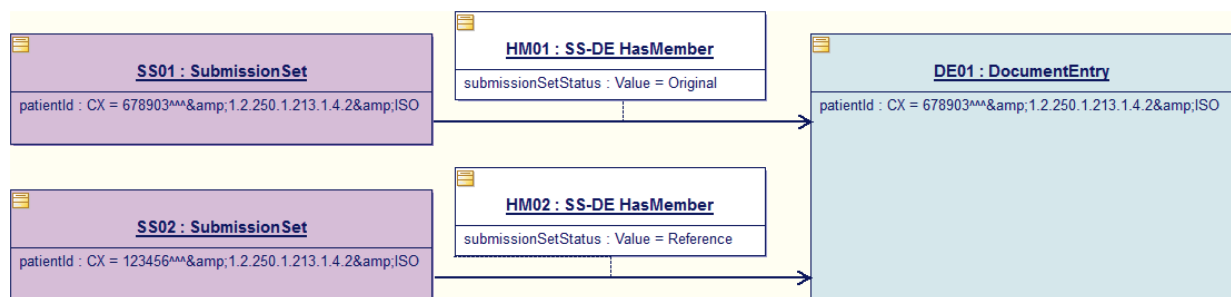


Figure 4.2.2.1.1-2: Submission of a reference to an existing Document (Informative)

When submitting a reference to an existing document:

- The targetObject shall contain the Id of the DocumentEntry object.
- The sourceObject shall contain the Id of the SubmissionSet object.

The following XML example demonstrates how to encode a submission by reference.

```

680 <rim:Association
      associationType="urn:oasis:names:tc:ebxml-
      regrep:AssociationType:HasMember"
      sourceObject="SubmissionSet01"
      targetObject="Document01">
685   <rim:Slot name="SubmissionSetStatus">
        <rim:ValueList>
          <rim:Value>Reference</rim:Value>
        </rim:ValueList>
      </rim:Slot>
    </rim:Association>
  
```

4.2.2.1.2 SS-FD HasMember

HasMember - Submit a Folder. The submission includes the Folder object and a HasMember Association linking the Folder to the SubmissionSet. This is shown as SS-FD HasMember in Figure 4.2.2.1.2-1. The value of the SubmissionSet.patientId attribute shall match the value of the Folder.patientId attribute.

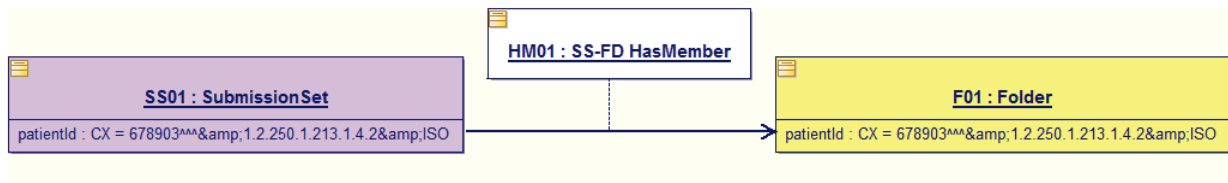


Figure 4.2.2.1.2-1: SubmissionSet HasMember Folder (Informative)

When submitting a Folder:

- The targetObject shall contain the Id of the Folder object.
- The sourceObject shall contain the Id of the SubmissionSet object.

Example SubmissionSet – Folder HasMember Association

```
<rim:Association
  associationType="urn:oasis:names:tc:ebxml-regrep:AssociationType:HasMember"
  sourceObject="SubmissionSet01"
  targetObject="Folder01">
</rim:Association>
```

The sourceObject and targetObject attributes are shown using symbolic names to reference the other objects in the submission. UUID format values could have been used if those objects were coded that way.

4.2.2.1.3 FD-DE HasMember

FD-DE HasMember - a HasMember Association linking a Folder to a DocumentEntry. The value of the Folder.patientId attribute shall match the value of the DocumentEntry.patientId attribute.



Figure 4.2.2.1.3-1: Folder HasMember DocumentEntry (Informative)

Linking documents to a folder

- 720 A document can be linked to a Folder to indicate that this document is a member of a particular Folder. This is colloquially called “putting the document into the folder.” Each FD-DE HasMember Association shall be accompanied by a SS-HM HasMember Association that links the FD-DE HasMember Association with the SubmissionSet object (see Section 4.2.2.1.4). See Section 4.2.2.15 for the four ways a DocumentEntry can be added to a Folder.
- 725 When adding a DocumentEntry to a Folder:
- The targetObject shall contain the Id of the DocumentEntry object.
 - The sourceObject shall contain the Id of the Folder object.

Example Folder HasMember Association

```
730 <Association
    id="FolderToDocAssoc"
    associationType="urn:oasis:names:tc:ebxml-regrep:AssociationType:HasMember"
    sourceObject="urn:uuid:e0985823-dc50-45a5-a6c8-a11a8298aabb"
    targetObject="urn:uuid:e0985823-dc50-45a5-a6c8-a11a829893bd"/>

735 <Association
    associationType="urn:oasis:names:tc:ebxml-regrep:AssociationType:HasMember"
    sourceObject="SubmissionSet"
    targetObject="FolderToDocAssoc"/>
```

- 740 In the first association, since both the sourceObject and targetObject attributes in the example are in UUID format (and not symbolic id format), the Folder and the DocumentEntry referenced could be part of this submission or already present in the registry.

The second Association shown is a SS-HM HasMember which is between the SubmissionSet and the first Association documenting which submission added the DocumentEntry to the Folder.

745

4.2.2.1.4 SS-HM HasMember

HasMember - a HasMember Association linking a SubmissionSet to a FD-DE HasMember Association, which is in turn an Association between a Folder and a DocumentEntry. This is shown as SS-HM HasMember in Figure 4.2.2.1.5-1. This shall be used to record the SubmissionSet responsible for adding the DocumentEntry to the Folder. The values of SubmissionSet.patientId, Folder.patientId, and DocumentEntry.patientId shall all be the same.

750

This kind of Association is used when adding a document to an existing Folder. It is used to identify the entity that created the link between a particular document and a particular Folder and shall be as follows:

- 755
- The targetObject shall contain the Id of the Association that links the DocumentEntry and the Folder.

- The sourceObject shall contain the Id of the SubmissionSet object.

4.2.2.1.5 Adding DocumentEntries to Folders

A DocumentEntry can be added to a Folder in one of four ways:

1. The DocumentEntry can be submitted as part of the Folder in a single submission.
2. The DocumentEntry and Folder are already present. The new submission makes the DocumentEntry a member of the Folder by adding the Association.
3. The DocumentEntry is already present. The new submission includes the Folder and the Association to make the DocumentEntry part of the Folder.
4. The Folder is already present. The new submission includes the DocumentEntry and the Association to make the DocumentEntry part of the Folder.

Scenario 1 - DocumentEntry submitted as part of the Folder in a single submission.

The simplest scenario submits all related objects in one submission set, as shown below.

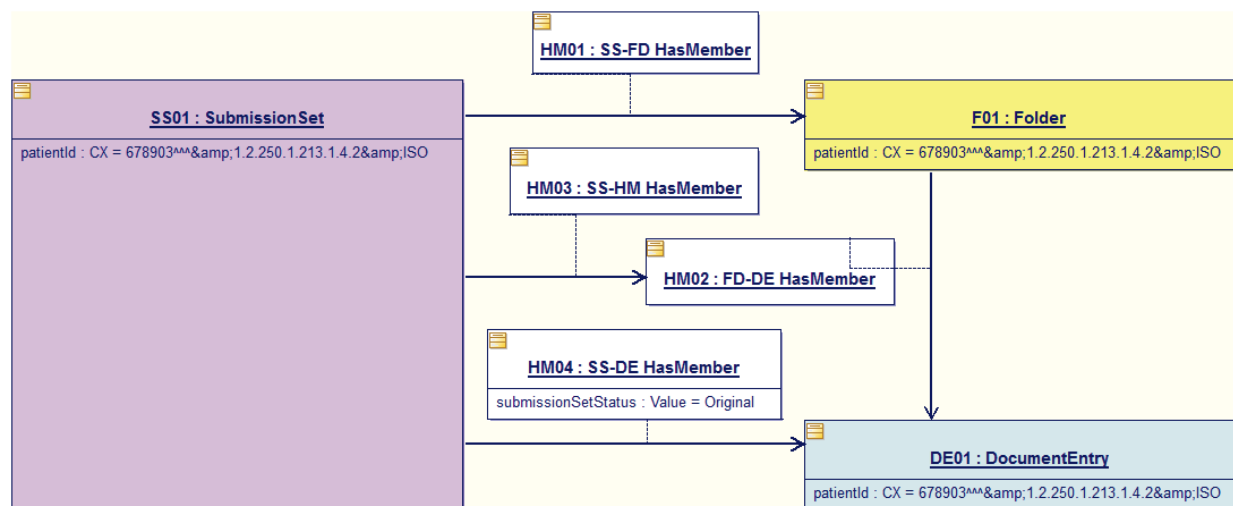


Figure 4.2.2.1.5-1: Scenario 1 - DocumentEntry submitted as part of the Folder (Informative)

Scenario 2 – Add existing DocumentEntry to existing Folder

Documents can be placed in a Folder at a later date and time, as shown in Figures 4.2.2.1.5-2 and 4.2.2.1.5-3. In this case, the SubmissionSet SS03 which links to FD-DE HasMember will not have as member either the DocumentEntry or the Folder that correspond to the referenced document and Folder.

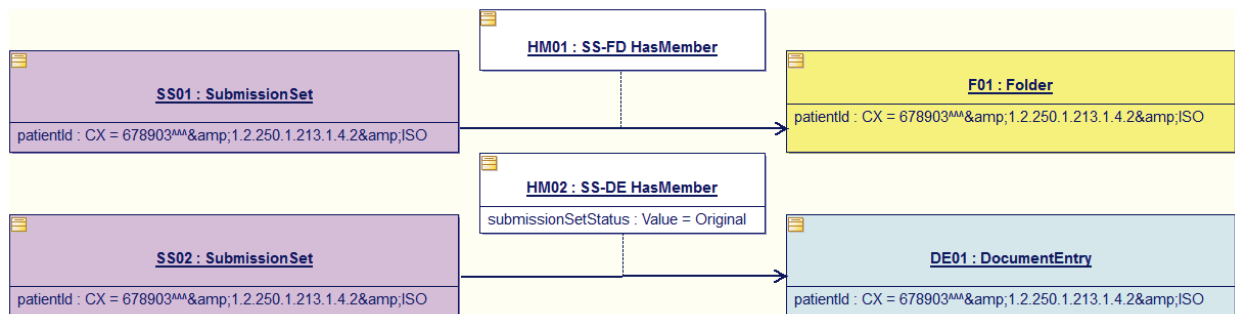


Figure 4.2.2.1.5-2: Scenario 2 - Existing DocumentEntry and existing Folder (Informative)

780

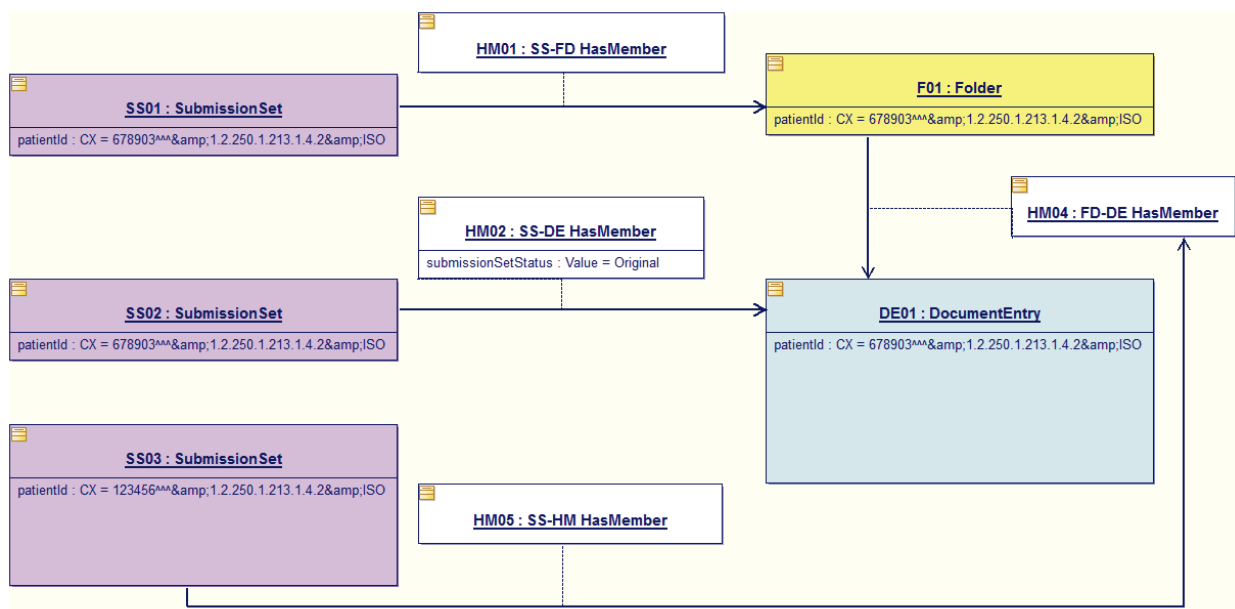


Figure 4.2.2.1.5-3: Scenario 2 - Add existing DocumentEntry to existing Folder (Informative)

Scenario 3 – Folder submitted and existing DocumentEntry added to it

785

When a new Folder is submitted, an existing DocumentEntry can be added to that Folder. In this case, the SubmissionSet object will not contain the DocumentEntry metadata that correspond to the referenced document.

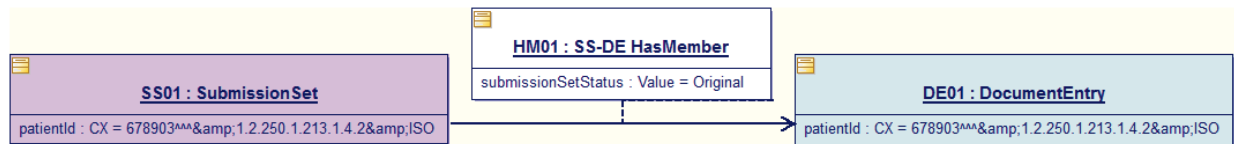


Figure 4.2.2.1.5-4: Scenario 3 - Starting point - Existing DocumentEntry (Informative)

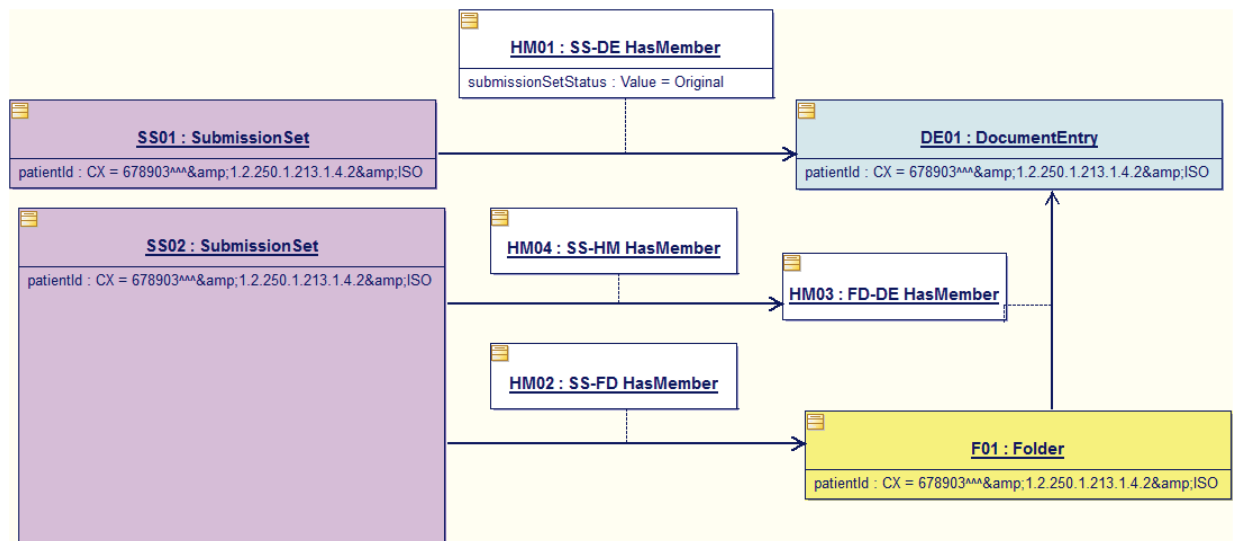


Figure 4.2.2.1.5-5: Scenario 3 - Folder submitted and existing DocumentEntry added to it (Informative)

Scenario 4 – DocumentEntry submitted and added to existing Folder

When a new DocumentEntry is submitted, it can be added to an existing folder. In this case, the SubmissionSet object will not contain the Folder metadata that correspond to the referenced Folder.

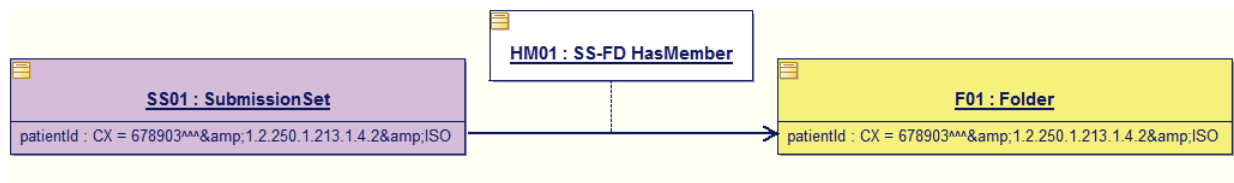


Figure 4.2.2.1.5-6: Scenario 4 - Starting point - Existing Folder (Informative)

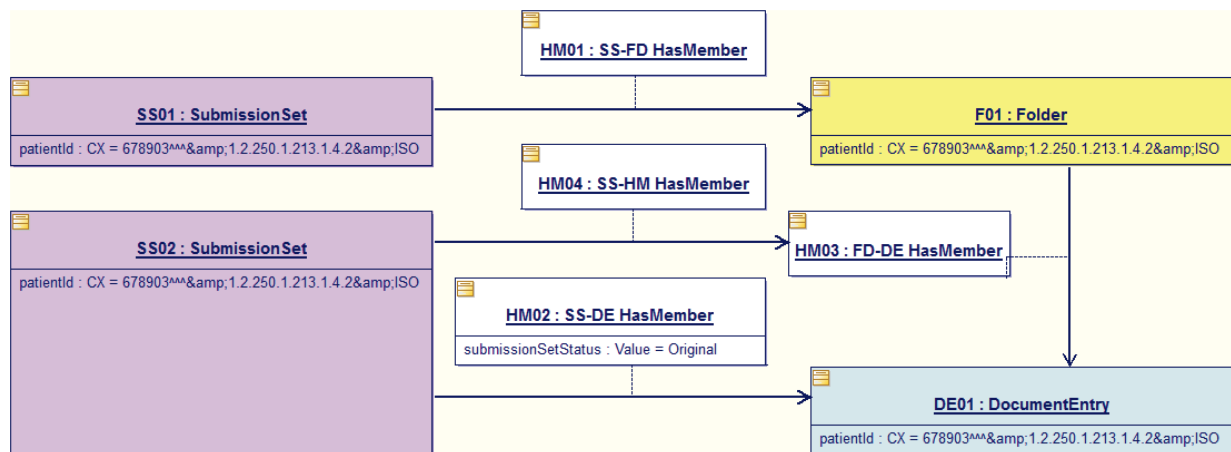


Figure 4.2.2.1.5-7: Scenario 4 - DocumentEntry submitted and added to existing Folder (Informative)

4.2.2.2 Document Relationship

805 Document relationships are association types used to link two DocumentEntry objects and declare a semantic relationship between them. Receiving a document relationship Association triggers specific processing in the receiving actor in some profiles. This is documented in the Expected Actions section of the relevant transaction in an IHE profile.

810 A document relationship refers to any of the relationships listed in Table 4.2.2.2-1 Document Relationships. The document relationship semantics (except Signs) are defined in HL7 Clinical Document Architecture (CDA) Release 2.

Table 4.2.2.2-1: Document Relationships

Relationship	Definition
APND (append)	The current document is an addendum to the parent document.
RPLC (replace)	The current document is a replacement of the parent document.
XFRM (transform)	The current document is a transformation of the parent document.
XFRM_RPLC (transform with replace)	The current document is both a transformation and a replacement of the parent document.
Signs	The current document is a Digital Signature which signs the parent document.
Is Snapshot of	The current document is a snapshot in time of the parent which shall be an on-demand document

Adapted from HL7 CDA Release 2, Committee Ballot 2

815

A submitting actor creates a document relationship by submitting a SubmissionSet containing:

1. **DocumentEntry** – this describes the new document being submitted
2. **Association** – this links a DocumentEntry with the new DocumentEntry being submitted.
 - a. The sourceObject attribute of the Association object shall be the entryUUID of the new DocumentEntry contained in the SubmissionSet.
 - b. The targetObject of the Association object shall be the entryUUID of the linked DocumentEntry. The linked DocumentEntry shall be:
 - an existing DocumentEntry known to the receiving entity, with availabilityStatus of Approved (see Section 4.2.3.2.2 DocumentEntry.availabilityStatus); or,
 - another DocumentEntry contained in the SubmissionSet.
 - c. The Association Type is one of the relationships in Table 4.2.2.2-1: Document Relationships.

Note: Some transactions may limit the choice on the linked DocumentEntry.

To specify the entryUUID of an existing DocumentEntry in targetObject, the submitting actor will need to discover the value using a Registry Stored Query [ITI-18] transaction, or by other means.

Note to implementers: A submitting actor using saved entryUUIDs in future transactions can run into consistency problems. For example, a second actor can replace (and therefore deprecate) the DocumentEntry. The saved entryUUID will point to the deprecated DocumentEntry and not the replacement DocumentEntry. Once a DocumentEntry is deprecated, new Associations to that DocumentEntry will be rejected.

Document Relationship Associations may include documentation describing the Association (type of transformation, reason for replacement, etc.). If documentation is included, it shall be specified as a Classification on the Association as follows:

1. Classifications shall be coded following the restrictions set forth in Section 4.2.3.1.2, “Creating Coded Attributes.”
2. The Classification Scheme shall equal urn:uuid:abd807a3-4432-4053-87b4-fd82c643d1f3, Association Documentation.

Example of a partial submission request:

```
850 <rim:Association
      associationType="urn:ihe:iti:2007:AssociationType:XFRM"
      sourceObject="source"
      targetObject="urn:uuid:XXX"
      objectType="urn:oasis:names:tc:ebxml-
        regrep:ObjectType:RegistryObject:Association"
      id="IdExample_042"
    >
855 <rim:Classification
      classificationScheme="urn:uuid:abd807a3-4432-4053-87b4-fd82c643d1f3"
      classifiedObject="IdExample_042"
      id="IdExample_043"
      objectType="urn:oasis:names:tc:ebxml-
660 regrep:ObjectType:RegistryObject:Classification"
      nodeRepresentation="LanguageExample"
    >
      <rim:Name>
        <rim:LocalizedString value="Translation into LanguageExample" />
      </rim:Name>
865 <rim:Slot name="codingScheme">
      <rim:ValueList>
        <rim:Value>Example translation types</rim:Value>
      </rim:ValueList>
    </rim:Slot>
870 </rim:Classification>
  </rim:Association>
  <rim:ExtrinsicObject id="source"
    objectType=" urn:uuid:7edca82f-054d-47f2-a032-9b2a5b5186c1">
    . . .
875 </rim:ExtrinsicObject>
```

A stub DocumentEntry is shown to illustrate the id reference coding (Association sourceObject attribute referencing the id attribute of the DocumentEntry/ExtrinsicObject in the submission).

The uniqueId of the new document shall be different than the uniqueId of the existing document, unless the two documents have identical byte sequences (e.g., when replacing a document with a copy of itself in order to change the metadata). See Section 4.2.3.2.26 “DocumentEntry.uniqueId”.

See ITI TF-1: 10.4.10 for further detail on the use and meaning of document relationships.

4.2.2.2.1 APND

The submission shall contain a new DocumentEntry and associated Document and an APND Association linking this new DocumentEntry with an existing DocumentEntry. This new Document/DocumentEntry forms an addendum to the existing Document/DocumentEntry. The APND relationship leaves the original DocumentEntry with its availabilityStatus unchanged (Approved).

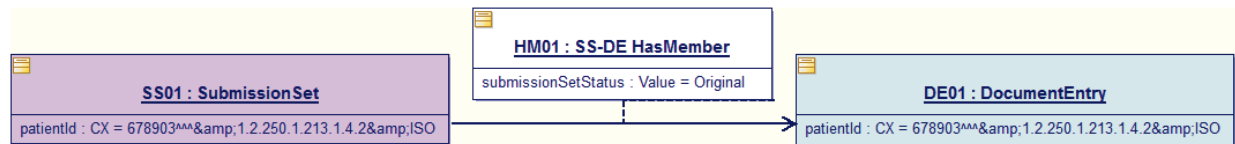


Figure 4.2.2.2.1-1: Starting Point (Informative)

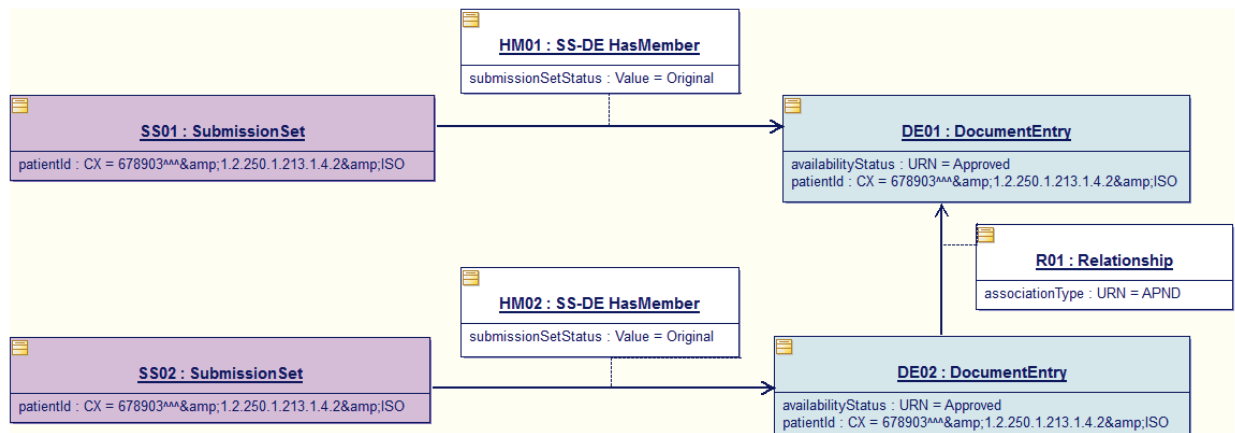


Figure 4.2.2.2.1-2: New DocumentEntry and Document forming an addendum to an existing DocumentEntry/Document (Informative)

Interactions between XFRM and APND

A transformation (connected to original document with XFRM Association) is an alternate form of an original document. Therefore, a transformation shall not be appended (APND).

4.2.2.2.2 XFRM

The submission shall contain a new DocumentEntry and associated Document and a XFRM Association linking this new DocumentEntry with an existing DocumentEntry. This new Document/DocumentEntry defines a transformation of the existing Document/DocumentEntry. The XFRM relationship leaves the original DocumentEntry with its availabilityStatus unchanged (Approved).

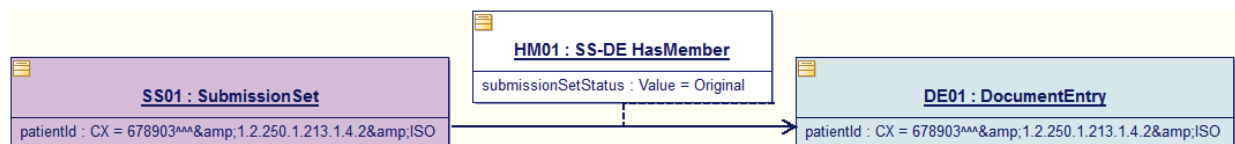


Figure 4.2.2.2.2-1: Starting Point (Informative)

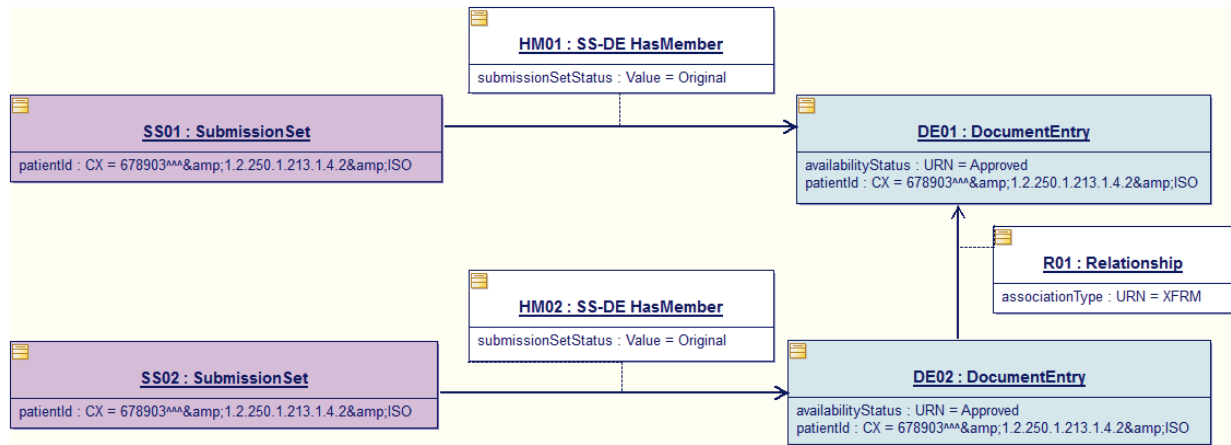


Figure 4.2.2.2-2: New DocumentEntry/Document defining a transformation of an existing DocumentEntry/Document (Informative)

4.2.2.2.3 RPLC

The submission shall contain a new DocumentEntry and associated Document and a RPLC Association linking this new DocumentEntry with an existing DocumentEntry. The new DocumentEntry and Document are considered the approved version of the document; the existing DocumentEntry and Document become a deprecated version.

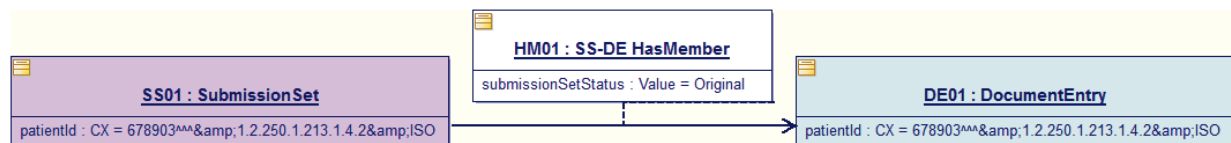


Figure 4.2.2.2.3-1: Starting Point (Informative)

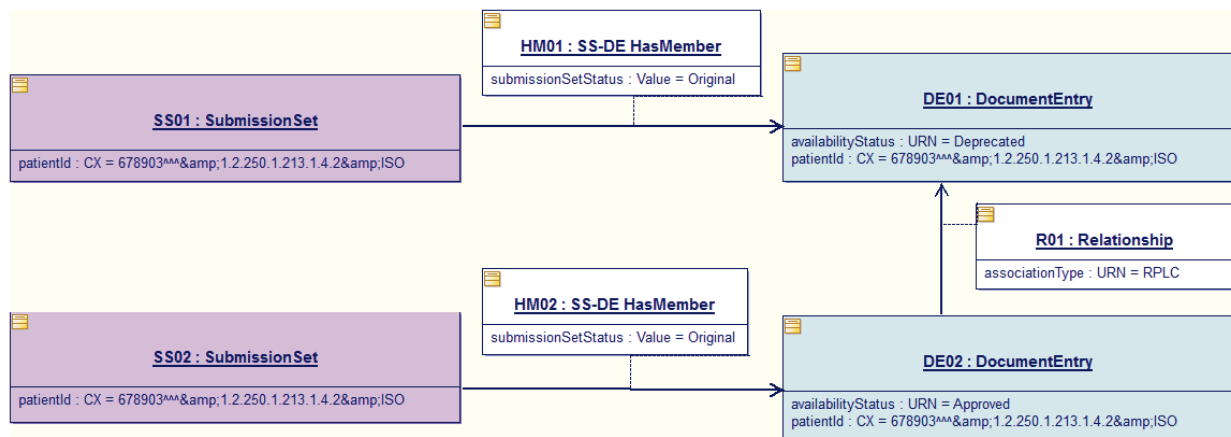


Figure 4.2.2.3-2: New DocumentEntry and Document replacing existing DocumentEntry/Document (Informative)

925 RPLC interactions with other Associations

The submission of a RPLC relationship shall change the availabilityStatus of the original DocumentEntry to Deprecated. The availabilityStatus of all DocumentEntry objects that are transformations (XFRM) or addenda (APND) of the original DocumentEntry shall also be changed to Deprecated.

930 Figures 4.2.2.3-3 and 4.2.2.3-4 show a new DocumentEntry/Document [DE03] replacing an original DocumentEntry/Document [DE01] that has a transformation (XFRM) [DE02].

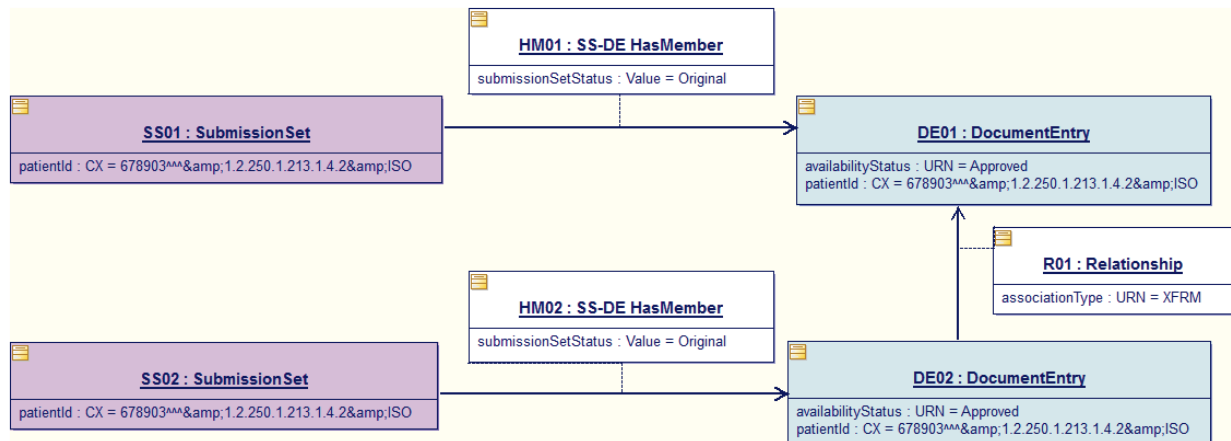


Figure 4.2.2.3-3: New DocumentEntry/Document defining a transformation of an existing DocumentEntry/Document – Starting point (Informative)

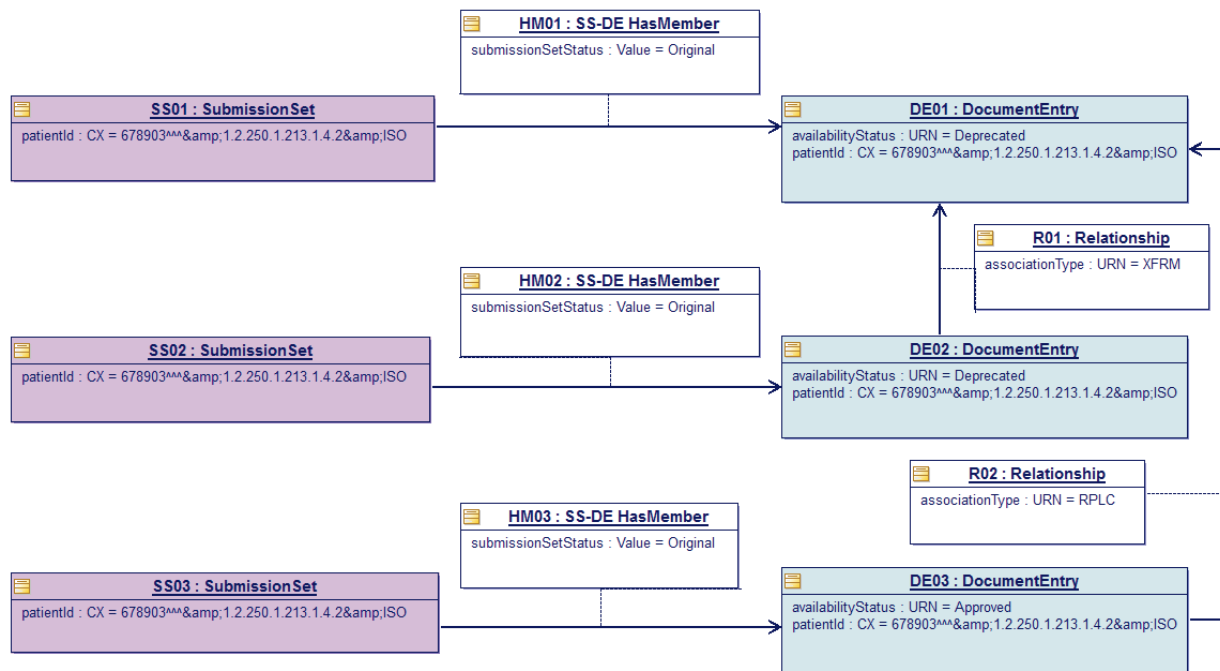


Figure 4.2.2.2.3-4: Original DocumentEntry/Document that has a Transformation (XFRM) is replaced by New DocumentEntry/Document (Informative)

Figures 4.2.2.2.3-5 and 4.2.2.2.3-6 show a new DocumentEntry/Document [DE03] replacing an original DocumentEntry/Document [DE01] that has an addendum (APND) [DE02].

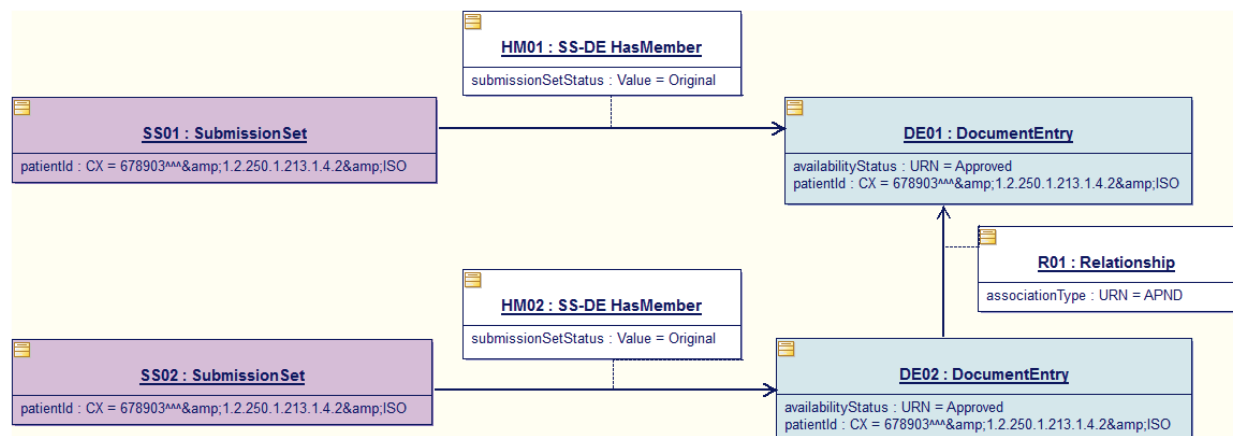
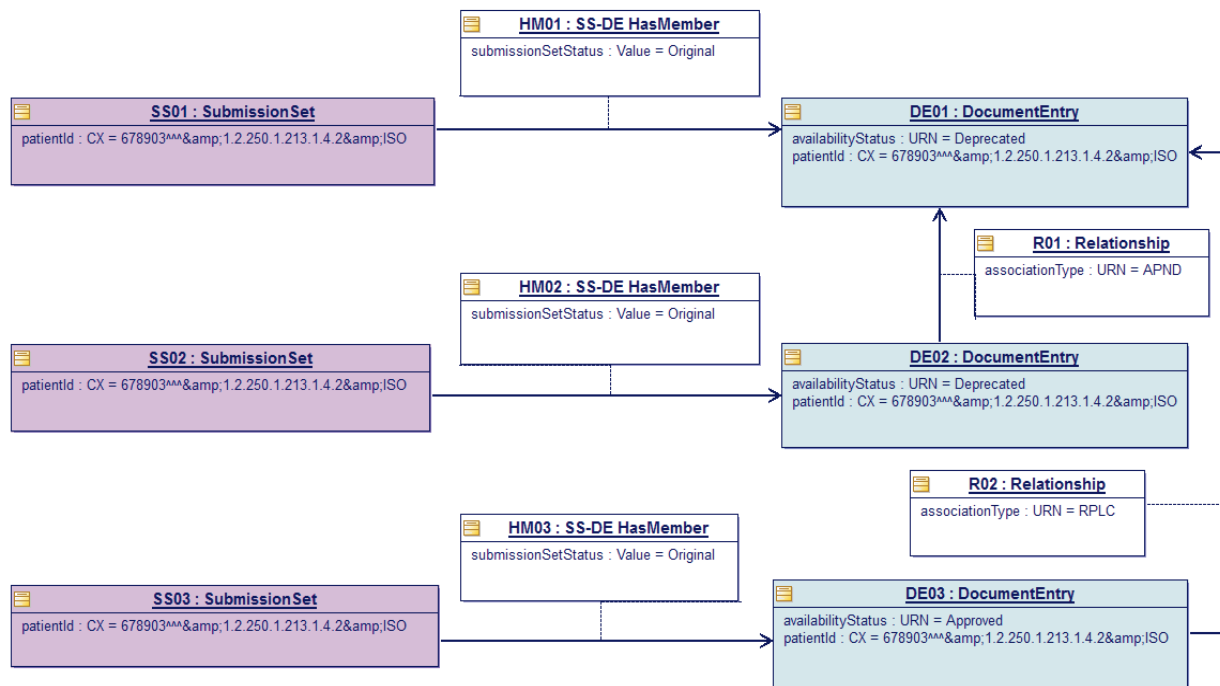


Figure 4.2.2.2.3-5: New DocumentEntry and Document forming an addendum to an existing DocumentEntry/Document – Starting point (Informative)



945 **Figure 4.2.2.3-6: Original DocumentEntry/Document that has an Addendum (APND) is replaced by New DocumentEntry/Document (Informative)**

Only an Approved DocumentEntry is replaceable. The most recent version of a DocumentEntry carries an availabilityStatus of Approved while older versions carry an availabilityStatus of Deprecated.

950 A transformation (connected to original DocumentEntry with XFRM Association) is an alternate form of an original document. Therefore, a transformation is permitted to be replaced (RPLC).

When a DocumentEntry is replaced and that DocumentEntry is a member of one or more Folders, new FD-DE HasMember and SS-HM HasMember Associations shall be created by the receiving actor, connecting the replacement DocumentEntry to each Folder that held the original DocumentEntry as a member. The result is that a Folder contains both the original and replacement DocumentEntry differentiated by their availabilityStatus.

955

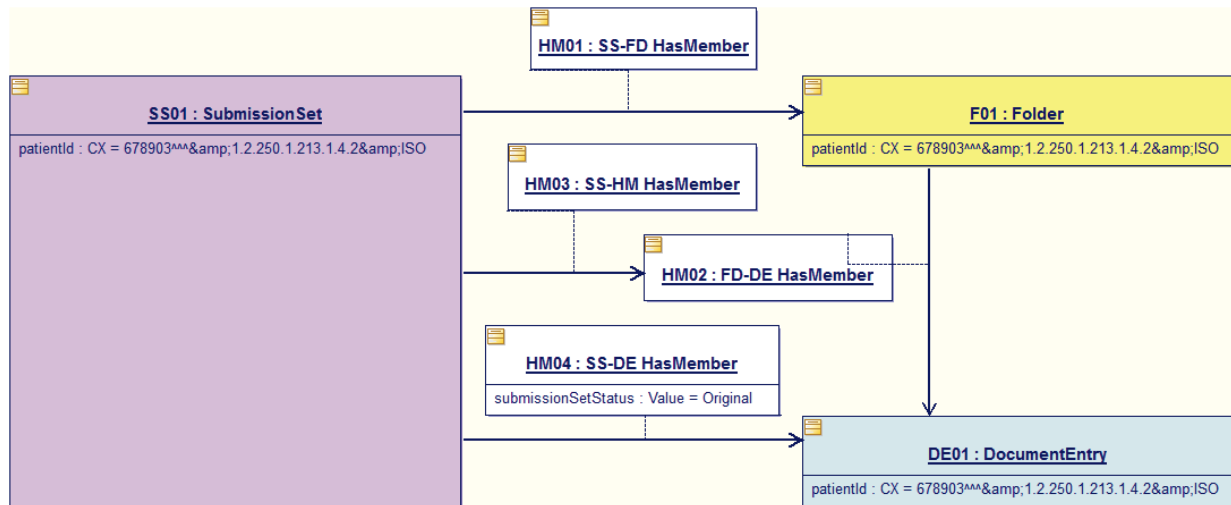


Figure 4.2.2.3-7: DocumentEntry submitted as part of the Folder in a single submission – Starting point (Informative)

960

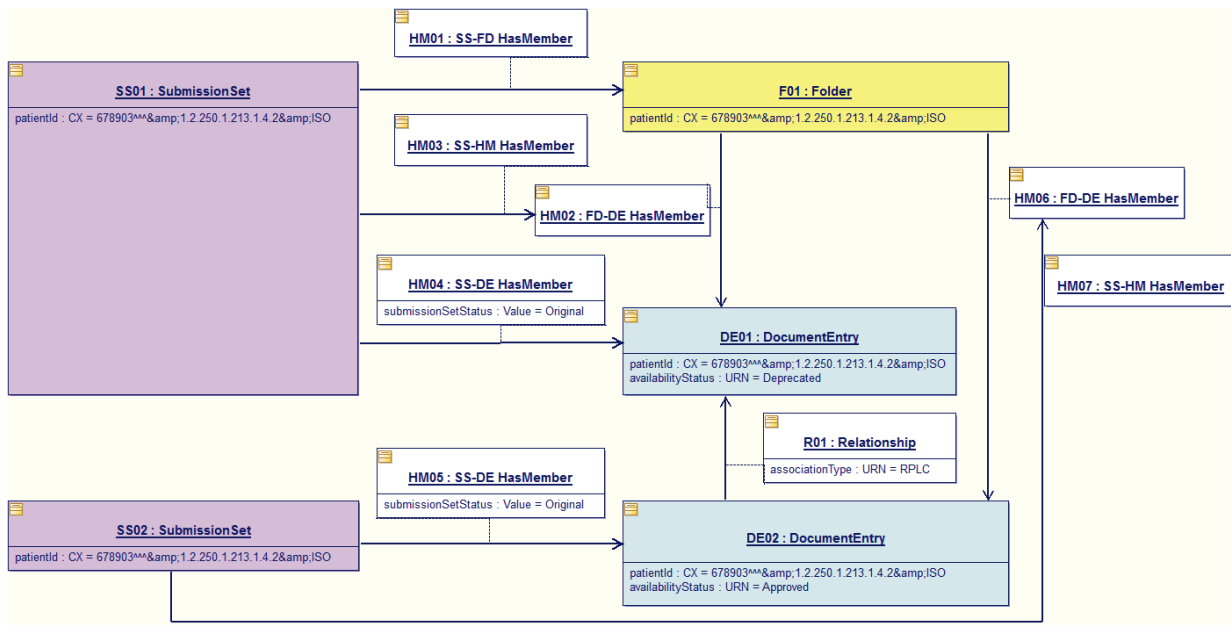


Figure 4.2.2.3-8: Submission of a new DocumentEntry replacing the DocumentEntry part of an existing Folder (Informative)

4.2.2.2.4 XFRM_RPLC

965

The submission contains a new DocumentEntry and associated Document and a XFRM_RPLC Association linking this new DocumentEntry with an existing DocumentEntry. This new Document/DocumentEntry defines a transformation of the existing Document/DocumentEntry

that replaces the existing Document/DocumentEntry. The XFRM_RPLC can be thought of as a RPLC followed immediately by a XFRM. All behavior associated with a RPLC association shall also apply to the XFRM_RPLC association.

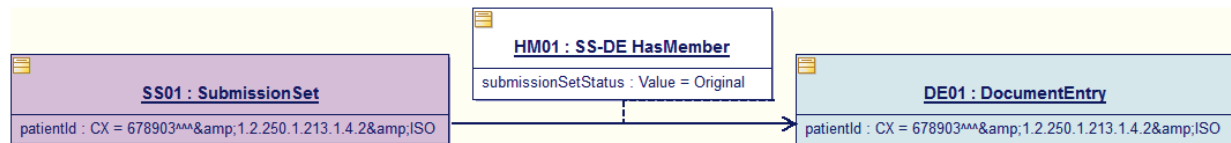


Figure 4.2.2.2.4-1: Starting Point (Informative)

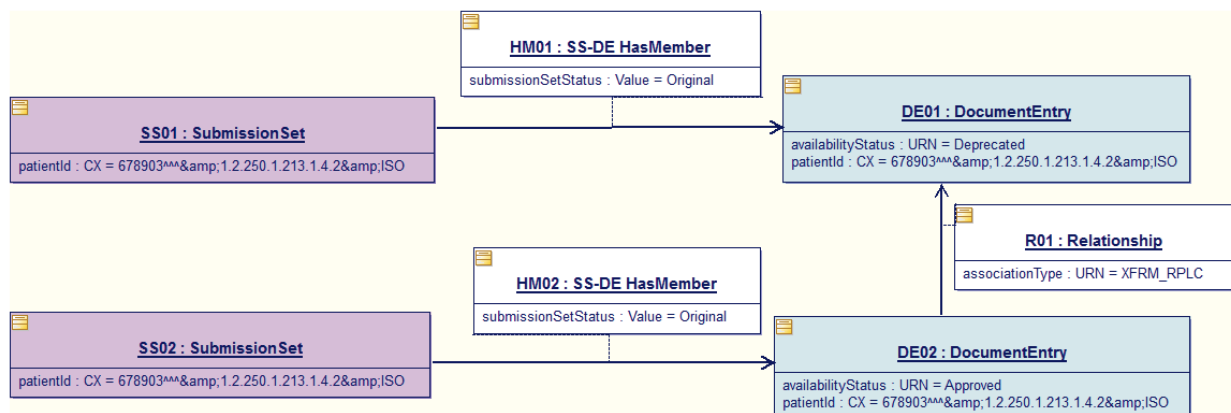


Figure 4.2.2.2.4-2: New DocumentEntry/Document defining a transformation of an existing DocumentEntry/Document that replaces this existing DocumentEntry/Document (Informative)

4.2.2.2.5 Signs

The submission contains a new DocumentEntry and associated Document and a Signs Association linking this new DocumentEntry with an existing DocumentEntry. This new Document is a Digital Signature that signs the existing Document.

An ebRIM Association with associationType of *signs* shall be used to link a DocumentEntry representing a Digital Signature with the DocumentEntry representing the document being signed. Details of how Digital Signatures are represented are found in the ITI Document Digital Signature (DSG) Profile.

In constructing this Association, the attributes are:

sourceObject: references the DocumentEntry representing the Digital Signature

targetObject: references the DocumentEntry representing the document being signed

associationType: signs

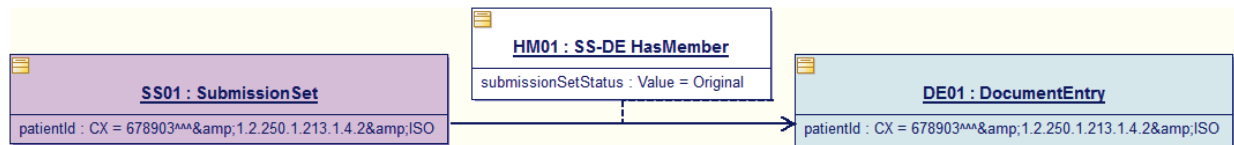


Figure 4.2.2.5-1: Starting Point (Informative)

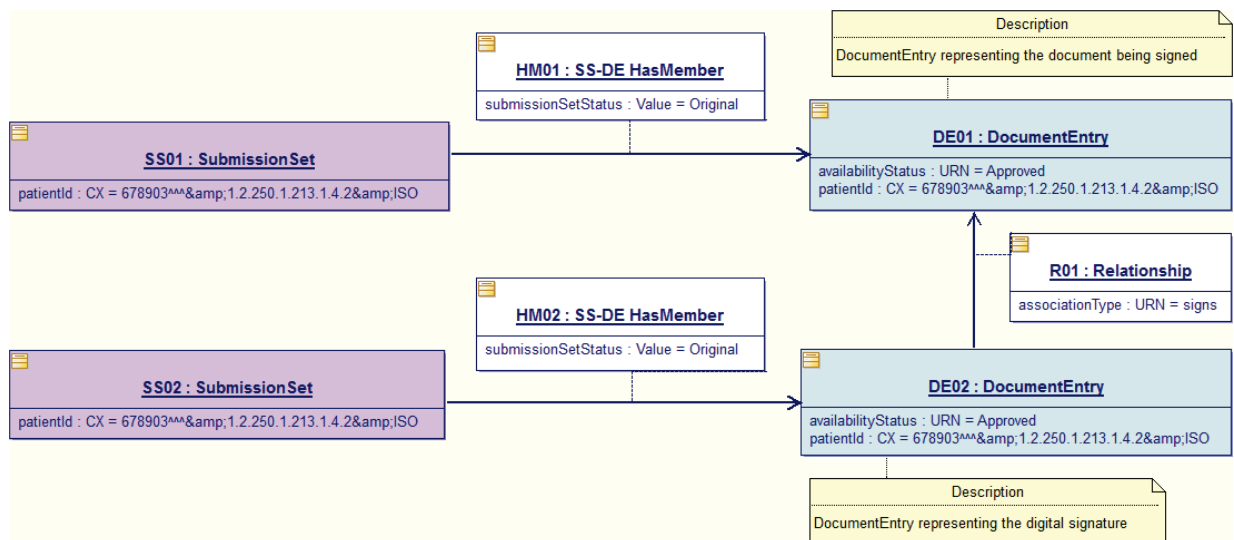


Figure 4.2.2.5-2: New DocumentEntry/Digital signature document signing the existing DocumentEntry/Document (Informative)

4.2.2.2.6 IsSnapshotOf

When the content of an On-Demand DocumentEntry is retrieved, the retrieved version can be saved in a Document Repository as a Document and recorded in the Document Registry as a Stable DocumentEntry. When this happens, the saved version is linked to the On-Demand DocumentEntry through the IsSnapshotOf Association.

Example IsSnapshotOf Association

```
1005 <rim:Association
      associationType="urn:ihe:iti:2010:AssociationType:IsSnapshotOf"
      sourceObject="Snapshot"
      targetObject="urn:uuid:e0985823-dc50-45a5-a6c8-a11a829893bd"/>

1010 <rim:ExtrinsicObject id="Snapshot"
      objectType="urn:uuid:7edca82f-054d-47f2-a032-9b2a5b5186c1">
      . . .
</rim:ExtrinsicObject>
```

Note: This example does not show the SubmissionSet object or the SubmissionSet to DocumentEntry HasMember association.

1015 This Association shall be submitted together with the Stable DocumentEntry representing the snapshot of the On-Demand Document. The sourceObject attribute references the snapshot and the targetObject references the On-Demand DocumentEntry already in the Document Registry.

4.2.3 Metadata Attributes

This section details the coding of metadata attributes using in Document Sharing profiles.

1020 4.2.3.1 General Information about Metadata Attributes

4.2.3.1.1 Attribute Value Length

All attribute value lengths are limited by the size specifications of ebRIM version 3.0. For example, rim:Slot/rim:ValueList/rim:Value is limited to a maximum length of 256 characters.

4.2.3.1.2 Creating Coded Attributes

1025 Many attributes of DocumentEntry, SubmissionSet, Folder, and Association objects are coded attributes defined as ebRIM Classifications. Three details are required to describe a coded value:

1. **Code Value** – contains the assigned value of the code.
2. **Code Display Name** - The display name used to represent the code (code values are not necessarily human-friendly). Must be non-zero length.
- 1030 3. **Coding Scheme** - An identifier of the coding scheme that the code comes from.

For common Coding Schemes, see DICOM PS3.16, Table 8-1 Coding Schemes (http://dicom.nema.org/medical/dicom/current/output/chtml/part16/chapter_8.html).

- If the Code Value is from a Coding Scheme in this table, the value for Coding Scheme should be taken from either the “Coding Scheme UID” or the “Coding Scheme Designator” column. If both are available, the value of Coding Scheme UID should be used.
- 1035 • If the Code Value is from a Coding Scheme that is not in this table, and if the Coding Scheme can be identified with an OID, then the OID should be used.

These three values combine to define a single coded attribute.

1040 The following example contains a code value (10160-0) from the LOINC coding scheme which is identified by an OID (2.16.840.1.113883.6.1):

```

1045 <rim:Classification
      classificationScheme="urn:uuid:41a5887f-8865-4c09-adf7-
e362475b143a"
      classifiedObject="ExampleDocument"
      id="IdExample_046"
      objectType="urn:oasis:names:tc:ebxml-
1050 regrep:ObjectType:RegistryObject:Classification"
      nodeRepresentation="10160-0">
      <rim:Name>
        <rim:LocalizedString value="History of Medication Use"/>
      </rim:Name>
      <rim:Slot name="codingScheme">
1055   <rim:ValueList>
        <rim:Value>2.16.840.1.113883.6.1</rim:Value>
        </rim:ValueList>
      </rim:Slot>
    </rim:Classification>

```

1060

A code is constructed as a Classification object. The relevant parts of this classification are described in Table 4.2.3.1.2-1 below.

Table 4.2.3.1.2-1: Classifications and Descriptions

Item	Description
Classification/@classificationScheme	This UUID defines which metadata attribute this Classification is supplying a value for. See Section 4.2.5 for a list of all values for this attribute. In the example above, this attribute indicates that the Classification contains a value for the DocumentEntry.classCode metadata attribute.
Classification/@classifiedObject	This references the object in metadata being classified. In the example this references the DocumentEntry object that the classCode value is for. Note that the Classification must also be embedded within the referenced object, thus providing dual context. This value must match the @id attribute of the containing Association, ExtrinsicObject or RegistryPackage.
Classification/@id	Symbolic id or UUID identifying this Classification. See Section 4.2.3.1.5 for details.
Classification/@objectType	Fixed value as specified by ebRIM. Optional upon submission of objects; required upon retrieval. If set, the value shall be "urn:oasis:names:tc:ebxml-regrep:ObjectType:RegistryObject:Classification"
Classification/@nodeRepresentation	The code value. Required. The example above shows a code value of "10160-0".
Name/LocalizedString/@value	The code displayName. The example above shows a display name of "History of Medication Use".
Slot/@name	Fixed value that must always be the string "codingScheme".

Item	Description
Slot/ValueList/Value/text()	The code codingScheme. Shall have exactly one value. In the example above it is "2.16.840.1.113883.6.1".

- 1065 The creating entity defines the local configuration for each coded metadata attribute. Specifically, it defines for each code:

Coding Scheme – shall be used in the codingScheme Slot.

Code Value – shall be used in the nodeRepresentation attribute.

- 1070 **Code Display Name** – shall be used in the Name element. It is expected that the name be semantically consistent with the code value. The same code value may have multiple valid human-readable representations in different languages or in different, but semantically equivalent, wording. The displayName is a convenience provided by the actor that creates the metadata (“metadata creator”), indicating the meaning of the code in a local language used at the “metadata creator”. It is the responsibility of the actor that consumes the metadata (“metadata consumer”) to resolve code values in metadata into human-readable display values. A “metadata consumer” may use the displayName found in the metadata provided by the “metadata creator”, or it may choose another local designation for the code, for example to translate it from English into French.

- 1080 Some coded attributes allow multiple values. EventCodeList is an example. These attributes may contain the letters ‘List’ in their name. These codes are XML encoded identically to the above example except the entire Classification element may be repeated to specify additional values.

Note: The attribute DocumentEntry.languageCode is not encoded as a coded attribute as shown above. See Table 4.2.3.1.7-2 for details.

4.2.3.1.3 Creating External Identifiers

- 1085 Several attributes of DocumentEntry, SubmissionSet and Folder (Table 4.2.3.2-1, Table, 4.2.3.3-1 and Table 4.2.3.4-1) are identifiers defined as ebRIM ExternalIdentifiers. These identifiers, such as patient IDs or document unique IDs are considered to be real-world identifiers that have global meaning external to an ebXML registry or other transaction.

- 1090 The identifiers consist of a single, opaque string stored in the value attribute of an ExternalIdentifier element. The meaning and format depend on the particular identifier. An example of an identifier in a submission request is:

1095

```
<rim:ExternalIdentifier
  identificationScheme="urn:uuid:6b5aea1a-874d-4603-a4bc-96a0a7b38446"
  value="6578946^^^&1.3.6.1.4.1.21367.2005.3.7&ISO"
  id="IdExample_051"
  objectType="urn:oasis:names:tc:ebxml-
  regrep:ObjectType:RegistryObject:ExternalIdentifier"
  registryObject="DocumentEntry01">
  <rim:Name>
    <rim:LocalizedString value="XSDDocumentEntry.patientId"/>
  </rim:Name>
</rim:ExternalIdentifier>
```

1100

1105

Table 4.2.3.1.3-1: Identifiers and Descriptions

Item	Description
ExternalIdentifier/@identificationScheme	Fixed value denoting the specific identifier. See Section 4.2.5 for a list of valid values.
ExternalIdentifier/@value	The identifier value.
ExternalIdentifier/@id	Symbolic id or UUID identifying this ExternalIdentifier. See Section 4.2.3.1.5 for details.
ExternalIdentifier/@objectType	Fixed value as specified by ebRIM. Optional upon submission of objects; required upon retrieval. If set, the value shall be "urn:oasis:names:tc:ebxml-regrep:ObjectType:RegistryObject:ExternalIdentifier"
ExternalIdentifier/@registryObject	This references the object in metadata being identified. In the example this references the DocumentEntry object that the patient identifier value is for. Note that the ExternalIdentifier element must also be embedded within the referenced object, thus providing dual context. This value must match the @id attribute of the containing ExtrinsicObject or RegistryPackage.
Name/LocalizedString/@value	The readable name for the identifier. Fixed value according to the particular identifier.

4.2.3.1.4 Creating Author Attributes

The author attribute contains personal and organizational details of a DocumentEntry or SubmissionSet author.

1110

A DocumentEntry's author is any human and/or machine that is actively involved in the document's creation process. Depending on the Affinity Domain's policy, this can include report writers, data enterers, transcriptionists, informants, expert systems, or other participants in the creation process.

1115

A SubmissionSet's author is any human and/or machine actively involved in selecting the documents to include, in assembling the metadata, or in the submission process.

The author attribute defines a structure to hold its sub-attributes that are individually defined in Sections 4.2.3.1.4.1 through 4.2.3.1.4.5.

- authorPerson – zero or one
- authorInstitution – zero or more
- 1120 • authorRole – zero or more
- authorSpecialty – zero or more
- authorTelecommunication – zero or more

At least an authorPerson, authorTelecommunication or authorInstitution sub-attribute shall be present when the author attribute is included in the metadata.

1125 Note: Even if the authorPerson sub-attribute is not present, then the human or machine who authored the document or SubmissionSet exists but is not known. The other author sub-attributes apply to that unknown authorPerson.

Note: Author sub-attributes can contain lists of values. IHE does not define a positional correspondence between values in the sub-attributes; e.g., the second authorTelecom value might be a second way of contacting the authorPerson in the first authorInstitution, or might apply to the second (or third) authorInstitution.

1130 **Coding:**

The author attribute is as an ebRIM Classification which contains sub-attributes in ebRIM Slots. An instance of the author Classification shall be considered a single author. Multiple authors are valid and are represented by multiple author ebRIM Classification objects. For the author metadata attribute, the value of classificationScheme is different for DocumentEntries and
1135 SubmissionSets; see Sections 4.2.3.2.1 and 4.2.3.3.1 respectively. The nodeRepresentation attribute shall be empty.

The @classifiedObject attribute references the object being classified, either ExtrinsicObject or RegistryPackage. The Classification must be embedded within the referenced object and the @classifiedObject attribute must match the @id attribute of the referenced object, thus providing
1140 dual context. In the example below, the Classification references the DocumentEntry object that the author value is associated with.

The following example shows the definition of a single author for a DocumentEntry.

```
1145 <rim:Classification
      classificationScheme="urn:uuid:93606bcf-9494-43ec-9b4e-a7748d1a838d"
      classifiedObject="ExampleDocument"
      id="IdExample_045"
      objectType="urn:oasis:names:tc:ebxml-
1150 regrep:ObjectType:RegistryObject:Classification"
      nodeRepresentation=""><!-- nodeRepresentation intentionally left blank-->
      <rim:Slot name="authorPerson">
        <rim:ValueList>
          <rim:Value>^Welby^Marcus^^MD^Dr</rim:Value>
        </rim:ValueList>
1155 </rim:Slot>
      <rim:Slot name="authorInstitution">
        <rim:ValueList>
          <rim:Value>Some Hospital^^^^^^^2.999.1.2.3.5.8.9.1789.45</rim:Value>
        </rim:ValueList>
1160 </rim:Slot>
      <rim:Slot name="authorRole">
        <rim:ValueList>
          <rim:Value>PRF^^^&2.16.840.1.113883.5.90&ISO</rim:Value>
        </rim:ValueList>
1165 </rim:Slot>
      <rim:Slot name="authorSpecialty">
        <rim:ValueList>
          <rim:Value>Cardiology</rim:Value>
        </rim:ValueList>
1170 </rim:Slot>
      <rim:Slot name="authorTelecommunication">
        <rim:ValueList>
          <rim:Value>^^Internet^marcus.welby@healthcare.example.org</rim:Value>
        </rim:ValueList>
1175 </rim:Slot>
    </rim:Classification>
```

The following example shows the definition of a single author for a SubmissionSet.

```
1180 <rim:Classification
      classificationScheme="urn:uuid:a7058bb9-b4e4-4307-ba5b-e3f0ab85e12d"
      classifiedObject="theSubmission"
      id="Id_045"
      objectType="urn:oasis:names:tc:ebxml-
1185 regrep:ObjectType:RegistryObject:Classification"
      nodeRepresentation=""><!-- nodeRepresentation intentionally left blank-->
      <rim:Slot name="authorPerson">
        <rim:ValueList>
          <rim:Value>2.999.1.2.3.7548^Some EMR</rim:Value>
1190 </rim:ValueList>
      </rim:Slot>
      <rim:Slot name="authorInstitution">
        <rim:ValueList>
          <rim:Value>Some Hospital^^^^^^^2.999.1.2.3.5.8.9.1789.45</rim:Value>
1195 </rim:ValueList>
      </rim:Slot>
    </rim:Classification>
```

4.2.3.1.4.1 authorInstitution

Description:

1200 Represents the healthcare facility of the author.

If the author works for multiple facilities then the authorInstitution should only include the one relevant to this DocumentEntry or SubmissionSet. Depending on Affinity Domain policy, authorInstitution can denote any organizational unit from an enterprise or a hospital, down to a department or ward. To avoid duplicating static directory information, Affinity Domains should
1205 require the use of multiple authorInstitutions only in rare cases, e.g., to identify both the relevant hospital and department in cases where a joint department is attached to two hospitals.

To avoid ambiguity, content creators are encouraged to include a globally unique identifier for the facility. Multiple authorInstitution values should not be used to represent alternate facility names, or the organizational hierarchy.

1210 This is a sub-attribute of the author attribute.

Coding:

The format of the authorInstitution value is XON. See Table 4.2.3.1.7-2 for description of XON format.

1215 The value is coded as an optional ebRIM Slot within an author Classification. See Section 4.2.3.1.4 for an example of author Classification. There may be multiple values within the ebRIM Slot.

1220

```
<rim:Slot name="authorInstitution">
  <rim:ValueList>
    <rim:Value>Some Hospital^^^^^^2.999.1.2.3.9.1789.45</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

4.2.3.1.4.2 authorPerson

Description:

1225 Represents a human or machine that authored the document or SubmissionSet. The author may be the patient itself.

This is a sub-attribute of the author attribute.

Coding:

1230 The format of the authorPerson value is XCN; see Table 4.2.3.1.7-2 for description of XCN format.

The value is coded as an ebRIM Slot within an author Classification; see Section 4.2.3.1.4 for an example of author Classification. There may be only a single value within the ebRIM Slot.

1235

```
<rim:Slot name="authorPerson">
  <rim:ValueList>
    <rim:Value>2.999.1.2.3.1375^Welby^Marcus^^MD^Dr</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

1240 4.2.3.1.4.3 authorRole

Description:

The authorRole attribute represents the role of the author with respect to the documented act (e.g., Primary Surgeon) or the relationship with the patient (e.g., Primary Care Physician) at the time of authorship.

1245 For a SubmissionSet, authorRole may represent the role of the author with respect to the act of constructing or submitting the SubmissionSet (e.g., legal authenticator).

If no authorPerson is included in the author attribute, authorRole still refers to the unknown authorPerson's role and not to an authorInstitution's role. It should not be used to communicate the author's organizational role (e.g., head of medicine, resident).

1250 This is a sub-attribute of the author attribute.

Coding:

The format of the authorRole value is String or Coded String (see Table 4.2.3.1.7-2).

1255 The value is coded as an optional ebRIM Slot within an author Classification. See Section 4.2.3.2.1 for an example of author Classification. There may be multiple values within the ebRIM Slot.

1260

```
<rim:Slot name="authorRole">
  <rim:ValueList>
    <rim:Value>PRF^^^&2.16.840.1.113883.5.90&ISO</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

4.2.3.1.4.4 authorSpecialty

Description:

1265 Represents a specific specialty under which the DocumentEntry or SubmissionSet were authored. Unlike a DocumentEntry's practiceSettingCode, this attribute depends on the author's specialty, not on the specialty of the healthcare facility. If no authorPerson is included in the author attribute, authorSpecialty still refers to the unknown authorPerson's specialty and not the authorInstitution's specialty.

1270 This is a sub-attribute of the author attribute.

Coding:

The format of the authorSpecialty value is String or Coded String (see Table 4.2.3.1.7-2).

1275 The value is coded as an optional ebRIM Slot within an author Classification. See Section 4.2.3.2.1 for an example of author Classification. There may be multiple values within the ebRIM Slot.

1280

```
<rim:Slot name="authorSpecialty">
  <rim:ValueList>
    <rim:Value>Cardiology</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

4.2.3.1.4.5 authorTelecommunication

Description:

1285 Represents a telecommunications address (e.g., email or telephone number) for contacting the author.

This is a sub-attribute of the author attribute.

Coding:

1290 The format of the authorTelecommunication value is XTN; see Table for a description of XTN format.

The value is coded as an optional ebRIM Slot within an author Classification. See Section 4.2.3.2.1 for an example of author Classification. There may be multiple values within the ebRIM Slot.

1295

```
<rim:Slot name="authorTelecommunication">
  <rim:ValueList>
    <rim:Value>^^Internet^marcus.welby@healthcare.example.org</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

1300

4.2.3.1.5 UUIDs

UUIDs shall be formatted according to [RFC4122](#). Furthermore, values 10 through 15 shall be formatted in hexadecimal using only lower case ‘a’-‘f’. An example of a properly formatted UUID is:

1305 urn:uuid:10b545ea-725c-446d-9b95-8aeb444eddf3

Alternatively, symbolic Ids may be used when referencing objects in the same submission request. A symbolic Id is any string which does not start with urn:uuid:. For example, in XDS, a Document Source may create a submission request using symbolic Ids; the Document Registry replaces these with assigned properly formatted UUIDs upon acceptance of the submission.

1310 Once a UUID-format Id value is assigned to a Registry Object, that value is permanent and shall not be changed.

4.2.3.1.6 Extra Metadata Attributes

The term “Extra Metadata Attributes” refers to ebRIM Slots on any DocumentEntry, SubmissionSet, Folder, or Association that are not defined in the Technical Framework.

1315 An actor that creates metadata may add Extra Metadata Attributes. An actor that receives metadata shall not generate an error due to the presence of Extra Metadata Attributes.

Some IHE transactions require that a receiving actor take specific actions if the submission contains Extra Metadata Attributes. Otherwise, the receiving actor may ignore them.

1320 The ‘name’ attribute of the ebRIM Slot for an Extra Metadata Attribute shall conform to the following rules:

- The value of ‘name’ shall be a valid URN.
- The prefix ‘urn:ihe:’ shall not be used.

Note that ebRIM requires that the name of a Slot be unique within the containing object (DocumentEntry, SubmissionSet, Folder, or Association).

1325 An example of coding an Extra Metadata Attribute for DocumentEntry is shown below:

1330

1335

```
<rim:ExtrinsicObject id="urn:uuid:3ddfef0d-d586-4914-8f87-da599a363fd2"
 mimeType="text/plain" objectType="urn:uuid:7edca82f-054d-47f2-a032-
9b2a5b5186c1">
  <!--Other valid elements-->
  <rim:Slot name="urn:example:extraMetadataSlot">
    <rim:ValueList>
      <rim:Value>important data</rim:Value>
    </rim:ValueList>
  </rim:Slot>
</rim:ExtrinsicObject>
```

4.2.3.1.7 Metadata Attribute Data types

1340

Several data types are used in the tables below describing the Document Entry, Folder and Submission Set metadata. These data types are derived from other standards, and encoded as described in Table 4.2.3.1.7-2.

For the data types derived from HL7 standards, IHE Document Sharing Profiles require that the data be encoded according to HL7 encoding rules and that the default HL7 separators in Table 4.2.3.1.7-1 be used to represent the structure of HL7 v2.5 data types:

Table 4.2.3.1.7-1: HL7 Separators

HL7 Separators	
Field Separator	
Component Separator	^
Subcomponent Separator	&
Repetition Separator	~
Escape Character	\

1345

The special character escape sequences (\F\, \S\, \R\, \T\, and \E\) shall be used to encode HL7 separators and the escape character. The escape sequences for formatting (\H\, \N\) and locally defined escape sequences (\Zdddd\) shall not be included for these data types.

1350

For the data types derived from HL7 standards, Document Sharing actors shall not enforce any length constraints specified by the HL7 standards.

Table 4.2.3.1.7-2: Data Types (previously Table 4.1-3)

Data Type	Source Standard	Encoding Specification
Code	ITI TF	See Section 4.2.3.1.2.

Data Type	Source Standard	Encoding Specification
Coded String	ITI TF	A coded value data type that can be communicated in one string. It combines a Code and a Code System ID in the following form: Code^^&CodeSystemID&ISO The Code is a character sequence defined by the Code System. The CodeSystemID is a unique identifier for the code system, using the ISO Object Identifier format (see OID below). This data type shall be treated according to HL7 encoding rules described above. Note that the '&' character must be properly encoded in the XML content.
CX	HL7 V2.5 Identifier	This is an identifier. HL7 Identifier type CX consists of several components, but this specification restricts them to the use of two components, the Id Number, and the Assigning Authority (AA). The Assigning Authority identifies the "domain" over which the Id Number represents a unique entity. Furthermore, the AA is characterized by a Universal Id and Universal Id Type. In Document Sharing profiles, ISO Object Identifiers (see OID below) must be used as Universal Id. Therefore, Universal Id Type is always ISO. The required format is: IdNumber^^&OIDofAA&ISO No other values/modifications in other components or subcomponents are allowed. Specifically, components 2 and 3 shall be empty as listed above. An example is: 543797436^^&1.2.840.113619.6.197&ISO Note that the '&' character must be properly encoded in the XML content.
CXi	HL7 V2 Identifier	This is an identifier of a reference object, distinct from the use of CX for Patient Identifiers. HL7 Identifier type CX consists of several components. • CXi.1 shall be present and hold the identifier value. This component may exceed the HL7 conformance length of 15 characters. • CXi.2 and CXi.3 shall be empty. • CXi.4 (Assigning Authority) shall be present when the identifier in CXi.1 is not globally unique and holds the identifier of the "domain" over which the ID Number represents a unique entity. Either Universal ID with Universal ID Type or Namespace ID is permitted. • CXi.5 (Identifier Type Code) shall be present and chosen from either a URN defined by IHE, or a locally defined value. • No other components shall be present. The following IHE values for CXi.5 (Identifier Type Codes) are defined: urn:ihe:iti:xds:2013:uniqueId This code shall be used when the identifier is a uniqueID from Document Sharing metadata attribute. For example if uniqueID equals "1.3.6367.3.7^11379", then the CXi value is 11379^^&1.3.6367.3.7&ISO^urn:ihe:iti:xds:2013:uniqueId urn:ihe:iti:xds:2013:accession This code shall be used when the identifier is an accession number. It shall contain

Data Type	Source Standard	Encoding Specification
		- The accession number and - for accession values that are not globally unique, the Assigning Authority shall be included. For example when the accession number has a value of “2013001” and the assigning authority is “1.2.3.4.5.6” then the CXi value is 2013001^^^1.2.3.4.5.6&ISO^urn:ihe:iti:xds:2013:accession urn:ihe:iti:xds:2013:referral Referral number and assigning authority shall be present. For example: 134467699^^^2.999.1.2.3.4&ISO^urn:ihe:iti:xds:2013:referral urn:ihe:iti:xds:2013:order Order number and assigning authority shall be present. For example: 134467653^^^1.2.3.4.5.42.1&ISO^urn:ihe:iti:xds:2013:order urn:ihe:iti:xdw:2013:workflowInstanceId This code shall be used when the identifier is an XDW workflow identifier. The workflow identifier shall be an OID. Only the CXi.1 and CXi.5 components shall be present: For example, if the workflow identifier is “2.16.840.1” the CXi value is: 2.16.840.1^^^urn:ihe:iti:xdw:2013:workflowInstanceId urn:ihe:iti:xds:2016:studyInstanceUID This code shall be used when the identifier is a DICOM Study Instance UID. CXi.1 shall contain the value of Study Instance UID. Only the CXi.1 and CXi.5 components shall be present. For example when the Study Instance UID has a value of “1.2.3.45.678” then the CXi value is 1.2.3.45.678^^^urn:ihe:iti:xds:2016:studyInstanceUID urn:ihe:iti:xds:2015:encounterId Encounter identifier (also known as visit number) and assigning authority shall be present. For example: 245348841^^^1.2.840.113619.6.197&ISO^urn:ihe:iti:xds:2015:encounterId Note that the '&' character must be properly encoded in the XML content.
DTM	HL7 V2.5 Date Time	This is a date/time value, represented as precisely as possible. All date time values in the registry are stored using Coordinated Universal Time [UTC]. "UTC" implies that time shall be converted from/to the local time.

Data Type	Source Standard	Encoding Specification
		The format of these values is defined as the following regular expression: YYYY[MM[DD[hh[mm[ss]]]]] Where: - YYYY is the four digit year i.e., 2006 - MM is the two digit month 01-12, where Jan is 01, Feb is 02, etc. - DD is the two digit day of the month 01-31 - HH is the two digit hour, 00-23, where 00 is midnight, 01 is 1 am, 12 is noon, 13 is 1 pm, etc. - mm is the two digit minute, 00-59 - ss is the two digit seconds, 00-59 The following are legal date time values with increasing precision representing the date and time January 2, 2005, 3:04:05am 2005 200501 20050102 2005010203 200501020304 20050102030405
Field	HL7 V2.5 Message Segment	Specified as the HL7 field identifier, followed by a pipe () and then the data value characterized as a corresponding HL7 V2.5 data type as defined in HL7 standard. Note that if a Document Sharing data type is based on an HL7 data type, then the Document Sharing data type is used to represent the value. If the HL7 field's segment definition allows repetitions, then they may be used in this context as well. When using HL7 repetitions, they shall be encoded using the HL7 repetition separator '~'. Individual Document Sharing metadata attributes using this data type may define additional ways of implementing repetitions. An example of an HL7 field Patient Identifier List (the third field of PID segment) containing repetitions is as follows: PID-3 D\E\TP-1^^^&1.3.6&ISO~XTP-1^^^&1.3.11&ISO Note that the '&' character must be properly encoded in the XML content.
Identifier	See referenced data types	A globally unique identifier. This may be one of OID, URI, UUID (as defined in this table) or any other format that employs effective mechanisms to ensure global uniqueness.
Integer	W3C XML Schema Part 2	XML Schema Part 2: Data Types Section 3.3.13.
MIME Type	RFC2046	https://www.iana.org/assignments/media-types
OID	ISO Object Identifier	An ISO Object identifier. Made up of characters from the set [0-9.]. It must start with an integer, and is followed by one or more additional integer values, separated by periods. Integers are characterized without leading 0 digits unless the value is zero. (e.g., 2.999.2005.3.7) In the attribute tables below, when an OID format is specified, it shall follow the assignment and format rules defined for unique IDs in ITI TF-2x: Appendix B.
OID URN	RFC3061 . OID in URN syntax	See RFC3061 . An example is urn:oid:2.999.2005.3.7.
Predefined URN	RFC2141	Specific URNs are defined and assigned in this framework. An example is urn:ihe:iti:2007:ResponseStatusType:PartialSuccess

Data Type	Source Standard	Encoding Specification
SHA1	RFC3174	Document hash calculated with SHA1 algorithm. The encoding is the Lexical Representation of hexBinary ([0-9a-fA-F]).
String	XML	XML Schema Part 2: Data Types Section 3.2.1.
URI	RFC2616	Uniform Resource Identifier
UTF-8	RFC3629	Unicode standard
UUID	RFC4122	A DCE Universally Unique Identifier, represented in registry attributes using the URN syntax for UUIDs e.g., urn:uuid:9e0110f8-4748-4f1e-b0a8-cecae32209c7 Some Document Sharing profiles may allow use of symbolic Ids in certain conditions or locations.
XCN	HL7 V2.5 Extended Person Name	This data type describes a person (or in some cases, a software agent) along with an identifier by which they are known in some domain (e.g., the XDS affinity domain). It is based on the HL7 v2.5 XCN data type containing: - Identifier - Last Name - First Name - Second and Further Given Names - Suffix - Prefix - Assigning Authority Last Name should be used to convey a software agent name. All of the HL7 v2.5 fields may be specified as optional components with the following restrictions: - At least the last name or an identifier shall be present. Inclusion of other components is optional provided the slot value length restrictions are not exceeded (see Section 4.2.3.1.1). - If component 1 (Id Number) is specified, component 9 (Assigning Authority) shall be present if available, unless component 1 is already globally unique (e.g., an OID). - The XCN Component 9 is subject to the same the restrictions as defined for the CX data type component 4. Thus: the first subcomponent shall be empty, the second subcomponent must be an ISO OID (e.g., 2.999.6.197), and the third subcomponent shall be 'ISO'. - Any empty component shall be treated by the Document Registry as not specified. - Trailing delimiters are recommended to be trimmed off. Receiving actors shall ignore trailing delimiters. An example of person name with Id number using this data type is as follows: 11375^Welby^Marcus^J^Jr. MD^Dr^^^&2.999.6.197&ISO Note that the '&' character must be properly encoded in the XML content.
XON	HL7 V2.5 Organization Name	This type provides the name and identification of an organization. This specification restricts the coding to the following fields: - XON.1 – Organization Name – this field is required - XON.6.2 – Assigning Authority Universal Id – this field is required if XON.10 is valued and not an OID

Data Type	Source Standard	Encoding Specification
		XON.6.3 – Assigning Authority Universal Id Type – this field is required if XON.10 is valued and not an OID and shall have the value "ISO" XON.10 – Organization Identifier – this field is optional No other fields shall be specified. The XON data type in Document Sharing metadata results in a valid encoding of an HL7 v2.5 XON encoding, with the exception of length limitations. Component length restrictions are unobserved; however, the total length including delimiters shall not exceed the limit of the ebXML Slot Value. It is common for organizations to be uniquely identified by an OID. In such cases, the Organization (Identifier component 10) may contain the organization's OID. If the Organization Identifier is not an OID, the metadata use assumes that it has been assigned so that the composite Id created by combining components 6 and 10 is a unique identifier for the organization. Examples: Some Hospital Some Hospital^^^^^^2.999.1.2.3.4.5.6.7.8.9.1789.45 Some Hospital^^^^&2.999.1.2.3.4.5.6.7.8.9.1789&ISO^^^^45 Note that the '&' character must be properly encoded in the XML content.
XTN	HL7 V2.5 Extended Telecommunications Number Chapter 2A Section 89	This type provides the telecommunications address of an entity (for example author, intended recipient). This specification restricts the use to the following fields: For phone numbers: XTN.2 – Indicates the type of phone number (Optional) XTN.3 – The type of telecommunication address (Required) XTN.5 – Country Code (Optional) XTN.6 – Area/City Code (Optional) XTN.7 – Subscriber Number (Required) XTN.8 – Extension (Optional) For email addresses: XTN.2 – Optional. If present, SHALL have the value "NET". XTN.3 – shall have the value "Internet". XTN.4 – the telecommunications address (Required), e.g., name@example.com No other fields shall be specified. The XTN data type in Document Sharing metadata results in a valid encoding of an HL7 V2.5 XTN data type. Use of ITU E.123 notation for telephone numbers is recommended. Example: ^^Internet^radiology@healthcare.example.org.org (e-mail address) ^PRS^PH^31^(042) 1123 4567 (national phone number) ^PRS^PH^^^^+31 42 1123 4567 (international phone number)

4.2.3.1.8 General format of DocumentEntry, Folder and SubmissionSet attribute tables

Each metadata attribute definition table below has five columns:

1. The first column contains the name used to refer to the attribute in IHE documentation. It is not always related to the way the attribute is coded in ebRIM.
2. The second column contains a brief description of the attribute.
- 1360 3. The third column identifies how the value of the attribute is coded. Table 4.2.3.1.7-2 lists all the possible types of data. In isolated instances a value may be complex enough to require a separate section to describe, in which case a reference to that section is included. For example, author.
- 1365 4. The fourth column describes where to find the encoding of the attribute within the DocumentEntry/Folder/SubmissionSet. In other words, how the value of the attribute is held within the enclosing object. The possible values in this column are:

- **ebRIM Classification** – indicates that the attribute is coded as a classification object, (see Section 4.2.3.1.2.
- **XML attribute** – indicates that the attribute is the value of an XML attribute of the enclosing object. For example:

```
<rim:ExtrinsicObject ... id="urn:uuid:a6e06ca8-0c75-4064-9e5c-88b9045a96f6"
... >
```

Showing the entryUUID attribute coded as a value of the *id* XML attribute of the ExtrinsicObject representing the DocumentEntry. Note that the name of the attribute – entryUUID – is not referenced in its actual representation.

- **ebRIM Slot**– indicates that the attribute is encoded within a slot. For example:

```
<rim:ExtrinsicObject ...>
<rim:Slot name="creationTime">
  <rim:ValueList>
    <rim:Value>20041225212010</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

Showing the creationTime attribute within a Slot of the ExtrinsicObject representing the Document Entry. In this case the name of the slot is the attribute name.

- **ebRIM ExternalIdentifier**– indicates the value is held within an ExternalIdentifier object, using the XML element rim:ExternalIdentifier, providing an additional identifier to a registry object (see Section 4.2.3.1.3).
- **ebRIM Name**– indicates this attribute is held in an ebRIM Name object. For example, the title attribute is:

```
<rim:Name>
  <rim:LocalizedString value="ExampleTitle"/>
</rim:Name>.
```

- **ebRIM Description**– indicates this attribute is held in an ebRIM Description object. For example the comment attribute is:

1395

```
<rim:Description>  
  <rim:LocalizedString value="ExampleComment"/>  
</rim:Description>.
```

1400 5. The fifth column links to a section which describes the attribute in more detail, including further detail and examples regarding its use and its coding.

4.2.3.1.9 Metadata Attribute Cardinality

Metadata attributes have several dimensions of cardinality.

1405 One dimension is whether or not any value is required, or the attribute is optional. This dimension is dependent on the profile, actor and transaction in which the attribute is being specified and is detailed in Section 4.3.

Another dimension is the required handling of the receiving actor. This is specified within each transaction.

1410 The last dimension of cardinality is whether the attribute can contain multiple values and, when multiple values are allowed, how multiple values are expressed. This is specified within the text explaining each of the attributes in Sections 4.2.3.2.1 through 4.2.3.2.27 for DocumentEntry, Sections 4.2.3.3.1 through 4.2.3.3.12 for SubmissionSet, and Sections 4.2.3.4.1 through 4.2.3.4.9 for Folder. The text indicates whether multiple values are allowed and, if they are allowed, how to express them. For example, for codes expressed using a Classification element, if multiple values are allowed they are coded by specifying multiple Classification elements.

1415 4.2.3.1.10 classificationScheme vs. classificationNode

Classification elements in ebRIM use one of two attributes: classificationScheme and classificationNode.

The attributes serve two different purposes:

- **classificationScheme**

1420 As the name suggests, the classificationScheme attribute specifies the category ("scheme") by which the referenced object is being classified. For example, classificationScheme="urn:uuid:cccf5598-8b07-4b77-a05e-ae952c785ead" indicates that a DocumentEntry is being classified by practiceSetting. The classificationScheme does not indicate WHICH practiceSetting applies; that information is recorded elsewhere in the Classification element.

1425 The use of classificationScheme corresponds with "external classifications", as described in ebRIM. This is the predominant type of classification in Document Sharing.

- **classificationNode**

1430 The classificationNode attribute provides an actual classification for the referenced object. For example, classificationNode="urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd" indicates that a RegistryPackage is a SubmissionSet.

The use of classificationNode corresponds with "internal classifications", as described in ebRIM. Document Sharing metadata uses this type of classification for three purposes:

- To label a RegistryPackage as a SubmissionSet
- To label a RegistryPackage as a Folder
- To label a SubmissionSet, Folder, or DocumentEntry as containing Limited Metadata

4.2.3.2 DocumentEntry Attributes

The following metadata attributes shall be used to describe a Document Sharing DocumentEntry. Optionality is determined by specific transaction requirements; see Section 4.2.3.1.9.

Each attribute shown below is an attribute on the DocumentEntry object. The attribute name is defined with a prefix of the object type of DocumentEntry when referenced by other objects, for example DocumentEntry.patientId.

See Section 4.2.3.1.8 for the general format of DocumentEntry, Folder and SubmissionSet attribute tables.

Table 4.2.3.2-1: DocumentEntry Metadata Attribute Definition (previously Table 4.1-5)

DocumentEntry Metadata Attribute	Description	Data Type (Table)	Coding (Section 4.2.3.1.8)	Detail (See Section)
author	The humans and/or machines that authored the document. This attribute contains the sub-attributes: authorInstitution, authorPerson, authorRole, authorSpecialty and authorTelecommunication.	See Section 4.2.3.2.1	ebRIM Classification	4.2.3.2.1
availabilityStatus	The lifecycle status of the DocumentEntry	Predefined URN	XML attribute	4.2.3.2.2
classCode	The code specifying the high-level use classification of the document type (e.g., Report, Summary, Images, Treatment Plan, Patient Preferences, Workflow).	Code	ebRIM Classification	4.2.3.2.3
comments	Comments associated with the document.	String	ebRIM Description	4.2.3.2.4
confidentialityCode	The code specifying the level of confidentiality of the document.	Code	ebRIM Classification	4.2.3.2.5
creationTime	The time the author created the document.	DTM	ebRIM Slot	4.2.3.2.6
entryUUID	A globally unique identifier used to identify the entry.	UUID	XML attribute	4.2.3.2.7
eventCodeList	This list of codes represents the main clinical acts, such as a colonoscopy or an appendectomy, being documented.	Code	ebRIM Classification	4.2.3.2.8
formatCode	The code specifying the detailed technical format of the document.	Code	ebRIM Classification	4.2.3.2.9
hash	The hash of the contents of the document.	SHA1 hash	ebRIM Slot	4.2.3.2.10

DocumentEntry Metadata Attribute	Description	Data Type (Table)	Coding (Section 4.2.3.1.8)	Detail (See Section)
healthcareFacility TypeCode	This code represents the type of organizational setting of the clinical encounter during which the documented act occurred.	Code	ebRIM Classification	4.2.3.2.11
homeCommunityId	A globally unique identifier for a community.	OID URN	home XML attribute	4.2.3.2.12
languageCode	Specifies the human language of character data in the document.	String	ebRIM Slot	4.2.3.2.13
legalAuthenticator	Represents a participant within an authorInstitution who has legally authenticated or attested the document.	XCN	ebRIM Slot	4.2.3.2.14
limitedMetadata	Indicates whether the DocumentEntry was created using the less rigorous requirements of metadata as defined for the Metadata-Limited Document Source.	4.2.3.2.29	ebRIM Classification	4.2.3.2.29
contentType	MIME type of the document.	MIME type	XML attribute	4.2.3.2.15
objectType	The type of DocumentEntry (e.g., On-Demand DocumentEntry).	UUID	XML attribute	4.2.3.2.30
patientId	The patientId represents the subject of care of the document.	CX	ebRIM ExternalIdentifier	4.2.3.1.3
practiceSettingCode	The code specifying the clinical specialty where the act that resulted in the document was performed (e.g., Family Practice, Laboratory, Radiology).	Code	ebRIM Classification	4.2.3.2.17
referenceIdList	A list of identifiers related to the document.	CXi	ebRIM Slot	4.2.3.2.28
repositoryUniqueId	The globally unique identifier of the repository where the document can be accessed.	OID	ebRIM Slot	4.2.3.2.18
serviceStartTime	The start time of the service being documented.	DTM	ebRIM Slot	4.2.3.2.19
serviceStopTime	The stop time of the service being documented.	DTM	ebRIM Slot	4.2.3.2.20
size	Size in bytes of the document.	Integer	ebRIM Slot	4.2.3.2.21
sourcePatientId	The sourcePatientId represents the subject of care's medical record identifier (e.g., Patient Id) in the local patient identifier domain of the creating entity.	CX	ebRIM Slot	4.2.3.2.22
sourcePatientInfo	This attribute contains demographic information of the patient to whose medical record this document belongs.	Field	ebRIM Slot	4.2.3.2.23
title	The title of the document.	UTF-8	ebRIM Name	4.2.3.2.24
typeCode	The code specifying the precise type of document from the user perspective (e.g., LOINC code).	Code	ebRIM Classification	4.2.3.2.25
uniqueId	Globally unique identifier assigned to the document by its creator.	Identifier	ebRIM ExternalIdentifier	4.2.3.1.3
URI	The URI for the document.	URI	ebRIM Slot	4.2.3.2.27

4.2.3.2.1 DocumentEntry.author

Description:

Represents the humans and/or machines that authored the document. See Section 4.2.3.1.4 for details on creating the structure.

1450 The classificationScheme shall be urn:uuid:93606bcf-9494-43ec-9b4e-a7748d1a838d

4.2.3.2.2 DocumentEntry.availabilityStatus

Description:

Represents the status of the DocumentEntry. A DocumentEntry shall have one of two availability statuses:

1455 **Approved** The document is available for patient care.

Deprecated The document is obsolete.

1460 This attribute is typically omitted in a submission of new documents. If present in a submission, the submitted value is ignored. It is always set to Approved as a result of the successful submission of new documents. It may be changed to Deprecated under the primary responsibility of the creating entity.

Coding:

The format of the availabilityStatus value is a URN.

1465 In a query response the value is coded in the status attribute of the ExtrinsicObject representing the DocumentEntry and shall be urn:oasis:names:tc:ebxml-regrep:StatusType:Approved or urn:oasis:names:tc:ebxml-regrep:StatusType:Deprecated. The example below shows the status attribute.

```
1470 <ExtrinsicObject
      id="urn:uuid:fbeacdb7-5421-4474-9267-985007cd8855"
      objectType="urn:uuid:7edca82f-054d-47f2-a032-9b2a5b5186c1"
      status="urn:oasis:names:tc:ebxml-regrep:StatusType:Approved"
    >
    ...
```

4.2.3.2.3 DocumentEntry.classCode

Description:

1480 The code specifying the high-level use classification of the document type (e.g., Report, Summary, Images, Treatment Plan, Patient Preferences, Workflow). The typeCode specifies the precise type of document from the user perspective. Valid values for classCode attribute are specified by the policies of the creating entity. It is recommended that the creating entity draws these values from a coding scheme providing a coarse level of granularity (about 10 to 100 entries). For example, XDS specifies that the XDS Affinity Domain will establish this list.

Coding:

1485 There shall be exactly zero or one ebRIM Classification containing a classCode for any DocumentEntry. See Section 4.2.3.1.2 for a description of coding an ebRIM Classification. For the classCode metadata attribute, the classificationScheme shall be urn:uuid:41a5887f-8865-4c09-adf7-e362475b143a.

1490 The following example specifies classCode=10160-0 with display name "History of Medication Use" and coding scheme "2.16.840.1.113883.6.1" for the DocumentEntry labeled "ExampleDocument".

```
1495 <rim:Classification
      classificationScheme="urn:uuid:41a5887f-8865-4c09-adf7-e362475b143a"
      classifiedObject="ExampleDocument"
      id="IdExample_046"
      objectType="urn:oasis:names:tc:ebxml-
1500 regrep:ObjectType:RegistryObject:Classification"
      nodeRepresentation="10160-0"
    >
      <rim:Name>
        <rim:LocalizedString
          value="History of Medication Use"/>
        </rim:Name>
        <rim:Slot name="codingScheme">
1505   <rim:ValueList>
     <rim:Value>2.16.840.1.113883.6.1</rim:Value>
     </rim:ValueList>
   </rim:Slot>
</rim:Classification>
```

1510

4.2.3.2.4 DocumentEntry.comments

Description:

Contains comments associated with the document.

Coding:

1515 Max length is unbounded.

The value of the comments attribute is coded in XML as the "value" attribute of the LocalizedString element within the ebRIM Description structure. There can be at most one ebRIM Description structure per DocumentEntry.

The following example shows a comment for the document.

1520

```
<rim:Description>
  <rim:LocalizedString value = "comment associated with the Document"/>
</rim:Description>
```

1525 4.2.3.2.5 DocumentEntry.confidentialityCode

Description:

The code specifying the security and privacy tags of the document. These codes are set by policy of the participants in the exchange, e.g., XDS affinity domain. confidentialityCode is part of a codification scheme.

1530 The confidentialityCode can carry multiple vocabulary items. HL7 has developed an understanding of security and privacy tags that might be desirable in a Document Sharing environment, called HL7 Healthcare Privacy and Security Classification System (HCS). The following specification is recommended but not mandated by IHE, as the vocabulary bindings are an administrative domain responsibility. The use of this method is up to the policy domain
1535 such as the XDS Affinity Domain or other Trust Domain where all parties including sender and recipients are trusted to appropriately tag and enforce.

- [1...1] Confidentiality Security Classification Label Field
- [0...*] Sensitivity Security Category Label Field
- [0...*] Compartment Security Category Label Field
- 1540 • [0...*] Integrity Security Category Label Field
- [0...*] Handling Caveat Security Category Field

In the HL7 Healthcare Privacy and Security Classification System In the HL7 Healthcare Privacy and Security Classification (HCS) there are code systems specific to Confidentiality, Sensitivity, Integrity, and Handling Caveats. Some values would come from a local vocabulary
1545 as they are related to workflow roles and special projects.

The decision to include a code is the responsibility of the publisher/sender (e.g., Access Control decision) and is dependent on the Policy rules and Trust Framework in place for the exchange. Use of Sensitivity tags expose the nature of the sensitivity and should be used only when the end-to-end confidentiality of the tags can be assured.

1550 When using the HL7 Healthcare Privacy and Security Classification System (HCS):

- The confidentialityCode SHALL contain exactly one value from the HL7 code system V:Confidentiality (@codeSystem="2.16.840.1.113883.5.25" i.e., U, L, M, N, R, or V), to indicate the Confidentiality coding of the content.
- The value represents the most restrictive content in the identified document (aka.
1555 High water mark).

- 1560
 - The confidentialityCode MAY contain values from the HL7 code system V:InformationSensitivityPolicy (@codeSystem="2.16.840.1.113883.1.11.20428"), to indicate the Sensitivity coding of the content.
 - Multiple values are all applicable to the content. This means that a consuming system/user must have rights to all Sensitivity classes indicated.
 - The confidentialityCode MAY contain values from the HL7 code system V:Compartment (@codeSystem="2.16.840.1.113883.1.11.20478"), to indicate the Compartment of the content.
 - Multiple values are all applicable to the content. This means that a consuming system/user must have rights to all Compartments indicated.
- 1565
 - The confidentialityCode MAY contain values from the HL7 code system V:SecurityIntegrityObservationValue (@codeSystem="2.16.840.1.113883.1.11.20469"), to indicate the Integrity of the content.
 - Multiple values are all applicable to the content.
- 1570
 - The confidentialityCode MAY contain values from the HL7 code system V:SecurityControlObservationValue (@codeSystem="2.16.840.1.113883.1.11.20471"), to address the Handling Caveats that must be applied to the use of the content.
 - Multiple values all applicable to the content. A consuming system must enforce all Handling Caveats indicated.
- 1575
 - Other value-sets and codesystems MAY be used as agreed between the communicating partners.

Coding:

- Each confidentialityCode is coded within an ebRIM Classification object. See Section 4.2.3.1.2 for a description of coding an ebRIM Classification. There shall be zero or more ebRIM Classification containing a confidentiality code (some profiles require at least one). Multiple values of confidentialityCode are coded by specifying multiple classification objects. For the confidentialityCode metadata attribute, the classificationScheme shall be
- 1580 urn:uuid:f4f85eac-e6cb-4883-b524-f2705394840f.

- The following example shows two confidentialityCode values. It specifies normal confidentiality with code "N", display name "Normal Clinical Data", and coding scheme
- 1585 "2.16.840.1.113883.5.25", and an obligation not to reuse with code "NOREUSE", display name "prohibit use beyond purpose of use", and coding scheme "2.16.840.1.113883.1.11.20471", for the DocumentEntry labeled "ExampleDocument".

```
1590 <rim:Classification
      classificationScheme=
        "urn:uuid:f4f85eac-e6cb-4883-b524-f2705394840f"
      classifiedObject="ExampleDocument"
      id="IdExample_046"
1595      objectType="urn:oasis:names:tc:ebxml-
      regrep:ObjectType:RegistryObject:Classification"
      nodeRepresentation="N"
      <rim:Name>
        <rim:LocalizedString
1600         value="Normal Clinical Data"/>
      </rim:Name>
      <rim:Slot name="codingScheme">
        <rim:ValueList>
          <rim:Value>2.16.840.1.113883.5.25</rim:Value>
1605        </rim:ValueList>
        </rim:Slot>
      </rim:Classification>
      <rim:Classification
        classificationScheme=
1610        "urn:uuid:f4f85eac-e6cb-4883-b524-f2705394840f"
        classifiedObject="ExampleDocument"
        id="IdExample_046"
        objectType="urn:oasis:names:tc:ebxml-
1615        regrep:ObjectType:RegistryObject:Classification"
        nodeRepresentation="NOREUSE">
        <rim:Name>
          <rim:LocalizedString value="prohibit reuse beyond purpose of use"/>
        </rim:Name>
        <rim:Slot name="codingScheme">
1620        <rim:ValueList>
          <rim:Value>2.16.840.1.113883.1.11.20471</rim:Value>
          </rim:ValueList>
          </rim:Slot>
        </rim:Classification>
1625
```

4.2.3.2.6 DocumentEntry.creationTime

Description:

Represents the time the author created the document.

Coding:

1630 Max length is 256 characters. The format of the creationTime value is DTM; see Table 4.2.3.1.7-2 for a description of DTM format.

The value is coded as a single value within an ebRIM Slot in the DocumentEntry.

The following example shows a creationTime of December 25, 2004 21:20:10 Coordinated Universal Time (UTC).

1635

```
<rim:Slot name="creationTime">
  <rim:ValueList>
    <rim:Value>20041225212010</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

1640

4.2.3.2.7 DocumentEntry.entryUUID

Description:

1645 The entryUUID attribute is a globally unique identifier primarily intended for internal document management purposes. In contrast, the uniqueId attribute is used for external references (e.g., links, etc.).

Coding:

The format of the entryUUID value is UUID. Certain Document Sharing transactions may allow symbolic Ids (anything that does not have the urn:uuid: prefix) to be used.

1650 The value of the entryUUID is coded in the id XML attribute on the ExtrinsicObject representing the DocumentEntry. In the example below, the entryUUID is urn:uuid:a6e06ca8-0c75-4064-9e5c-88b9045a96f6.

1655

```
<rim:ExtrinsicObject mimeType="application/pdf"
  id="urn:uuid:a6e06ca8-0c75-4064-9e5c-88b9045a96f6"
  objectType="urn:uuid:7edca82f-054d-47f2-a032-9b2a5b5186c1"
>
```

4.2.3.2.8 DocumentEntry.eventCodeList

Description:

1660 This list of codes represents the main clinical acts, such as a colonoscopy or an appendectomy, being documented. In some cases, the event is inherent in the typeCode, such as a "History and Physical Report" in which the procedure being documented is necessarily a "History and Physical" act. An event can further specialize the act inherent in the typeCode, such as where it is simply "Procedure Report" and the procedure was a "colonoscopy". When defining the value sets
1665 for eventCodes, they should not conflict with the values inherent in the classCode, practiceSettingCode or typeCode as such a conflict would create an ambiguous situation.

Coding:

1670 The eventCodeList is coded with ebRIM Classification objects. See Section 4.2.3.1.2 for a description of coding an ebRIM Classification. There may be zero or more ebRIM Classifications containing a code and additional eventCode entries are coded by specifying multiple classification objects. For the eventCodeList metadata attribute, the classificationScheme shall be urn:uuid:2c6b8cb7-8b2a-4051-b291-b1ae6a575ef4.

The following example specifies an eventCode="ExampleeventCode" with display name "eventCodeDisplayName" and coding scheme "Example Event Code Scheme" for the DocumentEntry labeled "ExampleDocument".

```
<rim:Classification
  classificationScheme=
    "urn:uuid:2c6b8cb7-8b2a-4051-b291-b1ae6a575ef4"
  classifiedObject="ExampleDocument"
  id="IdExample_048"
  objectType="urn:oasis:names:tc:ebxml-
    regrep:ObjectType:RegistryObject:Classification"
  nodeRepresentation="ExampleeventCode"
>
<rim:Name>
  <rim:LocalizedString value="eventCodeDisplayName"/>
</rim:Name>
<rim:Slot name="codingScheme">
  <rim:ValueList>
    <rim:Value>Example Event Code Scheme</rim:Value>
  </rim:ValueList>
</rim:Slot>
</rim:Classification>
```

4.2.3.2.9 DocumentEntry.formatCode

Description:

The code specifying the detailed technical format of the document. Along with the typeCode, it should provide sufficient information to allow potential consumer to know if it will be able to process the document.

The mimeType indicates the base format; the formatCode indicates the detailed-level technical structure. Together with the mimeType, the formatCode used shall be sufficiently specific to ensure processing/display by identifying a document encoding, structure and template (e.g., for a CDA Document, the fact that it complies with a CDA schema, possibly a template and the choice of a content-specific style sheet). The formatCode alone is often sufficiently specific, but an actor that consumes metadata should not assume that it is.

The formatCode is often an indicator of the IHE Document Content Profile to which the document conforms.

The mimeTypeSufficient formatCode of EV("urn:ihe:iti:xds:2017:mimeTypeSufficient", "1.3.6.1.4.1.19376.1.2.3") may be used when the mimeType is sufficient to identify the technical format of the document.

Format codes may be specified by multiple organizations. Format codes for Document Content Profiles defined by the ITI domain shall be in URN format and have names with the prefix urn:ihe:iti:

1715 Format codes defined by other IHE domains shall have names with the prefix

urn:ihe:'domain initials':

The IHE-managed codes and value set for formatCode are published on http://wiki.ihe.net/index.php/IHE_Format_Codes.

Format codes defined by non-IHE domains should be a valid unique URN.

1720 **Coding:**

There shall be zero or one ebRIM Classification containing a formatCode. See Section 4.2.3.1.2 for a description of coding an ebRIM Classification. For the formatCode metadata attribute, the classificationScheme shall be urn:uuid:a09d5840-386c-46f2-b5ad-9c3699a4309d. Any valid URN may be used as a formatCode.

1725 The following example using the XDS-SD document content profile specifies formatCode="urn:ihe:iti:xds-sd:pdf:2008" with display name "XDS-Scanned Documents" and coding scheme "1.3.6.1.4.1.19376.1.2.3" for the DocumentEntry labeled "ExampleDocument".

```
1730 <rim:Classification
      classificationScheme=
        "urn:uuid:a09d5840-386c-46f2-b5ad-9c3699a4309d"
      classifiedObject="ExampleDocument"
      id="IdExample_049"
      objectType="urn:oasis:names:tc:ebxml-
1735 regrep:ObjectType:RegistryObject:Classification"
      nodeRepresentation="urn:ihe:iti:xds-sd:pdf:2008"
    >
    <rim:Name>
      <rim:LocalizedString value="XDS-Scanned Documents"/>
1740 </rim:Name>
    <rim:Slot name="codingScheme">
      <rim:ValueList>
        <rim:Value>1.3.6.1.4.1.19376.1.2.3</rim:Value>
      </rim:ValueList>
1745 </rim:Slot>
    </rim:Classification>
```

4.2.3.2.10 DocumentEntry.hash

Description:

1750 The hash of the contents of the document.

The hash attribute can be used to identify accidental document corruption, mistaken duplicate IDs, etc. The SHA1 algorithm and hash attribute should not be used for identifying malicious alterations.

1755 Note: Environments requiring a higher level of protection against document modification should consider using a digital signature such as defined in the Digital Signature (DSG) Profile (see ITI TF-1: 37).

Coding:

Max length is 256 characters. The format of the hash value is SHA1 hash; see Table 4.2.3.1.7-2 for a description of SHA1.

1760 The value is coded as a case-insensitive single value within an ebRIM Slot in the DocumentEntry.

The following example shows a hash of da39a3ee5e6b4b0d3255bfef95601890afd80709.

1765

```
<rim:Slot name="hash">
  <rim:ValueList>
    <rim:Value>da39a3ee5e6b4b0d3255bfef95601890afd80709</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

4.2.3.2.11 DocumentEntry.healthcareFacilityTypeCode

1770 **Description:**

This code represents the type of organizational setting of the clinical encounter during which the documented act occurred.

1775 In some cases, the setting of the encounter is inherent in the typeCode, such as "Diabetes Clinic Progress Note". healthcareFacilityTypeCode shall be equivalent to or further specialize the value inherent in the typeCode; for example, where the typeCode is simply "Clinic Progress Note" and the value of healthcareFacilityTypeCode is "private clinic".

Coding:

1780 There shall be zero or one ebRIM Classification containing a healthcareFacilityTypeCode. See Section 4.2.3.1.2 for a description of coding an ebRIM Classification. For the healthcareFacilityTypeCode metadata attribute the classificationScheme shall be urn:uuid:f33fb8ac-18af-42cc-ae0e-ed0b0bdb91e1.

1785 The following example specifies healthcareFacilityTypeCode = "ExamplehealthcareFacilityTypeCode " with display name "healthcareFacilityTypeCodeDisplayName " and coding scheme "Example Healthcare Facility Scheme" for the DocumentEntry labeled "ExampleDocument".

```
1790 <rim:Classification
      classificationScheme=
        "urn:uuid:f33fb8ac-18af-42cc-ae0e-ed0b0bdb91e1"
      classifiedObject="ExampleDocument"
      id="IdExample_050"
      objectType="urn:oasis:names:tc:ebxml-
1795 regrep:ObjectType:RegistryObject:Classification"
      nodeRepresentation="ExamplehealthcareFacilityTypeCode">
      <rim:Name>
        <rim:value="healthcareFacilityTypeCodeDisplayName"/>
      </rim:Name>
      <rim:Slot name="codingScheme">
1800   <rim:ValueList>
        <rim:Value>Example Healthcare Facility Scheme</rim:Value>
      </rim:ValueList>
      </rim:Slot>
    </rim:Classification>
```

1805 4.2.3.2.12 DocumentEntry.homeCommunityId

Description:

A globally unique identifier for a community where the DocumentEntry and document can be accessed.

Coding:

1810 Max length is unbounded. Contained in the ebRS ExtrinsicObject home attribute for the ExtrinsicObject that corresponds to the DocumentEntry. It is an OID URN (see Table 4.2.3.1.7-2).

See ITI TF-2a: 3.18.4.1.2.3.8 and ITI TF-2b: 3.38.4.1.2.1.

```
1815 <rim:ExtrinsicObject home="urn:oid:1.2.3" ...>
      ...
    </rim:ExtrinsicObject>
```

4.2.3.2.13 DocumentEntry.languageCode

1820 Description:

Specifies the human language of character data in the document.

Coding:

Max length is 256 characters. The values of the attribute are language identifiers as described by the IETF (Internet Engineering Task Force) [RFC5646](#).

1825 The value is coded as a single value within an ebRIM Slot in the DocumentEntry.

The following example shows a languageCode of en-CA.

1830

```
<rim:Slot name="languageCode">
  <rim:ValueList>
    <rim:Value>en-CA</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

4.2.3.2.14 DocumentEntry.legalAuthenticator

1835 Description:

Represents a participant within an authorInstitution who has legally authenticated or attested the document. Legal authentication implies that a document has been signed manually or electronically by the legalAuthenticator.

Coding:

1840 Max length is 256 characters. This attribute shall be absent if not applicable. The value is coded as a single value within an ebRIM Slot in the DocumentEntry. The format of the legalAuthenticator value is XCN; see Table 4.2.3.1.7-2 for description of XCN format.

The following example shows a legalAuthenticator of ^Welby^Marcus^^^ Dr^MD.

1845

```
<rim:Slot name="legalAuthenticator">
  <rim:ValueList>
    <rim:Value>^Welby^Marcus^^^Dr^MD</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

1850

4.2.3.2.15 DocumentEntry.mimeType

Description:

MIME type of the document in the Repository

Coding:

1855 Max length is unbounded. Shall have only a single value. Encoded in the ebRS ExtrinsicObject mimeType attribute for the ExtrinsicObject that corresponds to the DocumentEntry. See ebRS Schema RIM.XSD.

In this example the MIME type is “application/pdf”.

1860

```
<rim:ExtrinsicObject mimeType="application/pdf"
  id="ExampleDocument"
  objectType="urn:uuid:7edca82f-054d-47f2-a032-9b2a5b5186c1">
```

4.2.3.2.16 DocumentEntry.patientId

1865 **Description:**

The patientId represents the subject of care of the document. For XDS the patient identifier domain is the XDS Affinity Domain Patient Identifier Domain (XAD-PID).

Within a submission request, the value of patientId of the DocumentEntries shall match that of the SubmissionSet.

1870 **Coding:**

The format of the patientId value is CX; see Table 4.2.3.1.7-2.

It shall contain two parts:

- Assigning Authority Domain Id (organization that issued the Id)
- An Id from the above Assigning Authority.

1875 No other values are allowed, as specified for the CX type. Using HL7 terminology, no other values are allowed in the components of the coded value, nor are further subcomponents allowed.

Coded as an ebRIM ExternalIdentifier. See Section 4.2.3.1.3 for a description of coding an ebRIM ExternalIdentifier. This element references, and is contained in, the ExtrinsicObject representing the DocumentEntry. There shall be zero or one patientId value.

1880

In the example below the patientId is 6578946^^^&1.3.6.1.4.1.21367.2005.3.7&ISO where 6578946 is the ID and 1.3.6.1.4.1.21367.2005.3.7 is the assigning authority.

1885

```
<rim:ExternalIdentifier
  identificationScheme=
    "urn:uuid:58a6f841-87b3-4a3e-92fd-a8ffefff98427"
  value="6578946^^^&1.3.6.1.4.1.21367.2005.3.7&ISO"
  id="IdExample_051"
  objectType="urn:oasis:names:tc:ebxml-
1890   regrep:ObjectType:RegistryObject:ExternalIdentifier"
  registryObject="DocumentEntry01">
  <rim:Name>
    <rim:LocalizedString value="XDSDocumentEntry.patientId "/>
1895 </rim:Name>
</rim:ExternalIdentifier>
```

4.2.3.2.17 DocumentEntry.practiceSettingCode

Description:

1900 The code specifying the clinical specialty where the act that resulted in the document was performed (e.g., Family Practice, Laboratory, Radiology). It is suggested that the creating entity draws these values from a coding scheme providing a coarse level of granularity (about 10 to 100 entries).

Coding:

1905 There shall be zero or one ebRIM Classification containing a practiceSettingCode. See Section 4.2.3.1.2 for a description of coding an ebRIM Classification. For the practiceSettingCode metadata attribute, the classificationScheme shall be
urn:uuid:cccf5598-8b07-4b77-a05e-ae952c785ead.

1910 The following example specifies practiceSettingCode="ExamplepracticeSettingCode" with display name "ExamplepracticeSettingCodeDisplayName" and coding scheme "Example Practice Setting Code Scheme" for the DocumentEntry labeled "ExampleDocument".

```
1915 <rim:Classification
      ClassificationScheme="urn:uuid:cccf5598-8b07-4b77-a05e-ae952c785ead"
      classifiedObject="ExampleDocument"
      id="IdExample_052"
      objectType="urn:oasis:names:tc:ebxml-
1920 regrep:ObjectType:RegistryObject:Classification"
      nodeRepresentation="ExamplepracticeSettingCode">
    <rim:Name>
      <rim:LocalizedString
        value="ExamplepracticeSettingCodeDisplayName"/>
    </rim:Name>
    <rim:Slot name="codingScheme">
      <rim:ValueList>
1925   <rim:Value>Example Practice Setting Code Scheme</rim:Value>
      </rim:ValueList>
    </rim:Slot>
  </rim:Classification>
```

1930 4.2.3.2.18 DocumentEntry.repositoryUniqueId

Description:

The globally unique, immutable, identifier of the repository where the document referenced by the Document Entry can be accessed. This unique identifier for the repository may be used to identify and connect to the specific repository to access the document.

1935 Coding:

Max length is 64 characters. The format of the repositoryUniqueId value is OID.

The value is coded as a single value within an ebRIM Slot in the DocumentEntry.

The following example shows a repositoryUniqueId of 1.3.6.1.4.5.

1940

```
<rim:Slot name="repositoryUniqueId">
  <rim:ValueList>
    <rim:Value>1.3.6.1.4.5</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

1945

4.2.3.2.19 DocumentEntry.serviceStartTime

Description:

1950 Represents the start time of the service being documented (clinically significant, but not necessarily when the document was produced or approved). This may be the same as the encounter time in case the service was delivered during an encounter. Encounter time is not coded in metadata but may be coded within the document.

Note: If needed, other times associated with the document, such as time of approval, are to be recorded within the document.

Coding:

1955 Max length is 256 characters. The format of the serviceStartTime value is DTM; see Table 4.2.3.1.7-2 for a description of DTM format.

The value is coded as a single value within an ebRIM Slot Attribute in the DocumentEntry.

The following example shows a serviceStartTime of December 25, 2004 21:20:10 Coordinated Universal Time (UTC).

1960

```
<rim:Slot name="serviceStartTime">
  <rim:ValueList>
    <rim:Value>20041225212010</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

1965

4.2.3.2.20 DocumentEntry.serviceStopTime

Description:

1970 Represents the stop time of the service being documented (clinically significant, but not necessarily when the document was produced or approved). This may be the same as the encounter time in case the service was delivered during an encounter. Encounter time is not coded in metadata but may be coded within the document.

If the service happens at a point in time, this attribute shall contain the same value as the serviceStartTime.

1975 **Coding:**

Max length is 256 characters. The format of the serviceStopTime value is DTM; see Table 4.2.3.1.7-2 for a description of DTM format.

The value is coded as a single value within an ebRIM Slot Attribute in the DocumentEntry.

1980 The following example shows a stop time of December 25, 2004 21:20:10 Coordinated Universal Time (UTC).

1985

```
<rim:Slot name="serviceStopTime">
  <rim:ValueList>
    <rim:Value>20041225232010</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

4.2.3.2.21 DocumentEntry.size

Description:

1990 Size in bytes of the byte stream that comprises the document.

Coding:

Max length of the encoded size is 256 characters. Coded as an ebRIM Slot. Shall have only a single value.

The following example shows a size value of 3654 bytes.

1995

2000

```
<rim:Slot name="size">
  <rim:ValueList>
    <rim:Value>3654</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

4.2.3.2.22 DocumentEntry.sourcePatientId

Description:

2005 The sourcePatientId represents the subject of care's medical record identifier (e.g., Patient Id) in the local patient identifier domain of the creating entity.

Coding:

Max length is 256 characters. Coded as an ebRIM Slot with the value encoded according the CX datatype (see Table 4.2.3.1.7-2). Shall contain zero or one value.

2010

```
<rim:Slot name="sourcePatientId">
  <rim:ValueList>
    <rim:Value>j98789^^^&1.2.3.4.343.1&ISO</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

2015 **4.2.3.2.23 DocumentEntry.sourcePatientInfo**

Description:

This attribute contains demographics information at the time of submission of the patient to whose medical record this document belongs.

2020

This information typically includes: the patient first and last name, sex, and birth date. Policies at the creating entity may require more or less specific information and format.

This patient information is not intended to be updated once the document is registered (just as the document content and metadata itself will not be updated without replacing the previous document). As sourcePatientInfo may have been updated by the source actor, it may no longer be in use within the Document Source (EHR-CR). It is only intended as an audit/checking mechanism and has occasional use for Document Consumer Actors.

2025

Coding:

Coded as an ebRIM Slot. If present, each rim:Value contains a Field (see Table 4.2.3.1.7-2 for a description of the Field datatype). Multiple rim:Value elements may exist for the same field name as a way to implement repetition; there shall be at most one rim:Value element for each of the PID-7 and PID-8 fields. Only field defined for the PID segment shall be used.

2030

Maximum length of each rim:Value is 256 characters. The sourcePatientInfo attribute should include:

- PID-3 (source patient identifier list)
- PID-5 (source patient name)
- If multiple patient names are present, then PID-5.7 “Name Type Code” and PID-5.8 “Name Representation Code” should be valued in each entry.
- PID-7 (source patient date of birth)
- PID-8 (source patient gender)

2035

2040

The sourcePatientInfo attribute should not include values for PID-2 (patient id), PID-4 (alternate patient id), PID-12 (country code), or PID-19 (social security number).

Example 1:

```
<rim:Slot name="sourcePatientInfo">
  <rim:ValueList>
    <rim:Value>PID-3|D\E\ID1-1^^^&1.3.6&ISO~ID2^^^&1.3.11&ISO</rim:Value>
    <rim:Value>PID-3|YZP-2^^^&1.3.42&ISO~ABC-3^^^&1.3.3.14&ISO</rim:Value>
    <rim:Value>PID-5|DICTAPHONE^ONE^^^</rim:Value>
    <rim:Value>PID-7|19650120</rim:Value>
    <rim:Value>PID-8|M</rim:Value>
    <rim:Value>PID-11|100 Main St^^BURLINGTON^MA^01803^USA</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

This example illustrates several of the encoding rules:

- In the first PID-3 entry, the use of the HL7 escape sequence `\E\`, representing the `”\”` character (see Section 4.2.3.1.7).
- The encoding of two patient identifiers in the first PID-3 entry and a third patient identifier in the second PID-3 entry (see above and definition of Field in Table 4.2.3.1.7-2).
- In the PID-3.4 values, the XML encoding of the `"&"` subcomponent separators (see definition of Field in Table 4.2.3.1.7-2).

Example 2:

```
<rim:Slot name="sourcePatientInfo">
  <rim:ValueList>
    <rim:Value>PID-3|ID1-1^^^&1.3.6&ISO</rim:Value>
    <rim:Value>PID-5|やまだ^たろう^^^^L^P~Yamada^Tarou^^^^L^A</rim:Value>
    <rim:Value>PID-5|山田^太郎^^^^L^I</rim:Value>
    <rim:Value>PID-7|19650120</rim:Value>
    <rim:Value>PID-8|M</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

This example illustrates encoding of a patient name with alphabetic, phonetic and ideographic representations of the legal name using both the HL7 repetition separator as well as multiple PID-5 entries.

4.2.3.2.24 DocumentEntry.title

Description:

Represents the title of the document.

Clinical documents often do not have a title; in such case the classCode (e.g., a "consultation" or "progress note") is often used as the title. In that case, the title is usually omitted.

Coding:

The format of DocumentEntry.title shall be any string of length less than 128 characters.

DocumentEntry.title is represented in ebXML as the "value" attribute of the LocalizedString element within the ebRIM Name structure. There can be only one ebRIM Name structure per DocumentEntry.

The following example shows a title for the DocumentEntry.

```
2090 <rim:ExtrinsicObject
      id="ExampleDocument"
      objectType="urn:uuid:7edca82f-054d-47f2-a032-9b2a5b5186c1"
      mimeType="application/pdf">
2095   <rim:Name>
     <rim:LocalizedString value="Example Document Title"/>
   </rim:Name>
   ...
</rim:ExtrinsicObject>
```

4.2.3.2.25 DocumentEntry.typeCode

Description:

2100 The code specifying the precise type of document from the user's perspective. It is recommended that the creating entity draw these values from a coding scheme providing a fine level of granularity such as LOINC.

Coding:

2105 Coded as an ebRIM classification. See Section 4.2.3.1.2 for a description on creating classifications. Shall have zero or one value.

The following example specifies typeCode="ExemplotypeCode" with display name "typeCodeDisplayName " and coding scheme " Example Type Code Scheme " for the DocumentEntry labeled "ExampleDocument".

```
2110 <rim:Classification
      classificationScheme="urn:uuid:f0306f51-975f-434e-a61c-c59651d33983"
      classifiedObject="ExampleDocument"
      nodeRepresentation="ExemplotypeCode"
      id="IdExample_053"
2115   objectType="urn:oasis:names:tc:ebxml-
  regrep:ObjectType:RegistryObject:Classification">
  <rim:Name>
    <rim:LocalizedString value="typeCodeDisplayName" />
  </rim:Name>
2120 <rim:Slot name="codingScheme">
  <rim:ValueList>
    <rim:Value>Example Type Code Scheme</rim:Value>
  </rim:ValueList>
  </rim:Slot>
2125 </rim:Classification>
```

4.2.3.2.26 DocumentEntry.uniqueId

Description:

Globally unique identifier assigned to the document by its creator.

- 2130 A DocumentEntry representing a single document is identified by the uniqueId attribute; the linkage between DocumentEntry and the document it represents is made with the uniqueId attribute.

This unique identifier may be used in other documents to reference this document.

- 2135 Two documents MAY be assigned the same uniqueId if the documents have the same byte sequence, but they SHALL NOT be assigned the same uniqueId if the documents have different byte sequences when communicated via a Document Sharing protocol. The size and hash metadata attributes allow for a quick comparison, so it is adequate to treat two documents as having the same byte sequence if their size and hash attributes are the same.

- 2140 For formats where different byte sequences can be functionally equivalent (XML, for example, where whitespace between elements is ignored), it is important to note that documents with different byte sequences SHALL have different uniqueIds even if they are functionally equivalent when communicated via a Document Sharing protocol.

Coding:

The format of the DocumentEntry.uniqueId value is Identifier (see Table 4.2.3.1.7-2).

- 2145 Coded as an ebRIM ExternalIdentifier (see Section 4.2.3.1.3 for a description of coding an ebRIM ExternalIdentifier) which references, and is contained in, the ExtrinsicObject representing the DocumentEntry. There shall be only a single uniqueId value.

Document creators should use OIDs in dot notation (see OID in Table 4.2.3.1.7-2) as uniqueIds, with the following exceptions:

- 2150
- For documents using HL7v3 Instance Identifiers (e.g., CDAs) with an extension attribute, the uniqueId should be a serialization of the root and extension attributes in the form root^extension. The HL7v3 Instance Identifier URN encoding (using the namespace urn:hl7ii) should not be used.
- 2155
- For documents using UUIDs, the uniqueId should be URN-encoded (see UUID in Table 4.2.3.1.7-2).
 - For documents using URIs, the uniqueId should be the URI, except for URNs with the “urn:oid:” and “urn:uuid:” namespaces (see OID and UUID above).

- 2160 All guidance regarding the structure and format of the identifier is meant to support document creators in following best practices for identifier management. From the perspective of all other actors, the uniqueId should be considered an opaque string.

Note: Some IHE profiles may restrict the length and format of this attribute.

```
2165 <rim:ExternalIdentifier
      identificationScheme="urn:uuid:2e82c1f6-a085-4c72-9da3-8640a32e42ab"
      value="2.999.78901.2345.6.7^123456"
      id="IdExample_054"
      objectType="urn:oasis:names:tc:ebxml-
2170 regrep:ObjectType:RegistryObject:ExternalIdentifier"
      registryObject="DocumentEntry01">
      <rim:Name>
        <rim:LocalizedString value="XSDDocumentEntry.uniqueId"/>
      </rim:Name>
    </rim:ExternalIdentifier>
```

2175 **4.2.3.2.27 DocumentEntry.URI**

Description:

The URI attribute contains the URI for the document.

Coding:

Max length is 256 characters. Coded as an ebRIM Slot. Shall have only a single value.

2180 For example, in the XDM Profile the URI attribute will contain a relative URI to the document (see ITI TF-2b: 3.32.4.1.2.2).

```
2185 <rim:Slot name="URI">
      <rim:ValueList>
        <rim:Value>DOC001.XML</rim:Value>
      </rim:ValueList>
    </rim:Slot>
```

4.2.3.2.28 DocumentEntry.referenceIdList

Description:

2190 These Identifiers may be internal or external identifiers, e.g., Identifiers may be Accession Numbers, Order Numbers, Referral Request Identifiers, XDW Workflow Instance Identifiers, etc. The referenceIdList contains Identifiers CXi encoded, as specified in Table 4.2.3.1.7-2.

Coding:

2195 Max length is 256 characters. Coded as an ebRIM Slot. May have multiple values.

The name of the slot in the metadata shall be `urn:ihe:iti:xds:2013:referenceIdList`.

For example encoding two values in the referenceIdList:

```
2200 <rim:Slot name="urn:ihe:iti:xds:2013:referenceIdList">
      <rim:ValueList>
        <rim:Value>
2205 2013001^^^&1.2.3.4.5.6&ISO^urn:ihe:iti:xds:2013:accession
        </rim:Value>
        <rim:Value>
2205 1.2.3.12.78.23^^^&1.2.3.4&ISO^urn:ihe:iti:xds:2013:uniqueId
        </rim:Value>
      </rim:ValueList>
    </rim:Slot>
```

2210 **4.2.3.2.29 DocumentEntry.limitedMetadata**

Description:

Indicates whether the Document Entry was created using the less rigorous requirements of metadata as defined for the Metadata-Limited Document Source Actor.

Coding:

2215 The Document Entry is flagged using an ebRIM Classification with a classificationNode of urn:uuid:ab9b591b-83ab-4d03-8f5d-f93b1fb92e85.

The following example marks the “DocEntry” Document Entry as created via the less rigorous metadata requirements.

```
2220 <ExtrinsicObject id="DocEntry">
      (...)
      <Classification classifiedObject="DocEntry"
2225      classificationNode="urn:uuid:ab9b591b-83ab-4d03-8f5d-f93b1fb92e85"/>
      (...)
    </ExtrinsicObject>
```

4.2.3.2.30 DocumentEntry.objectType

Description:

2230 The objectType attribute reflects the type of DocumentEntry. As described in Section 4.1.1, there are two DocumentEntry types: Stable Document Entry and On-Demand Document Entry. A Stable Document Entry contains metadata about an already created document available for retrieval is a Document Entry and is designated by setting objectType equal to the UUID for Stable (see Section 4.2.5.2 for the UUID). An On-Demand Document Entry contains metadata which can be used to create an on-demand document which collects the latest, most recent
2235 available information at the time of retrieval. It is designed by setting an objectType equal to the UUID for on-demand (see Section 4.2.5.2 for the UUID).

Coding:

Max length is unbounded. The format of the objectType value is UUID.

2240 The value of the objectType is coded in the objectType XML attribute on the ExtrinsicObject representing the DocumentEntry. In the example below, the objectType is urn:uuid:7edca82f-054d-47f2-a032-9b2a5b5186c1 and reflects a stable DocumentEntry.

2245

```
<rim:ExtrinsicObject mimeType="application/pdf"
  id="urn:uuid:a6e06ca8-0c75-4064-9e5c-88b9045a96f6"
  objectType="urn:uuid:7edca82f-054d-47f2-a032-9b2a5b5186c1"
> ...
```

4.2.3.3 SubmissionSet Attributes

The following metadata elements shall be used to describe a SubmissionSet.

2250 Each attribute shown is an attribute on the RegistryPackage object defining the SubmissionSet. The attribute name is defined with a prefix of the object type of SubmissionSet when referenced by other objects, for example SubmissionSet.sourceId.

See Section 4.2.3.1.8 for the General format of DocumentEntry, Folder and SubmissionSet attribute tables.

2255 **Table 4.2.3.3-1: Submission Set Metadata Attribute Definitions (previously Table 4.1-6)**

SubmissionSet Metadata Attribute	Description	Form	Coding	Detail (See Section)
author	The humans and/or machines that authored the SubmissionSet. This attribute contains the sub-attributes: authorInstitution, authorPerson, authorRole, authorSpecialty, authorTelecommunication.	See Section 4.2.3.3.1	ebRIM Classification	4.2.3.3.1
availabilityStatus	The lifecycle status of the SubmissionSet.	Predefined URN	XML attribute	4.2.3.3.2
comments	Comments associated with the SubmissionSet.	String	ebRIM Description	4.2.3.3.3
contentTypeCode	The code specifying the type of clinical activity that resulted in placing the associated content in the SubmissionSet.	Code	ebRIM Classification	4.2.3.3.4
entryUUID	A globally unique identifier used to identify the entry.	UUID	XML attribute	4.2.3.3.5
homeCommunityId	A globally unique identifier for a community.	OID URN	home XML attribute	4.2.3.3.6
intendedRecipient	The organizations or persons for whom the SubmissionSet is intended.	See Section 4.2.3.3.7	ebRIM Slot	4.2.3.3.7

SubmissionSet Metadata Attribute	Description	Form	Coding	Detail (See Section)
limitedMetadata	A flag that the associated SubmissionSet was created using the less rigorous metadata requirements as defined for the Metadata-Limited Document Source.	See Section 4.2.3.3.13	ebRIM Classification	4.2.3.3.13
patientId	The patientId represents the primary subject of care of the SubmissionSet.	CX	ebRIM ExternalIdentifier	4.2.3.3.8
sourceId	Identifier of the entity that contributed the SubmissionSet.	OID	ebRIM ExternalIdentifier	4.2.3.3.9
submissionTime	Point in time at the creating entity when the SubmissionSet was created.	DTM	ebRIM Slot	4.2.3.3.10
title	The title of the SubmissionSet.	UTF-8	ebRIM Name	4.2.3.3.11
uniqueId	Globally unique identifier for the SubmissionSet assigned by the creating entity.	OID	ebRIM ExternalIdentifier	4.2.3.3.12

4.2.3.3.1 SubmissionSet.author

Description:

2260 Represents the humans and/or machines that authored the SubmissionSet. See Section 4.2.3.1.4 for details on creating the structure.

The classificationScheme shall be urn:uuid:a7058bb9-b4e4-4307-ba5b-e3f0ab85e12d

4.2.3.3.2 SubmissionSet.availabilityStatus

Description:

2265 Represents the status of the SubmissionSet. Since the deprecation of SubmissionSets is not allowed, this value shall always be Approved.

Coding:

The availabilityStatus value shall be

urn:oasis:names:tc:ebxml-regrep:StatusType:Approved.

2270

```
<rim:RegistryPackage
  id="urn:uuid:fbeacdb7-5421-4474-9267-985007cd8855"
  status="urn:oasis:names:tc:ebxml-regrep:StatusType:Approved"
> ...
```

2275 **4.2.3.3.3 SubmissionSet.comments**

Description:

Contains comments associated with the SubmissionSet.

Coding:

2280 Max length is unbounded. The value of the comments attribute is coded in XML as the "value" attribute of the LocalizedString element within the ebRIM Description structure. There can be at most one ebRIM Description structure per SubmissionSet.

The following example shows a comment for the SubmissionSet.

2285

```
<rim:Description>
  <rim:LocalizedString value = "comment associated with SubmissionSet"/>
</rim:Description>
```

4.2.3.3.4 SubmissionSet.contentTypeCode

Description:

2290 The code specifying the type of clinical activity that resulted in placing these DocumentEntries, Folders, and/or Associations in this SubmissionSet. These values are to be drawn from a vocabulary defined by the creating entity that contributed the SubmissionSet.

Coding:

2295 Coded as an ebRIM Classification. See Section 4.2.3.1.2 for a description of coding an ebRIM Classification. Shall have zero or one value

The following example specifies contentTypeCode="ExamplecontentTypeCode" with display name "Example contentTypeCodeDisplayName" and coding scheme "Example contentTypeCode Scheme" for the SubmissionSet labeled "ExampleSubmissionSet".

```
2300 <rim:Classification
      classificationScheme="urn:uuid:aa543740-bdda-424e-8c96-df4873be8500"
      classifiedObject="ExampleSubmissionSet"
      id="IdExample_056"
      objectType="urn:oasis:names:tc:ebxml-
2305 regrep:ObjectType:RegistryObject:Classification"
      nodeRepresentation="ExamplecontentTypeCode"
      >
      <rim:Name>
        <rim:LocalizedString value="Example contentTypeCodeDisplayName" />
2310 </rim:Name>
      <rim:Slot name="codingScheme">
        <rim:ValueList>
          <rim:Value>Example Specific Value</rim:Value>
          </rim:ValueList>
2315 </rim:Slot>
    </rim:Classification>
```

4.2.3.3.5 SubmissionSet.entryUUID

2320 The entryUUID attribute is a globally unique identifier primarily intended for internal document management purposes. In contrast, the uniqueId attribute is used for external references (e.g., links, etc.).

Coding:

The format of the entryUUID value is UUID. Certain Document Sharing transactions may allow symbolic Ids (any string that does not have the urn:uuid: prefix) to be used.

2325 The value of the entryUUID is coded in the id XML attribute on the RegistryPackage representing the Submission Set. In the example below, the entryUUID is urn:uuid:a6e06ca8-0c75-4064-9e5c-88b9045a96f6.

```
2330 <rim:RegistryPackage
      id="urn:uuid:a6e06ca8-0c75-4064-9e5c-88b9045a96f6"
      objectType=
        "urn:oasis:names:tc:ebxml-
      regrep:ObjectType:RegistryObject:RegistryPackage"
      > ...
```

2335

4.2.3.3.6 SubmissionSet.homeCommunityId

Description:

A globally unique identifier for a community.

Coding:

2340 The ebRIM RegistryPackage home attribute for the RegistryPackage that corresponds to the SubmissionSet. It is an OID URN. See Table 4.2.3.1.7-2.

See ITI TF-2a: 3.18.4.1.2.3.8 and ITI TF-2b: 3.38.4.1.2.1.

2345

<pre><rim:RegistryPackage home="urn:oid:1.2.3" ...> ... </rim:RegistryPackage></pre>
--

4.2.3.3.7 SubmissionSet.intendedRecipient

Description:

2350 Represents the organization(s) or person(s) for whom the SubmissionSet is intended at time of submission. Each slot value shall include at least one of the organization, person, or telecommunications address fields described below. It is highly recommended to define the organization for all the persons, avoiding errors in the transmission of the documents.

Coding:

2355 Max length is 256. The format of the SubmissionSet.intendedRecipient value is XON|XCN|XTN where XON identifies the organization, XCN identifies a person and XTN identifies the telecommunications, see Table 4.2.3.1.7-2 for description of XON, XCN and XTN format. There is a "|" character separator between the organization and the person, and between the person and the telecommunications address, which is required when the person or the telecommunications

2360 address information is present.

The value is coded as zero or more values within a single ebRIM Slot in the SubmissionSet.

The following example shows two doctors from the same organization, another doctor without the organization details and another organization without the person details, and just a telecommunications address.

2365

```
2370 <rim:Slot name="intendedRecipient">
    <rim:ValueList>
      <rim:Value>
        Some
        Hospital^^^^^^^^1.2.3.9.1789.45|^Wel^Marcus^^^Dr^MD|^Internet^mwel@healthca
re.example.org
      </rim:Value>
      <rim:Value>
        Some Hospital^^^^^^^^1.2.3.9.1789.45|^Peirre^LaPointe^^^Dr^MD
2375 </rim:Value>
      <rim:Value>|12345^LaShawn^James^^Dr^MD</rim:Value>
      <rim:Value>MainHospital^^^^^^^^1.2.3.4.5.6.7.8.9.1789.2364</rim:Value>
<rim:Value>|^Internet^dr.oz@healthcare.example.org</rim:Value>
      </rim:ValueList>
2380 </rim:Slot>
```

4.2.3.3.8 SubmissionSet.patientId

Description:

The patientId represents the primary subject of care of the SubmissionSet.

2385 Coding:

The format of the patientId value is CX (see Table 4.2.3.1.7-2).

It shall contain two parts:

- Assigning Authority Domain Id (organization that issued the Id).
- An Id from the above Assigning Authority.

2390 No other values are allowed, as specified for the CX type. Using HL7 terminology, no other values are allowed in the components of the coded value, nor are further subcomponents allowed.

2395 The value is coded within a single ebRIM ExternalIdentifier element (see Section 4.2.3.1.3 for a description of coding an ebRIM ExternalIdentifier) which references, and is contained in, the RegistryPackage representing the SubmissionSet. There shall be zero or one single patientId value.

In the example below the patientId is 6578946^^^&1.3.6.1.4.1.21367.2005.3.7&ISO where 6578946 is the ID and 1.3.6.1.4.1.21367.2005.3.7 is the assigning authority.

```
2400 <rim:ExternalIdentifier
      identificationScheme="urn:uuid:6b5aea1a-874d-4603-a4bc-96a0a7b38446"
      value="6578946^^^&1.3.6.1.4.1.21367.2005.3.7&ISO"
      id="IdExample_057"
      objectType="urn:oasis:names:tc:ebxml-
2405 regrep:ObjectType:RegistryObject:ExternalIdentifier"
      registryObject="SubmissionSet01">
      >
      <rim:Name>
      <rim:LocalizedString value = "XDSSubmissionSet.patientId"/>
2410 </rim:Name>
      </rim:ExternalIdentifier>
```

4.2.3.3.9 SubmissionSet.sourceId

Description:

2415 The globally unique, immutable, identifier of the entity that contributed the SubmissionSet. When a "broker" is involved in sending SubmissionSets from a collection of client systems, it shall use a different sourceId for submissions from each separate system to allow for tracking.

Coding:

The format of the sourceId value is OID (see Table 4.2.3.1.7-2).

2420 The value is coded within a single ebRIM ExternalIdentifier element (see Section 4.2.3.1.3 for a description of coding an ebRIM ExternalIdentifier) which references, and is contained in, the RegistryPackage representing the SubmissionSet. There shall be only a single sourceId value.

In the example below the sourceId is 1.3.6.1.4.1.21367.2005.3.7.

```
2425 <rim:ExternalIdentifier
      identificationScheme="urn:uuid:554ac39e-e3fe-47fe-b233-965d2a147832"
      value="1.3.6.1.4.1.21367.2005.3.7"
      id="IdExample_058"
      objectType="urn:oasis:names:tc:ebxml-
2430 regrep:ObjectType:RegistryObject:ExternalIdentifier"
      registryObject="SubmissionSet01">
      <rim:Name>
      <rim:LocalizedString value = "XDSSubmissionSet.sourceId"/>
      </rim:Name>
2435 </rim:ExternalIdentifier>
```

4.2.3.3.10 SubmissionSet.submissionTime

Description:

Represents the point in time at the creating entity when the SubmissionSet was created.

2440 This shall be provided by the submitting system.

Coding:

Max length is 256. The format of the submissionTime value is DTM. See Table 4.2.3.1.7-2 for a description of DTM format.

The value is coded as a single value within an ebRIM Slot Attribute in the SubmissionSet.

2445 The following example shows a submissionTime of December 25, 2004 21:20:10 Coordinated Universal Time (UTC).

2450

```
<rim:Slot name="submissionTime">
  <rim:ValueList>
    <rim:Value>20041225212010</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

4.2.3.3.11 SubmissionSet.title

2455 **Description:**

Shall contain the title of the SubmissionSet.

Coding:

The format of SubmissionSet.title shall be any string of length less than 256 characters.

2460 SubmissionSet.title is represented in ebXML as the "value" attribute of the LocalizedString element within the ebRIM Name structure. There can be only one ebRIM Name structure per SubmissionSet.

The following example shows a title for the SubmissionSet.

2465

```
<rim:Name>
  <LocalizedString value="Example Submission Set Title"/>
</rim:Name>
```

4.2.3.3.12 SubmissionSet.uniqueId

Description:

2470 The globally unique identifier for the SubmissionSet assigned by the entity that contributed the SubmissionSet.

Coding:

The format of the SubmissionSet.uniqueId value is OID (see Table 4.2.3.1.7-2).

The value is coded within a single ebRIM ExternalIdentifier element which references, and is contained in, the RegistryPackage representing the SubmissionSet. See Section 4.2.3.1.3 for a description of coding an ebRIM ExternalIdentifier. There shall be only a single uniqueId value.

The following example shows a uniqueId of 1.2.3.4.5.

```
<rim:ExternalIdentifier
  identificationScheme="urn:uuid:96fdda7c-d067-4183-912e-bf5ee74998a8"
  id="IdExample_059"
  objectType="urn:oasis:names:tc:ebxml-
regrep:ObjectType:RegistryObject:ExternalIdentifier"
  value="1.2.3.4.5"
  registryObject="SubmissionSet01">
  <rim:Name>
    <rim:LocalizedString value = "XDSSubmissionSet.uniqueId"/>
  </rim:Name>
</rim:ExternalIdentifier>
```

4.2.3.3.13 SubmissionSet.limitedMetadata

Description:

Indicates whether the SubmissionSet was created using the less rigorous requirements of metadata as defined for the Metadata-Limited Document Source.

Coding:

The SubmissionSet is flagged using an ebRIM Classification with a classificationNode of urn:uuid:5003a9db-8d8d-49e6-bf0c-990e34ac7707. Zero or one may be present.

The following example marks the “SubmissionSet” SubmissionSet as created via the less rigorous metadata requirements.

```
<RegistryPackage id="SubmissionSet">
  (...)
  <Classification classifiedObject="SubmissionSet"
    classificationNode="urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd"/>
  <Classification classifiedObject="SubmissionSet"
    classificationNode="urn:uuid:5003a9db-8d8d-49e6-bf0c-990e34ac7707"/>
  (...)
</RegistryPackage>
```

4.2.3.4 Folder Attributes

The following metadata elements shall be used to describe a Folder. Each attribute shown below is an attribute on the RegistryPackage object defining the Folder. The attribute name is defined with a prefix of the object type of Folder when referenced by other objects, for example

2515 Folder.patientId. See Section 4.2.3.1.8 for the general format of DocumentEntry, Folder and SubmissionSet attribute tables.

Table 4.2.3.4-1: Folder Metadata Attribute Definitions (previously Table 4.1-7)

Folder Metadata Attribute	Description	Form	Coding	Detail (See Section)
availabilityStatus	The lifecycle status of the Folder.	Predefined URN	XML attribute	4.2.3.4.1
codeList	The set of codes specifying the type of clinical activities that resulted in placing DocumentEntry objects in the Folder.	Code	ebRIM Classification	4.2.3.4.2
comments	Comments associated with the Folder.	String	ebRIM Description	4.2.3.4.3
entryUUID	A globally unique identifier used to identify the entry.	UUID	XML attribute	4.2.3.4.4
homeCommunityId	A globally unique identifier for a community.	OID URN	XML attribute	4.2.3.4.5
lastUpdateTime	Most recent point in time that the Folder has been modified.	DTM	ebRIM Slot	4.2.3.4.6
limitedMetadata	A flag that the associated Folder was created using the less rigorous metadata requirements as defined for the Metadata-Limited	Section 4.2.3.4.10	ebRIM Classification	4.2.3.4.10
patientId	Represents the primary subject of care of the Folder.	CX	ebRIM ExternalIdentifier	4.2.3.4.7
title	The title of the Folder.	String	ebRIM Name	4.2.3.4.8
uniqueId	Globally unique identifier for the Folder.	OID	ebRIM ExternalIdentifier	4.2.3.4.9

4.2.3.4.1 Folder.availabilityStatus

Description:

2520 Represents the status of the Folder. Since the deprecation of Folders is not allowed, this value shall always be Approved.

Coding:

Max length is unbounded. The availabilityStatus value shall be urn:oasis:names:tc:ebxml-regrep:StatusType:Approved.

2525 The example below shows the status attribute; however, this attribute is only returned on query, not set during any transaction.

2530

```
<rim:RegistryPackage
  id="urn:uuid:fbeacdb7-5421-4474-9267-985007cd8855"
  status="urn:oasis:names:tc:ebxml-regrep:StatusType:Approved"
> ...
```

4.2.3.4.2 Folder.codeList

Description:

2535 Shall contain the set of codes specifying the type of clinical activity that resulted in placing DocumentEntry objects in this Folder. These values shall be drawn from a vocabulary or coding scheme defined by the creating entity.

Coding:

2540 Coded as an ebRIM classification. See Section 4.2.3.1.2 for a description of coding an ebRIM Classification. Shall have zero or more values. Code multiple values by creating multiple classification objects.

The following example specifies code = "Examplecode", display name "codeDisplayName" and coding scheme "Example codeList coding scheme" for the Folder with id "ExampleFolder".

```
2545 <rim:Classification
      classificationScheme= "urn:uuid:1ba97051-7806-41a8-a48b-8fce7af683c5"
      classifiedObject="ExampleFolder"
      id="IdExample_062"
      objectType="urn:oasis:names:tc:ebxml-
2550       regrep:ObjectType:RegistryObject:Classification"
      nodeRepresentation="Examplecode"
    >
    <rim:Name>
      <rim:LocalizedString
2555       value="codeDisplayName" />
    </rim:Name>
    <rim:Slot name="codingScheme">
      <rim:ValueList>
        <rim:Value>Example codeList coding scheme</rim:Value>
2560      </rim:ValueList>
    </rim:Slot>
  </rim:Classification>
```

4.2.3.4.3 Folder.comments

Description:

2565 Comments associated with the Folder. Free form text or IHE profile-specified usage.

Note: Prior to the availability of the Folder.title attribute, the comments attribute might have been used to hold the title of the folder (folder name). With the addition of the title attribute, the comments attribute shall not hold the folder name.

Coding:

2570 The format of Folder.comments is any string. Max length is unbounded.

The value of the comments attribute is coded in XML as the "value" attribute of the LocalizedString element within the ebRIM Description structure. There can be at most one ebRIM Description structure per DocumentEntry.

The following example shows a comment for the Folder.

2575

```
<rim:Description>
  <rim:LocalizedString value = "comments"/>
</rim:Description>
```

2580 **4.2.3.4.4 Folder.entryUUID**

Description:

The entryUUID attribute is a globally unique identifier primarily intended for internal document management purposes. In contrast, the uniqueId attribute is used for external references (e.g., links, etc.).

2585 **Coding:**

The format of the entryUUID value is UUID. Certain Document Sharing transactions may allow symbolic Ids (anything that does not have the urn:uuid: prefix) to be used.

The value of the entryUUID is coded in the id XML attribute on the RegistryPackage representing the Folder. In the example below, the entryUUID is urn:uuid:a6e06ca8-0c75-4064-9e5c-88b9045a9ab6.

2590

```
<rim:RegistryPackage
  id="urn:uuid:a6e06ca8-0c75-4064-9e5c-88b9045a9ab6"
> ...
```

2595

4.2.3.4.5 Folder.homeCommunityId

Description:

A globally unique identifier for a community.

Coding:

2600 Max length is unbounded. The ebRS RegistryPackage home attribute for the RegistryPackage that corresponds to the Folder. It is an OID URN (see Table 4.2.3.1.7-2).

See ITI TF-2a: 3.18.4.1.2.3.8 and ITI TF-2b: 3.38.4.1.2.1.

2605

```
<rim:RegistryPackage home="urn:oid:1.2.3" ...>
  ...
</rim:RegistryPackage>
```

4.2.3.4.6 Folder.lastUpdateTime

Description:

2610 Most recent point in time that the Folder has been modified by changing which DocumentEntry objects are associated with the Folder, or by changing the Folder's metadata attributes. If the Folder has not been modified since creation, the lastUpdateTime contains the creation time.

Coding:

2615 Max length is 256 characters. The format of the lastUpdateTime value is DTM and shall have at least "second" precision. See Table 4.2.3.1.7-2 for a description of DTM format.

The value is coded as a single value within an ebRIM Slot Attribute in the DocumentEntry.

The following example shows a last update of December 25, 2004 21:20:10 Coordinated Universal Time (UTC).

2620

```
<rim:Slot name="lastUpdateTime">
  <rim:ValueList>
    <rim:Value>20041225212010</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

2625

4.2.3.4.7 Folder.patientId

Description:

The patientId represents the primary subject of care of the Folder.

2630 The value of the patientId shall be the same for all new documents of a SubmissionSet. All DocumentEntries placed in a Folder shall have the same patientId as the Folder.

Coding:

Max length unbounded. The format of the patientId value is CX (see Table 4.2.3.1.7-2).

It shall contain two parts:

- Assigning Authority Domain Id (organization that issued the Id).
- An Id from the Assigning Authority.

2635

No other values are allowed, as specified for the CX type in Table 4.2.3.1.7-2. Using HL7 terminology, no other values are allowed in the components of the coded value, nor are further subcomponents allowed.

```
2640 <rim:ExternalIdentifier
      identificationScheme="urn:uuid:f64ffdf0-4b97-4e06-b79f-a52b38ec2f8a"
      value="6578946^^^&1.3.6.1.4.1.21367.2005.3.7&ISO"
      id="IdExample_057"
      objectType="urn:oasis:names:tc:ebxml-
2645 regrep:ObjectType:RegistryObject:ExternalIdentifier"
      >
      <rim:Name>
        <rim:LocalizedString value = "XDSFolder.patientId"/>
      </rim:Name>
2650 </rim:ExternalIdentifier>
```

4.2.3.4.8 Folder.title

Description:

Shall contain the title of the Folder.

2655 Note: Prior to the availability of this attribute, the comments attribute might have been used to hold the title of the folder.
With the addition of this attribute, the comments attribute shall not hold the folder title.

Coding:

Max length is 256 characters. Encoded in the name element within the ebRS ExtrinsicObject for the document (see ebRS Schema RIM.XSD). Shall have only a single value.

2660 In this example the title is “title”.

```
<Name>
  <LocalizedString value="title"/>
</Name>
```

2665

4.2.3.4.9 Folder.uniqueld

Description:

Globally unique identifier for the folder instance assigned by the creating entity.

Coding:

2670 Max length is 256 characters. Encoded as the ExternalIdentifier. See Section 4.2.3.1.3 for a description of coding an ebRIM ExternalIdentifier. Shall have only a single value. Shall be of OID format.

```
2675 <rim:ExternalIdentifier
      identificationScheme="urn:uuid:75df8f67-9973-4fbe-a900-df66cefecc5a"
      id="IdExample_059"
      objectType="urn:oasis:names:tc:ebxml-
2680 regrep:ObjectType:RegistryObject:ExternalIdentifier"
      value="1.3.6.1.4.1.21367.2005.3.7.3670984664"
      registryObject="Folder01">
    <rim:Name>
      <rim:LocalizedString value = "XDSFolder.uniqueId"/>
    </rim:Name>
  </rim:ExternalIdentifier>
```

4.2.3.4.10 Folder.limitedMetadata

Description:

Indicates whether the Folder was created using the less rigorous requirements of metadata as defined for the Metadata-Limited Document Source.

Coding:

The Folder is flagged using an ebRIM Classification with a classificationNode of urn:uuid:2c144a76-29a9-4b7c-af54-b25409fe7d03. Zero or one may be present.

The following example marks the “Folder” Folder as created via the less rigorous metadata requirements.

```
2695 <RegistryPackage id="Folder">
  (...)
2700 <Classification classifiedObject="Folder"
  classificationNode="urn:uuid:d9d542f3-6cc4-48b6-8870-ea235fbc94c2"
  id="ID_061" objectType="urn:oasis:names:tc:ebxml-
  regrep:ObjectType:RegistryObject:Classification"/>

2705   <Classification classifiedObject="Folder"
   classificationNode="urn:uuid:2c144a76-29a9-4b7c-af54-b25409fe7d03"/>
  (...)
</RegistryPackage>
```

4.2.4 Success and Error Reporting

The ebXML RegistryResponse (for submission transactions) or ebXML AdhocQueryResponse (for query transactions) element will contain the status of the requested operation. The status attribute reflects the status of the operation and shall be one of the following values:

2715

```
urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success
urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Failure
urn:ihe:iti:2007:ResponseStatusType:PartialSuccess
```

A response to a Submission Request that indicates success with no warnings is:

2720

```
<rs:RegistryResponse
  status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success"/>
```

A response to a query request that indicates success with no warnings and no documents found is:

2725

```
<query:AdhocQueryResponse
  status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success">
  <rim:RegistryObjectList/>
</query:AdhocQueryResponse >
```

2730

If the transaction resulted in warnings or errors, the ebXML RegistryResponse or ebXML AdhocQueryResponse shall contain an ebXML RegistryErrorList, which shall contain corresponding RegistryError elements.

The highestSeverity attribute may be present in a RegistryErrorList. If present, it shall contain the severity of the most severe of the RegistryErrors in the RegistryErrorList. See Section 4.2.4.2 for more details.

2735

4.2.4.1 RegistryError Element

Registry Services schema (ebRS 3.0) defines the RegistryError element for reporting details of errors or warnings.

The RegistryError element contains the attributes in Table 4.2.4.1-1.

2740

All IHE transactions that carry the RegistryError element shall return these attributes with each error reported.

The body of all RegistryError elements shall be empty.

Table 4.2.4.1-1: RegistryError Element Attributes

Attribute	Optionality	Value
errorCode	R	Shall be taken from Table 4.2.4.1-2 when one of those codes is appropriate. All extensions to the list of error codes shall be unique.
codeContext	R	Supplies additional detail for the errorCode
severity	R	Indicates the severity of the error. Shall be one of: urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Error urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Warning

Attribute	Optionality	Value
location	O	Supplies the location of the error module name and line number or stack trace if appropriate.

An example response to a Submission Request that reports two errors and one warning is:

2745

2750

2755

2760

2765

2770

```
<rs:RegistryResponse
  status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Failure">
  <rs:RegistryErrorList
    highestSeverity="urn:oasis:names:tc:ebxml-
      regrep:ErrorSeverityType:Error">
    <rs:RegistryError
      errorCode="XDSPatientIdDoesNotMatch"
      codeContext="Patient Id in Document (Document1) does not match
        SubmissionSet"
      location=""
      severity="urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Error"/>
    <rs:RegistryError
      errorCode="XDSRegistryMetadataError"
      codeContext="RegistryPackage (SubmissionSet) is not labeled as
        SubmissionSet or Folder"
      location=""
      severity="urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Error"/>
    <rs:RegistryError
      errorCode="XDSExtraMetadataNotSaved"
      codeContext="Extra Metadata - localinfo - not saved"
      location=""
      severity="urn:oasis:names:tc:ebxml-
        regrep:ErrorSeverityType:Warning"/>
    </rs:RegistryErrorList>
  </rs:RegistryResponse>
```

An example response to a query request that reports two errors is:


```

2775 <query:AdhocQueryResponse
      status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Failure">
      <rs:RegistryErrorList
        highestSeverity="urn:oasis:names:tc:ebxml-
2780 regrep:ErrorSeverityType:Error">
        <rs:RegistryError
          errorCode="XDSStoredQueryMissingParam"
          codeContext="Required parameter $XDSDocumentEntryStatus is missing"
          location=""
          severity="urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Error"/>
2785 <rs:RegistryError
          errorCode="XDSStoredQueryParamNumber"
          codeContext="$XDSDocumentEntryServiceStartTimeFrom contains multiple
entries and is restricted to a single entry"
          location=""
          severity="urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Error"/>
2790 </rs:RegistryErrorList>
      </query:AdhocQueryResponse >

```

Table 4.2.4.2-1 through Table 4.2.4.2-4 control the reporting of errors for transactions that use the Document Sharing metadata attributes.

2795 **Table 4.2.4.1-2: Error Codes (previously Table 4.1-11)**

Error Code ³	Discussion	Transaction (See Note 1)
DocumentQueued	An XDR Recipient queued the document for future manual matching to a patient	P
InvalidDocumentContent	The recipient has rejected this submission because it detected that one of the documents does not match the metadata (e.g., formatCode) or has failed other requirements for the document content. When the RegistryError element contains this error code, the codeContext shall contain the uniqueID of the document in error. If multiple documents are in error, there shall be a separate RegistryError element for each document in error.	P
PartialAppendContentNotProcessed	An XDR Document Recipient did not process some part of the content. Specifically the parts not processed are Append semantics	P
PartialFolderContentNotProcessed	An XDR Document Recipient did not process some part of the content. Specifically the parts not processed are Folder semantics	P
PartialRelationshipContentNotProcessed	An XDR Document Recipient did not process some part of the content. Specifically the parts not processed are Relationship Association semantics.	P

³ The 'XDS Metadata Update' and 'Remove Metadata and Documents' Trial Implementation Supplements add error codes to this table.

Error Code ³	Discussion	Transaction (See Note 1)
PartialReplaceContentNotProcessed	An XDR Document Recipient did not process some part of the content. Specifically the parts not processed are Replacement semantics	P
PartialTransformNotProcessed	An XDR Document Recipient did not process some part of the content. Specifically the parts not processed are Transform semantics	P
PartialTransformReplaceNotProcessed	An XDR Document Recipient did not process some part of the content. Specifically the parts not processed are Transform and Replace semantics	P
UnresolvedReferenceException	The recipient cannot resolve an entryUUID reference in the transaction.	P, R
XDSDocumentUniqueIdError	The document associated with the uniqueId is not available. This could be because the document is not available, the requestor is not authorized to access that document or the document is no longer available.	RS, XGR
XSDuplicateUniqueIdInRegistry	UniqueId received was not unique. UniqueId could have been attached to SubmissionSet or Folder. codeContext shall indicate which and the value of the non-unique uniqueId. This error cannot be thrown for DocumentEntry. See XDSNonIdenticalHash and XDSNonIdenticalSize.	P, R
XDSExtraMetadataNotSaved	This warning is returned if extra metadata was present but not saved.	P, R
XDSMissingDocument	DocumentEntry exists in metadata with no corresponding attached document	P
XDSMissingDocumentMetadata	MIME package contains MIME part with Content-Id header not found in metadata	P
XDSMissingHomeCommunityId	A value for the homeCommunityId is required and has not been specified	SQ, XGQ, RS, XGR
XDSNonIdenticalHash	Document being registered was a duplicate (uniqueId already in Document Registry) but hash does not match. The codeContext shall indicate uniqueId.	R
XDSNonIdenticalSize	Document being registered was a duplicate (uniqueId already in Document Registry) but size does not match. The codeContext shall indicate uniqueId.	R
XDSPatientIdDoesNotMatch	This error is thrown when the patient Id is required to match and does not. The codeContext shall indicate the value of the Patient Id and the nature of the conflict.	P, R
XDSRegistryBusy XDSRepositoryBusy	Too much activity	P, R, SQ, XGQ P, RS, XGR
XDSRegistryDeprecatedDocumentError	The transaction was rejected because it submitted an Association referencing a deprecated document.	P, R
XDSRegistryDuplicateUniqueIdInMessage XDSRepositoryDuplicateUniqueIdInMessage	A uniqueId value was found to be used more than once within the submission. The errorCode indicates where the error was detected. The codeContext shall indicate the duplicate uniqueId.	P, R

Error Code ³	Discussion	Transaction (See Note 1)
XDSRegistryError XDSRepositoryError	Internal Error The error codes XDSRegistryError or XDSRepositoryError shall be returned if and only if a more detailed code is not available from this table for the condition being reported. If one of these error codes is returned, the attribute codeContext shall contain details of the error condition that may be implementation-specific.	P, R, SQ, XGQ P, RS, XGR
XDSRegistryMetadataError XDSRepositoryMetadataError	Error detected in metadata. Actor name indicates where error was detected. (Document Recipient uses Repository error). codeContext indicates nature of problem.	P, R
XDSRegistryNotAvailable	Repository was unable to access the Registry	P
XDSRegistryOutOfResources XDSRepositoryOutOfResources	Resources are low.	P, R, SQ, XGQ P, RS, XGR
<i>XDSReplaceFailed</i> <i>Note: This error code is deprecated. See ITI TF-2b: 3.42.4.1.3.5.</i>	<i>Error detected by the Document Registry during a document replacement.</i>	<i>P, R</i>
XDSResultNotSinglePatient	This error signals that a single request would have returned content for multiple Patient Ids	SQ, RS, XGQ, XGR
XDSStoredQueryMissingParam	A required parameter to a stored query is missing.	SQ, XGQ
XDSStoredQueryParamNumber	A parameter which only accepts a single value is coded with multiple values	SQ, XGQ
XDSTooManyResults	Query resulted in too many results.	SQ, XGQ
XDSUnavailableCommunity	A community which would have been contacted was not available. See Note 2.	SQ, RS
XDSUnknownCommunity	A value for the homeCommunityId is not recognized	SQ, XGQ, RS, XGR
XDSUnknownPatientId	Patient Id referenced in metadata is not known by the receiving actor. The codeContext shall include the value of patient Id in question.	P, R, XGQ Note: This error code is not used in the response to Registry Stored Query [IIT-18].
XDSUnknownRepositoryId	The repositoryUniqueId value could not be resolved to a valid document repository or the value does not match the repositoryUniqueId.	RS, XGR
XDSUnknownStoredQuery	The Query Id provided in the request is not recognized.	SQ, XGQ

Note 1:

P = Provide and Register-b
R = Register-b
SQ = Stored Query
RS = Retrieve Document Set
XGQ = Cross Gateway Query
XGR = Cross Gateway Retrieve

Note 2:

Two examples of the use of error code XDSUnavailableCommunity are:

1. A Cross Gateway Query or Cross Gateway Retrieve fails because the community identified by a homeCommunityId could not be contacted.
2. A Cross Gateway Query based on Patient ID could not contact some known communities to relay the query.

The error would be generated by the Initiating Gateway and returned in the Registry Stored Query [ITI-18] or Retrieve Document Set [ITI-43] transaction. This would only apply when XDS Affinity Domain Option was used.

4.2.4.2 Error responses

The following tables explain the meaning of the status attribute in RegistryResponse and AdhocQueryResponse. Tables 4.2.4.2-1, 4.2.4.2-2, 4.2.4.2-3 and 4.2.4.2-4 below indicate whether the RegistryErrorList element shall be present and what other content shall be part of the response.

Table 4.2.4.2-1: [ITI-41] Provide and Register Document Set-b Responses

RegistryResponse status	RegistryErrorList element	Result
urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success	May be present. If present will contain one or more RegistryError elements with warning severity, none with error severity.	All metadata defined in this volume, and documents were successfully registered. Extra metadata may or may not be saved, based on the presence of the XDSExtraMetadataNotSaved warning.
urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Failure	Present, contains one or more RegistryError elements. At least one has error severity others may have warning severity.	Metadata and documents not stored

Table 4.2.4.2-2: [ITI-42] Register Document Set-b Responses

RegistryResponse status	RegistryErrorList element	Result
urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success	May be present. If present will contain one or more RegistryError elements with warning severity, none with error severity	All metadata defined in this volume was successfully registered Extra metadata may or may not be saved, based on the presence of the XDSExtraMetadataNotSaved warning.
urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Failure	Present, contains one or more RegistryError elements. At least one has error severity, others may have warning severity.	Metadata not stored

Table 4.2.4.2-3: [ITI-18] Stored Query and [ITI-38] Cross Gateway Query Responses

AdhocQueryResponse status	RegistryErrorList element	Result
urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success	May be present. If present will contain one or more RegistryError	Results shall be returned. Results may contain zero or more entries.

AdhocQueryResponse status	RegistryErrorList element	Result
	elements with warning severity; none with error severity	
urn:ihe:iti:2007:ResponseStatusType:PartialSuccess	Present, contains one or more RegistryError elements. At least one has error severity; others may have warning severity.	Results shall be returned. Results may contain zero or more entries.
urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Failure	Present, contains one or more RegistryError elements. At least one has error severity; others may have warning severity.	Results not returned

Table 4.2.4.2-4: [ITI-43] Retrieve Document Set and [ITI-39] Cross Gateway Retrieve Responses

Registry Response status	RegistryErrorList element	Result
urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success	May be present. If present will contain one or more RegistryError elements with warning severity; none with error severity	All documents were successfully retrieved
urn:ihe:iti:2007:ResponseStatusType:PartialSuccess	Present, contains one or more RegistryError elements. At least one has error severity; others may have warning severity.	Some documents were successfully retrieved
urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Failure	Present, contains one or more RegistryError elements. At least one has error severity; others may have warning severity.	No documents were successfully retrieved

2820

4.2.5 Metadata Vocabulary

The UUIDs in the following tables shall be used in constructing and interpreting Document Sharing metadata.

4.2.5.1 Submission Set Object UUIDs

UUID	Use/meaning
urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd	SubmissionSet ClassificationNode
urn:uuid:a7058bb9-b4e4-4307-ba5b-e3f0ab85e12d	author External Classification Scheme
urn:uuid:aa543740-bdda-424e-8c96-df4873be8500	contentTypeCode External Classification Scheme
urn:uuid:6b5aea1a-874d-4603-a4bc-96a0a7b38446	patientId External Identifier
urn:uuid:554ac39e-e3fe-47fe-b233-965d2a147832	sourceId External Identifier
urn:uuid:96fdda7c-d067-4183-912e-bf5ee74998a8	uniqueId External Identifier

2825

4.2.5.2 Document Entry Object

UUID	Use/meaning
urn:uuid:7edca82f-054d-47f2-a032-9b2a5b5186c1	DocumentEntry objectType for Stable Document Entries
urn:uuid:34268e47-fdf5-41a6-ba33-82133c465248	DocumentEntry objectType for On Demand Document Entries
urn:uuid:93606bcf-9494-43ec-9b4e-a7748d1a838d	author External Classification Scheme
urn:uuid:41a5887f-8865-4c09-adf7-e362475b143a	classCode External Classification Scheme
urn:uuid:f4f85eac-e6cb-4883-b524-f2705394840f	confidentialityCode External Classification Scheme
urn:uuid:2c6b8cb7-8b2a-4051-b291-b1ae6a575ef4	eventCodeList External Classification Scheme
urn:uuid:a09d5840-386c-46f2-b5ad-9c3699a4309d	formatCode External Classification Scheme
urn:uuid:f33fb8ac-18af-42cc-ae0e-ed0b0bdb91e1	healthCareFacilityTypeCode External Classification Scheme
urn:uuid:58a6f841-87b3-4a3e-92fd-a8ffefff98427	patientId ExternalIdentifier
urn:uuid:cccf5598-8b07-4b77-a05e-ae952c785ead	practiceSettingCode External Classification Scheme
urn:uuid:f0306f51-975f-434e-a61c-c59651d33983	typeCode External Classification Scheme
urn:uuid:2e82c1f6-a085-4c72-9da3-8640a32e42ab	uniqueId ExternalIdentifier

4.2.5.3 Folder Object

UUID	Use/meaning
urn:uuid:d9d542f3-6cc4-48b6-8870-ea235fbc94c2	Folder ClassificationNode
urn:uuid:1ba97051-7806-41a8-a48b-8fce7af683c5	codeList External Classification Scheme
urn:uuid:f64ffdf0-4b97-4e06-b79f-a52b38ec2f8a	patientId External Identifier
urn:uuid:75df8f67-9973-4fbe-a900-df66cefecc5a	uniqueId External Identifier

2830

4.2.5.4 Association Object

UUID	Use/meaning
urn:uuid:abd807a3-4432-4053-87b4-fd82c643d1f3	Association Documentation ClassificationNode

4.3 Additional Document Sharing Requirements

This section includes profile specific requirements.

4.3.1 Submission Metadata Attribute Optionality

This section lists which metadata attributes an actor shall provide when initiating a Submission Type Transaction.

The Actor/Transaction pairs addressed by this section are as follows:

Table 4.3.1-1: Sending Actor/Transaction Pairs

Actor	Transaction	Shortname
XDS Document Source	Provide and Register Document Set-b [ITI-41]	XDS DS
XDS Document Repository	Register Document Set-b [ITI-42]	XDS DR
XDM Portable Media Creator	Distribute Document Set on Media [ITI-32]	XDM MC
XDR Document Source	Provide and Register Document Set-b [ITI-41]	XDR DS
XDR Metadata-Limited Document Source	Provide and Register Document Set-b [ITI-41]	XDR MS
XDS On-Demand Document Source	Register On-Demand Document Entry [ITI-61]	XDS OD

For each actor/transaction pair across the top of Table 4.3.1-3, and each metadata attribute row, the cell indicates the requirement for that actor when creating a submission request using the paired transaction. The requirements are expressed through these codes:

Table 4.3.1-2: Sending Actor Metadata Attribute Optionality Code Definitions

Code	Meaning
R	Required – A value for the attribute shall be supplied by the sending actor when sending the submission
R2	Required if Known – A value for the attribute shall be supplied by the sending actor when sending the submission unless the actor does not have any value for the attribute
O	Optional – The sending actor may or may not supply a value for this attribute
X	Prohibited – when sending a submission, a value for the attribute shall not be supplied by the sending actor.

Table 4.3.1-3: Sending Actor Metadata Attribute Optionality

Metadata Element	Metadata Attribute	XDS DS	XDS DR	XDM MC	XDR DS	XDR MS	XDS OD
DocumentEntry	author	R2	R2	R2	R2	R2	R2
DocumentEntry	availabilityStatus	O	O	O	O	O	O
DocumentEntry	classCode	R	R	R2	R	R2	R
DocumentEntry	comments	O	O	O	O	O	O
DocumentEntry	confidentialityCode	R	R	R2	R	R2	R
DocumentEntry	creationTime	R	R	R2	R	R2	X

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Metadata Element	Metadata Attribute	XDS DS	XDS DR	XDM MC	XDR DS	XDR MS	XDS OD
DocumentEntry	entryUUID	R	R	R	R	R	R
DocumentEntry	eventCodeList	O	O	O	O	O	O
DocumentEntry	formatCode	R	R	R2	R	R2	R
DocumentEntry	hash	O	R	R	O	O	X
DocumentEntry	healthcareFacility TypeCode	R	R	R2	R	R2	R
DocumentEntry	homeCommunityId	O	O	O	O	O	O
DocumentEntry	languageCode	R	R	R2	R	R2	R
DocumentEntry	legalAuthenticator	O	O	O	O	O	O
DocumentEntry	limitedMetadata	X	X	O	X	R	X
DocumentEntry	contentType	R	R	R	R	R	R
DocumentEntry	objectType	R	R	R	R	R	R
DocumentEntry	patientId	R	R	R2	R	R2	R
DocumentEntry	practiceSettingCode	R	R	R2	R	R2	R
DocumentEntry	referenceIdList	O	O	O	O	O	O
DocumentEntry	repositoryUniqueId	O	R	O	O	O	R
DocumentEntry	serviceStartTime	R2	R2	R2	R2	R2	O
DocumentEntry	serviceStopTime	R2	R2	R2	R2	R2	O
DocumentEntry	size	O	R	R	O	O	X
DocumentEntry	sourcePatientId	R	R	R2	R	R2	R
DocumentEntry	sourcePatientInfo	O	O	R2	O	R2	O
DocumentEntry	title	O	O	O	O	O	O
DocumentEntry	typeCode	R	R	R2	R	R2	R
DocumentEntry	uniqueId	R	R	R	R	R	R
DocumentEntry	URI	O	O	R	O	O	O
SubmissionSet	author	R2	R2	R2	R2	R2	R2
SubmissionSet	availabilityStatus	O	O	O	O	O	O
SubmissionSet	comments	O	O	O	O	O	O
SubmissionSet	contentTypeCode	R	R	R2	R	R2	R
SubmissionSet	entryUUID	R	R	R	R	R	R
SubmissionSet	homeCommunityId	O	O	O	O	O	O
SubmissionSet	intendedRecipient	O	O	R2	R2	R2	O
SubmissionSet	limitedMetadata	X	X	O	X	R	X
SubmissionSet	patientId	R	R	R2	R	R2	R
SubmissionSet	sourceId	R	R	R	R	R	R
SubmissionSet	submissionTime	R	R	R	R	R	R
SubmissionSet	title	O	O	O	O	O	O
SubmissionSet	uniqueId	R	R	R	R	R	R
Folder	availabilityStatus	O	O	O	O	O	O

Metadata Element	Metadata Attribute	XDS DS	XDS DR	XDM MC	XDR DS	XDR MS	XDS OD
Folder	codeList	R	R	R2	R	R2	R
Folder	comments	O	O	O	O	O	O
Folder	entryUUID	R	R	R	R	R	R
Folder	homeCommunityId	O	O	O	O	O	O
Folder	lastUpdateTime	O	O	O	O	O	O
Folder	limitedMetadata	X	X	O	X	R	X
Folder	patientId	R	R	R2	R	R2	R
Folder	title	R	R	O	R	O	R
Folder	uniqueId	R	R	R	R	R	R

4.3.2 Requirements on Query Type Transactions

4.3.2.1 Query Type Metadata Attribute Optionality

This section lists which attributes shall contain content in a response to a query transaction. The query transactions covered in Table 4.3.2.1-1. The content of the query request can be found within the referenced transaction.

Table 4.3.2.1-1: Responding Actor/Transaction Pairs

Actor	Transaction	Shortname
XDS Document Registry	Registry Stored Query [ITI-18]	XDS DR
XCA Initiating Gateway	Registry Stored Query [ITI-18]	XCA IG
XCA Responding Gateway	Cross-Gateway Query [ITI-38]	XCA RG
MPQ Document Registry	Multi-Patient Stored Query [ITI-51]	MPQ DR

For each actor/transaction pair across the top of the table, and each metadata attribute row, the cells indicates the requirement for that actor when creating a query response to the paired transaction. The requirements are expressed through these codes:

Table 4.3.2.1-2: Responding Actor Metadata Attribute Optionality Code Definitions

Code	Meaning
R	Required – A value for the attribute shall be supplied by the responding actor when responding to a query
R2	Required if Known – A value for the attribute shall be supplied by the responding actor when responding to the query if a value is available to the actor. For the Document Registry it must supply the value specified in the submission request.
O	Optional – The responding actor may or may not supply a value for this attribute. For the Document Registry it must supply the value specified in the submission request.
X	Prohibited – When responding to a query, a value for the attribute shall not be supplied by the responding actor.
R3	Required for Stable DocumentEntries and not allowed for On-Demand DocumentEntries.

Table 4.3.2.1-3: Responding Actor Metadata Attribute Optionality

Metadata Element	Metadata Attribute	XDS DR	XCA IG	XCA RG	MPQ DR
DocumentEntry	author	R2	R2	R2	R2
DocumentEntry	availabilityStatus	R	R	R	R
DocumentEntry	classCode	R	R	R	R
DocumentEntry	comments	O	O	O	O
DocumentEntry	confidentialityCode	R	R	R	R
DocumentEntry	creationTime	R3	R3	R3	R3
DocumentEntry	entryUUID	R	R	R	R
DocumentEntry	eventCodeList	O	O	O	O
DocumentEntry	formatCode	R	R	R	R
DocumentEntry	hash	R3	R3	R3	R3
DocumentEntry	healthcareFacilityTypeCode	R	R	R	R
DocumentEntry	homeCommunityId	O	R	R	O
DocumentEntry	languageCode	R	R	R	R
DocumentEntry	legalAuthenticator	O	O	O	O
DocumentEntry	limitedMetadata	X	X	X	X
DocumentEntry	contentType	R	R	R	R
DocumentEntry	objectType	R	R	R	R
DocumentEntry	patientId	R	R	R	R
DocumentEntry	practiceSettingCode	R	R	R	R
DocumentEntry	referenceIdList	O	O	O	O
DocumentEntry	repositoryUniqueId	R	R	R	R
DocumentEntry	serviceStartTime	R2	R2	R2	R2
DocumentEntry	serviceStopTime	R2	R2	R2	R2
DocumentEntry	size	R3	R3	R3	R3
DocumentEntry	sourcePatientId	R	R	R	R
DocumentEntry	sourcePatientInfo	O	O	O	O
DocumentEntry	title	O	O	O	O
DocumentEntry	typeCode	R	R	R	R
DocumentEntry	uniqueId	R	R	R	R
DocumentEntry	URI	O	O	O	O
SubmissionSet	author	R2	R2	R2	R2
SubmissionSet	availabilityStatus	R	R	R	R
SubmissionSet	comments	O	O	O	O
SubmissionSet	contentTypeCode	R	R	R	R
SubmissionSet	entryUUID	R	R	R	R
SubmissionSet	homeCommunityId	O	R	R	O
SubmissionSet	intendedRecipient	O	O	O	O

Metadata Element	Metadata Attribute	XDS DR	XCA IG	XCA RG	MPQ DR
SubmissionSet	limitedMetadata	X	X	X	X
SubmissionSet	patientId	R	R	R	R
SubmissionSet	sourceId	R	R	R	R
SubmissionSet	submissionTime	R	R	R	R
SubmissionSet	title	O	O	O	O
SubmissionSet	uniqueId	R	R	R	R
Folder	availabilityStatus	R	R	R	R
Folder	codeList	R	R	R	R
Folder	comments	O	O	O	O
Folder	entryUUID	R	R	R	R
Folder	homeCommunityId	O	R	R	O
Folder	lastUpdateTime	O	O	O	O
Folder	limitedMetadata	X	X	X	X
Folder	patientId	R	R	R	R
Folder	title	R	R	R	R
Folder	uniqueId	R	R	R	R

4.4 Intentionally Left Blank

2860 4.5 Intentionally Left Blank

Reserved for HL7 FHIR^{®4} Representation.

⁴ FHIR is the registered trademark of Health Level Seven International and the use does not constitute endorsement by HL7.

5.0 IHE Content Specifications

This section follows the documentation pattern found in the IHE PCC Technical Framework. The reader should be familiar with the IHE PCC Technical Framework.

2865 5.1 Basic Patient Privacy Consents Module

This section describes the encoding requirements for the Basic Patient Privacy Consents Document Content.

2870 The BPPC document has two possible document templates, one without a scanned document part, and one in Section 5.1.2 defines the requirements of the BPPC document without a scanned document part; Section 5.1.3 explains with a scanned document part.

5.1.1 References

- [HL7 CDA Release 2.0](#) (denoted HL7 CDA R2, or just CDA, in subsequent text)

5.1.2 Patient Privacy Consent Acknowledgment Document Specification 1.3.6.1.4.1.19376.1.5.3.1.1.7 – With no Scanned Document Part

2875 A patient acknowledgement of a Patient Privacy Consent Policy is a document that contains machine readable indication. This specification describes the BPPC document without a scanned part. When the Patient Privacy Consent Acknowledgment Document contains a Scanned Document (XDS-SD), it will conform to Section 5.1.3.

5.1.2.1 XDS Metadata

2880 5.1.2.1.1 XDS DocumentEntry Metadata

2885 Content Creators shall populate DocumentEntry Metadata requirements in [PCC TF-2: 4.1.1](#) (e.g., authorInstitution, authorPerson, authorRole, authorSpeciality, typeCode, confidentialityCode, creationTime, healthcareFacilityTypeCode, languageCode, mimeType, practiceSettingCode, serviceStartTime, serviceStopTime, sourcePatientId, and sourcePatientInfo) unless otherwise specified below.

5.1.2.1.1.1 XDSDocumentEntry.classCode

The LOINC code for these documents is “57016-8” “Privacy Policy Acknowledgement Document” and the codeSystem is 2.16.840.1.113883.6.1.

For backward compatibility historic documents may be registered with:

- 2890
- classCode – This attribute may have been set to the value "Consent".
 - classCodeDisplayName – This attribute may have been set to the value "Consent".

5.1.2.1.1.2 XSDDocumentEntry.eventCodeList

- eventCodeList – the eventCodeList shall be populated using the Patient Privacy Policy Identifiers that have been acknowledged to within the document.
- 2895 • /ClinicalDocument/documentationOf/serviceEvent[templateId/@root='1.3.6.1.4.1.19376.1.5.3.1.2.6']/code/@code
- eventCodeDisplayNameList -- The eventCodeDisplayNameList shall be populated using the display names for those policies.
- 2900 • /ClinicalDocument/documentationOf/serviceEvent[templateId/@root='1.3.6.1.4.1.19376.1.5.3.1.2.6']/code/@displayName

5.1.2.1.1.3 XSDDocumentEntry.formatCode

The XSDDocumentEntry format code for this content shall be `urn:ihe:iti:bppc:2007`. The formatCode codeSystem shall be **1.3.6.1.4.1.19376.1.2.3**.

5.1.2.1.1.4 XSDDocumentEntry.uniqueId

- 2905 This value shall be the `ClinicalDocument/id` in the HL7 CDA R2 header. The root attribute is required, and the extension attribute is optional. The total length is limited to 256 characters. See PCC TF-2: 4.1.1, for further content specification.

5.1.2.1.2 XDS SubmissionSet Metadata

No additional constraints. For more information, see PCC TF-2: 4.1.1.1.

2910 5.1.2.1.3 XDS Folder Metadata

No additional requirements.

5.1.2.2 Specification

- 2915 CDA Release 2.0 documents that conform to the requirements of this content module shall indicate their conformance by the inclusion of the appropriate `<templateId>` elements in the header of the document. This is shown in the sample document below. A CDA Document may conform to more than one template. This content module inherits from the Medical Document content module, and so must conform to the requirements of that template as well, thus all `<templateId>` elements shown in the example below shall be included.

```

2920 <ClinicalDocument xmlns='urn:hl7-org:v3'>
      <typeId extension="POCD_HD000040" root="2.16.840.1.113883.1.3"/>
      <templateId root='1.3.6.1.4.1.19376.1.5.3.1.1.1' />
      <templateId root='1.3.6.1.4.1.19376.1.5.3.1.1.7' />
      <id root=' ' extension=' ' />
2925 <code code='57016-8' displayName='PATIENT PRIVACY ACKNOWLEDGEMENT'
      codeSystem='2.16.840.1.113883.6.1' codeSystemName='LOINC' />
      <title>Consent to Share Information</title>
      <effectiveTime value='20070619012005' />
      <confidentialityCode code='N' displayName='Normal'
2930   codeSystem='2.16.840.1.113883.5.25' codeSystemName='Confidentiality' />
      <languageCode code='en-US' />
      :
      <component><structuredBody>
2935   </structuredBody></component>
</ClinicalDocument>

```

Figure 5.1.2.2-1: Sample Consent to Share Information Document

2940 A Patient Privacy Acknowledgement Document shall contain a text description of what the patient consented to, a list of codes indicating the policy(s) agreed to, and a time range indicating the effective time of the consent. It may be attested to using an electronic digital signature, conforming to the ITI Document Digital Signature (DSG) Profile.

2945 A Patient Privacy Acknowledgement Document shall have one or more <serviceEvent> elements in the header identifying the policies acknowledged by the document (see Section 4.2.3.4 of CDA R2). Each <serviceEvent> element indicates an acknowledgement of a Patient Privacy Policy. More than one policy may be acknowledged to within a given document.

Data Element Name	Opt	Template ID
Patient Privacy Acknowledgement Service Event At least one, and possibly more than one acknowledgement can be provided within the document.	R	1.3.6.1.4.1.19376.1.5.3.1.2.6

5.1.2.2.1 Patient Privacy Acknowledgement Service Events 1.3.6.1.4.1.19376.1.5.3.1.2.6

2950 Within a Patient Privacy Acknowledgement Document, there shall be a Patient Privacy Acknowledgement Service Event with the effective time of the consent shall be specified within the documentationOf/serviceEvent element.

```
<documentationOf typeCode='DOC'>
  <serviceEvent classCode='ACT' moodCode='EVN'>
    <templateId root='1.3.6.1.4.1.19376.1.5.3.1.2.6' />
    <id root='1.2.3.4.5.6' />
    <code code='9.8.7.6.5.4.3.2.1' displayName='Chicken Costume Consent'
codeSystem='9.8.7.6.5.4.3.2.2' codeSystemName='Silly Policy Land' />
    <effectiveTime>
      <low value='20101130' />
    </effectiveTime>
  </serviceEvent>
</documentationOf>
```

Figure 5.1.2.2-2: Patient Privacy Acknowledgement Service Events Example

5.1.2.2.2 <documentationOf typeCode='DOC'>

At least one <documentationOf> element shall exist, describing the service event. This element shall have a typeCode attribute with the value DOC.

5.1.2.2.3 <serviceEvent classCode='ACT' moodCode='EVN'>

One <serviceEvent> shall exist for each Patient Privacy Policy acknowledged. This element shall have a classCode attribute set to ACT, and a moodCode attribute of EVN.

5.1.2.2.4 <templateId root='1.3.6.1.4.1.19376.1.5.3.1.2.6' />

The <templateId> element shall be recorded exactly as shown above, and identifies this <serviceEvent> as recording the acknowledgement of a Patient Privacy Policy.

5.1.2.2.5 <id root=' ' />

The service event shall have one <id> element, providing an identifier for the service event. The root attribute of this element shall be present, and shall be a GUID or OID. The extension attribute shall not be present.

5.1.2.2.6 <code code=' ' displayName=' ' codeSystem=' ' codeSystemName=' ' />

The <code> element shall be present, and shall indicate the Patient Privacy Policy acknowledged. The code attribute indicates the Patient Privacy Policy Identifier, and the codeSystem attribute indicates the code system for the Patient Privacy Policy Domain from which this Patient Privacy Policy Identifier is assigned. The displayName attribute may be present, and describes the Patient Privacy Policy acknowledgement. The codeSystemName attribute may be present, and describes the Patient Privacy Policy Domain code system.

5.1.2.2.7 <effectiveTime><low value=' ' /><high value=' ' /></effectiveTime>

The <effectiveTime> element shall be present, and shall indicate the effective time range over which acknowledgement is given. The low value must be provided. The high value may be present. If present, it shall indicate the maximum effective time of the consent. The

2990 effectiveTime must be the same for all ServiceEvents in one Patient Privacy Acknowledgement Document. If different effectiveTimes are needed then different documents should be generated.

5.1.3 Patient Privacy Consent Acknowledgment Document Specification

1.3.6.1.4.1.19376.1.5.3.1.1.7.1 – With Scanned Document

2995 A patient acknowledgement of a Patient Privacy Consent Policy is a document that contains machine-readable indication. This section specifies the BPPC document with a scanned document part.

5.1.3.1 XDS Metadata

The BPPC document shall conform to the requirements in Section 5.1.2.1 with the formatCode exception listed below.

3000 5.1.3.1.1 XDS DocumentEntry Metadata

The BPPC document shall conform to the DocumentEntry Metadata requirements in the IHE PCC TF-2: 4.1.1 unless otherwise specified below.

5.1.3.1.1.1 XDSDocumentEntry.formatCode

3005 The XDSDocumentEntry format code for this content is urn:ihe:iti:bppc-sd:2007. The formatCode codeSystem shall be 1.3.6.1.4.1.19376.1.2.3.

5.1.3.1.2 XDS SubmissionSet Metadata

No additional constraints. For more information, see PCC TF-2: 4.1.1.1.

5.1.3.1.3 XDS Folder Metadata

No additional requirements.

3010 5.1.3.2 Specification

This BPPC document shall conform to the XDS-SD (Section 5.2) specification and shall have the additional requirements stated in Section 5.1.2.2.

5.1.3.3 Conformance

3015 See Section 5.1.2.2.

5.2 Scanned Documents Content Module

This section outlines the content of the HL7 CDA R2 constraints for the document. We note here that requirements specified below are to ensure the presence of a minimum amount of wrapper data in order to enhance description and facilitate sharing of the document. Implementers of this profile can and should make use of additional annotation within the CDA header to provide richer context. The examples in the following sections contain the minimal amount of wrapper data, as specified, and in many cases do make use of additional CDA header elements for enriched context.

Assumptions and Definitions: We assume that the scanning facility and equipment within it are assigned an OID and that the scanning facility assembles the wrapped scanned content. More information regarding the construction of OIDs can be found in ITI TF-2x: Appendix B. We define the following nomenclature for entity roles concerned in forming the wrapper content.

- *Original content* – Legacy paper or electronic document intended for wrapping.
- *Scanned content* – Scanned or appropriately converted/encoded electronic version of the original content.
- *Original author* – Author of the original content.
- *(Scanner) Operator* – Person assembling the scanned content.

5.2.1 Referenced Standards

- PDF RFC3778, The application/pdf Media Type (informative)
- PDF/A ISO 19005-1b. Document management - Electronic document file format for long-term preservation - Part 1: Use of PDF (PDF/A)
- HL7 CDA Release 2.0 (denoted HL7 CDA R2, or just CDA, in subsequent text)
- [RFC5646](#), Tags for the identification of languages

5.2.1.1 Discussion of Content Standards

PDF and plaintext documents intended for wrapping can consist of multiple pages. Encoding of multiple page PDF documents are subject to the PDF/A standard. This ISO standard, PDF/A, is a subset of Adobe PDF version 1.4 intended to be suitable for long-term preservation of page-oriented documents. PDF/A attempts to maximize:

- Device independence
- Self-containment
- Self-documentation

The constraints imposed by PDF/A include:

- Audio and video content are forbidden
- JavaScript and executable file launches are prohibited

- 3050
- All fonts must be embedded and also must be legally embeddable for unlimited, universal rendering
 - Colorspaces specified in a device-independent manner
 - Encryption is disallowed (although the enclosing document and transport may provide encryption external to the PDF content)

- 3055
- Compression methods are restricted to a standard list

3060

The PDF/A approach has several advantages over TIFF or JPEG. First, there are more image compressions and format flexibility in PDF, so that the image files sizes can be kept smaller. There are many simple programs available for converting TIFF and JPEG into PDF with various other features for improving compression or adding other information. The PDF/A enables devices that produce vectorized output. Unlike TIFF, JPEG, or BMP, a PDF/A image has the ability to provide several "layers" of information. This allows the creation of PDF searchable images.

3065

A PDF searchable image is a PDF document with an exact bitmapped replica of the scanned paper pages and with text information stored behind the bitmap image of the page. This approach retains the look of the original pages while enabling text searchability and computer analysis. This approach is especially suitable for documents that have to be searchable while retaining the original scan details. The text layer is created by an Optical Character Recognition (OCR) application that scans the text on each page. It then creates a PDF file with the recognized text stored in a layer beneath the image of the text. Unrecognized graphics areas and annotations are preserved with full fidelity in the image. The text form may be incomplete or the OCR confused by some words, but the original image is preserved and available.

3070

3075

Plaintext as well as PDF/A documents shall be base-64 encoded before wrapped in a HL7 CDA R2 header. The PDF/A documents shall conform to PDF/A-1b. Creators are encouraged to conform to PDF/A-1a to the maximum extent possible, but a simple document scanner may be unable to fully conform to PDF/A-1a. Other profiles may require PDF/A-1a conformance.

HL7 CDA R2 header schema is constrained so that pertinent metadata values and scanning facility, technology and operator information shall be present (see Section 5.2.3).

3080

Medical imagery and photographs are outside the scope of this profile. Diagnostic or intervention medical imagery will be supported through DICOM (which includes the use of JPEG and MPEG). Additionally, audio and video recorded content is not covered by this profile.

5.2.2 XDS Metadata

XDS-SD is a CDA R2 document and thus conforms to the XDS Metadata requirements in the PCC TF-2:4 unless otherwise specified below.

5.2.2.1 XDS DocumentEntry Metadata

3085

Content Creators shall populate DocumentEntry Metadata according to requirements in PCC TF-2: 4.1.1 (e.g., authorInstitution, authorPerson, authorRole, authorSpeciality, classCode,

typeCode, confidentialityCode, creationTime, formatCode, healthcareFacilityTypeCode, languageCode, mimeType, practiceSettingCode, serviceStartTime, serviceStopTime, sourcePatientId, and sourcePatientInfo) unless otherwise specified below.

3090 **5.2.2.1.1 XSDDocumentEntry.formatCode**

The XSDDocumentEntry.formatCode shall be **urn:ihe:iti:xds-sd:pdf:2008** when the document is scanned pdf and **urn:ihe:iti:xds-sd:text:2008** when the document is scanned text. The formatCode codeSystem shall be **1.3.6.1.4.1.19376.1.2.3**.

5.2.2.1.2 XSDDocumentEntry.uniqueId

3095 This value shall be the ClinicalDocument/id in the HL7 CDA R2 header. The root attribute is required, and the extension attribute is optional. In accordance with the XDS Profile, total length is limited to 256 characters. See PCC TF-2: 4.1.1, for further content specification.

5.2.2.1.3 Relating instances of XDS-SD documents

3100 In general, most instances of XDS-SD will not have parent documents. It is possible, however, in some specific use cases that instances of XDS-SD documents are related. For example, for a particular document it may be the case that both the PDF scanned content and somewhat equivalent plaintext need to be wrapped and submitted. Each document would correspond to separate XSDDocumentEntries linked via an XFRM Association that indicates one document is a transform of the other. These can be submitted in a single submission set, or in separate ones.

3105 Other specific examples may exist and this profile does not preclude the notion of a parent document for these cases.

5.2.2.2 XDS SubmissionSet Metadata

No additional constraints. Particular to this profile, a legitimate use of submission sets would be to maintain a logical grouping of multiple XDS-SD documents. We encourage such usage. For more information, see PCC TF-2: 4.1.2.

3110

5.2.2.3 XDS Folder Metadata

No additional requirements. For more information, see PCC TF-2: 4.1.3.

5.2.3 Specification

HL7 CDA R2 header element	CDA as constrained by XDS-SD	Section Number of Extended Discussion	Source Type	Source / Value
ClinicalDocument/typeId	R	5.2.3.1	FM	Fixed, per CDA R2 version in use.
ClinicalDocument/templateId	R	5.2.3.1	FM	Fixed, per this specification
ClinicalDocument/id	R	5.2.3.1	DS	Computable.
ClinicalDocument/code	R	5.2.3.1	O / FM	Entered by operator or appropriately fixed for scanned content
ClinicalDocument/title	R2	5.2.3.1	SA / O	Entered by operator, or possibly can be taken from the scanned content.
ClinicalDocument/confidentiality Code	R	5.2.3.1	O	Assigned by the operator
ClinicalDocument/effectiveTime	R	5.2.3.1	DS	Computed. This is the scan time.
ClinicalDocument/languageCode	R	5.2.3.1	O	Entered by operator
ClinicalDocument/recordTarget	R	5.2.3.2	SA / O	Taken from scanned content, supplemented by operator.
ClinicalDocument/author/assignedAuthor/assignedPerson	R2	5.2.3.3	SA / O	Taken from scanned content, supplemented by operator. This is the original author.
ClinicalDocument/author/assignedAuthor/authoringDevice	R	5.2.3.4	DS / FM / O	Can be computed or fixed based on the scanning device and software. This is the information about the scanning device.
ClinicalDocument/dataEnterer	R	5.2.3.5	DS / O	Can be computed by the scanner or supplemented by operator. This is the information about the scanner operator.
ClinicalDocument/custodian	R	5.2.3.6	DS / FM	Retains original HL7 CDA Context. To be computed or fixed appropriately to denote guardianship of the scanned and wrapped content.
ClinicalDocument/legalAuthenticator	O	5.2.3.7	O	Most likely supplemented by the operator, when applicable or mandated.
ClinicalDocument/documentationOf/serviceEvent/effectiveTime	R	5.2.3.8	SA / O	Denotes the time/date range of the original content.
ClinicalDocument/component/wholeXMLBody	R	5.2.3.9	SA	The scanned/encoded content.

5.2.3.1 ClinicalDocument child-less elements

- 3115 In this section we further discuss `id`, `code`, `effectiveTime`, `confidentialityCode` and `languageCode` elements of the `ClinicalDocument`.
- The `ClinicalDocument/templateId` element shall be present. The root attribute shall contain the OID '1.3.6.1.4.1.19376.1.2.20', to indicate this document is an XDS-SD document.
 - 3120 • The `ClinicalDocument/id` element shall be present. The root attribute shall contain the OID for the document, in which case the extension attribute shall be empty, or an OID that scopes the set of possible unique values for the extension attribute, in which case the extension shall be populated with a globally unique identifier within the scope of the root OID.
 - 3125 • The `ClinicalDocument/code` will in most cases be provided by the operator. Values for this code are dictated by the CDA R2 documentation, but are permissible to extend to fit the particular use case. Attributes `code@code` and `code@codeSystem` shall be present.
 - The `ClinicalDocument/title` shall be present if known.
 - 3130 • The `ClinicalDocument/effectiveTime` shall denote the time at which the original content was scanned. At a minimum, the time shall be precise to the day and shall include the time zone offset from GMT.
 - The `ClinicalDocument/confidentialityCode` shall be assigned by the operator in accordance with the scanning facility policy. The notion or level of confidentiality in the header may not be the same as that in the Affinity Domain, but in certain cases could be used to derive a confidentiality value among those specified by the Affinity Domain.
 - 3135 Attributes `confidentialityCode@code` and `confidentialityCode@codeSystem` shall be present.
 - The `ClinicalDocument/languageCode`, in accordance with the HL7 CDA R2 documentation, shall denote the language used in the character data of the wrapper CDA header. If the scanned content, when rendered, is in a language different than that of the header, the language context of the CDA will be overwritten at the body level (see Section 5.2.3.9 `ClinicalDocument/component/nonXMLBody` for an example). Attribute `code@code` shall be present. Attribute `code@codeSystem` shall be IETF (Internet Engineering Task Force) RFC5646 in accordance with the HL7 CDA R2 documentation.
 - 3140

3145 Example:

```
<ClinicalDocument xmlns="urn:hl7-org:v3">
  <typeId extension="POCD_HD000040" root="2.16.840.1.113883.1.3"/>
  <templateId root="1.3.6.1.4.1.19376.1.2.20"/>
  <id root="1.3.6.4.1.4.1.2835.2.7777"/>
  <code code="34133-9" codeSystem="2.16.840.1.113883.6.1"
    codeSystemName="LOINC" displayName="SUMMARIZATION OF EPISODE NOTE"/>
  <title>Good Health Clinic Care Record Summary</title>
  <effectiveTime value="20050329224411+0500"/>
  <confidentialityCode code="N" codeSystem="2.16.840.1.113883.5.25"/>
  <languageCode code="en-US"/>
```

5.2.3.2 ClinicalDocument/recordTarget

3150 The ClinicalDocument/recordTarget contains identifying information about the patient concerned in the original content. In many cases this will have to be supplied by the operator. All subelements retain their original definition as defined by the HL7 CDA R2 specification, unless noted below.

- The ClinicalDocument/recordTarget/patientRole/id element shall include both the root and the extension attributes. Refer to PCC TF-2: 4.1.1 for more details.
- 3155 • At least one ClinicalDocument/recordTarget/patientRole/addr element shall include at least the country subelement. The addr element has an unbounded upper limit on occurrences. It can, and should, be replicated to include additional addresses for a patient, each minimally specified by the country sub element.
- 3160 • At least one ClinicalDocument/recordTarget/patientRole/ patient/name element shall be at least one given subelement and one family subelement.
- The ClinicalDocument/recordTarget/patientRole/patient/ administrativeGenderCode element shall be present.
- The ClinicalDocument/recordTarget/patientRole/patient/ birthTime element shall be present with precision to the year.

3165 Example:

```
<recordTarget>
  <patientRole>
    <id extension="12345" root="2.16.840.1.113883.3.933"/>
    <addr>
      <streetAddressLine>17 Daws Rd.</streetAddressLine>
      <city>Blue Bell</city>
      <state>MA</state>
      <postalCode>02368</postalCode>
      <country>USA</country>
    </addr>
    <patient>
      <name>
        <prefix>Mrs.</prefix>
        <given>Ellen</given>
        <family>Ross</family>
      </name>
      <administrativeGenderCode code="F"
        codeSystem="2.16.840.1.113883.5.1"/>
      <birthTime value="19600127"/>
    </patient>
  </patientRole>
</recordTarget>
```

5.2.3.3 ClinicalDocument/author (original)

3170 This ClinicalDocument/author element represents the author of the original content. It additionally can encode the original author's institution in the subelement representedOrganization. Information regarding the original author and his/her institution shall be included, if it is known. In many cases this will have to be supplied by the operator. All subelements retain their original definition as defined by the HL7 CDA R2 specification, unless noted below.

- 3175
- The ClinicalDocument/author/templateId element shall be present. The root attribute shall contain the OID '1.3.6.1.4.1.19376.1.2.20.1', to indicate this is the original author.
 - The ClinicalDocument/author/time represents the day and time of the authoring of the original content. This value is not restricted beyond statements made in the HL7 CDA R2 documentation.
- 3180
- The ClinicalDocument/author/assignedAuthor/id element if known shall include both the root and extension attributes. Refer to PCC TF-2: 4.1.1 for more details.
 - The ClinicalDocument/author/assignedAuthor/representedOrganization/id element if known shall include both the root and the extension attribute. Refer to PCC TF-2: 4.1.1 for more details.

3185 Example:

```
<author>
  <templateId root="1.3.6.1.4.1.19376.1.2.20.1"/>
  <time value="19990522"/>
  <assignedAuthor>
    <id extension="11111111" root="1.3.5.35.1.4436.7"/>
    <assignedPerson>
      <name>
        <prefix>Dr.</prefix>
        <given>Bernard</given>
        <family>Wiseman</family>
        <suffix>Sr.</suffix>
      </name>
    </assignedPerson>
    <representedOrganization>
      <id extension="aaaaabbbbb" root="1.3.5.35.1.4436.7"/>
      <name>Dr. Wiseman's Clinic</name>
    </representedOrganization>
  </assignedAuthor>
</author>
```

5.2.3.4 ClinicalDocument/author (scanner)

3190 This ClinicalDocument/author element shall be present and represent the scanning device and software used to produce the scanned content. All subelements retain their original definition as defined by the HL7 CDA R2 specification, unless noted below.

- The ClinicalDocument/author/templateId element shall be present. The root attribute shall contain the OID '1.3.6.1.4.1.19376.1.2.20.2', to indicate this author is the scanning device and software.
- 3195 • The ClinicalDocument/author/time shall denote the time at which the original content was scanned. This value shall be equal to that of ClinicalDocument/effectiveTime. At a minimum, the time shall be precise to the day and shall include the time zone offset from GMT.
- 3200 • The ClinicalDocument/author/assignedAuthor/id element shall be at least the root OID of the scanning device.
- 3205 • The ClinicalDocument/author/assignedAuthor/assignedAuthoringDevice/code element shall be present. The values set here are taken from appropriate DICOM vocabulary. The value of code@codeSystem shall be set to "1.2.840.10008.2.16.4". The value of code@code shall be set to "CAPTURE" for PDF scanned content and "WSD" for plaintext. The value of code@displayName shall be set to "Image Capture" for PDF scanned content and "Workstation" for plaintext.

- 3210 • The ClinicalDocument/author/assignedAuthor/assignedAuthoringDevice/manufactureModelName element shall be present. The mixed content shall contain string information that specifies the scanner product name and model number. From this information, features like bit depth and resolution can be inferred. In the case of virtually scanned documents (for example, print to PDF), the manufactureModelName referenced here refers to the makers of the technology that was used to produce the embedded content.
- 3215 • The ClinicalDocument/author/assignedAuthor/assignedAuthoringDevice/softwareName element shall be present. The mixed content shall contain string information that specifies the scanning software name and version. In the case of virtually scanned documents, the softwareName referenced here refers to the technology that was used to produce the embedded content.
- 3220 • The ClinicalDocument/author/assignedAuthor/representedOrganization/id element shall be present. The root attribute shall be set to the OID of the scanning facility.

Example:

```
<author>
  <templateId root="1.3.6.1.4.1.19376.1.2.20.2"/>
  <time value="20050329224411+0500"/>
  <assignedAuthor>
    <id root="1.3.6.4.1.4.1.2835.2.1234"/>
    <assignedAuthoringDevice>
      <code code="CAPTURE" displayName="Image Capture" codeSystem="
1.2.840.10008.2.16.4" />
      <manufacturerModelName>SOME SCANNER NAME AND MODEL
      </manufacturerModelName>
      <softwareName>SCAN SOFTWARE NAME v0.0</softwareName>
    </assignedAuthoringDevice>
    <representedOrganization>
      <id root="1.3.6.4.1.4.1.2835.2"/>
      <name>SOME Scanning Facility</name>
      <addr>
        <streetAddressLine>21 North Ave</streetAddressLine>
        <city>Burlington</city>
        <state>MA</state>
        <postalCode>01803</postalCode>
        <country>USA</country>
      </addr>
    </representedOrganization>
  </assignedAuthor>
</author>
```

5.2.3.5 ClinicalDocument/dataEnterer

- 3225 This ClinicalDocument/dataEnterer element shall represent the scanner operator who produced the scanned content. All subelements retain their original definition as defined by the HL7 CDA R2 specification, unless noted below.
- The ClinicalDocument/dataEnterer/templateId element shall be present. The root attribute shall contain the OID '1.3.6.1.4.1.19376.1.2.20.3', to indicate this is the scanner operator.
- 3230
- The ClinicalDocument/dataEnterer/time shall denote the time at which the original content was scanned. This value shall be equal to that of ClinicalDocument/effectiveTime. At a minimum, the time shall be precise to the day and shall include the time zone offset from GMT.
- 3235
- The ClinicalDocument/dataEnterer/assignedEntity/id element shall be both the root and the extension attributes; the root shall be the OID of the scanning facility and the extension shall be an appropriately assigned, facility unique id of the operator.

Example:

```
<dataEnterer>
  <templateId root="1.3.6.1.4.1.19376.1.2.20.3"/>
  <time value="20050329224411+0500"/>
  <assignedEntity>
    <id extension="22222222" root="1.3.6.4.1.4.1.2835.2"/>
    <assignedPerson>
      <name>
        <prefix>Mrs.</prefix>
        <given>Bernice</given>
        <family>Smith</family>
      </name>
    </assignedPerson>
  </assignedEntity>
</dataEnterer>
```

5.2.3.6 ClinicalDocument/custodian

- 3240 The ClinicalDocument/custodian shall be present. Its context is left up to the scanning facility to refine in accordance with local policies and to reflect the entity responsible for the scanned content. In most cases this will be the scanning facility. All subelements retain their original definition as defined by the HL7 CDA R2 specification, unless noted below.
- 3245
- The ClinicalDocument/assignedCustodian/representedOrganization/name shall be present.
 - At least one ClinicalDocument/assignedCustodian/representedOrganization/addr element shall include at least the country sub element.

Example:

```
<custodian>
  <assignedCustodian>
    <representedCustodianOrganization>
      <id root="1.3.6.4.1.4.1.2835.2"/>
      <name>SOME Scanning Facility</name>
      <addr>
        <streetAddressLine>21 North Ave</streetAddressLine>
        <city>Burlington</city>
        <state>MA</state>
        <postalCode>01803</postalCode>
        <country>USA</country>
      </addr>
    </representedCustodianOrganization>
  </assignedCustodian>
</custodian>
```

3250

5.2.3.7 ClinicalDocument/legalAuthenticator

The `ClinicalDocument/legalAuthenticator` may be present and its context is left up to the scanning facility to refine in accordance with local policies. All subelements retain their original definition as defined by the HL7 CDA R2 specification, unless noted below.

- 3255
- The `ClinicalDocument/legalAuthenticator/assignedEntity/id` element if known shall include both the root and the extension attribute. Refer back to PCC TF-2: 4.1.1 for more details.

Example:

```
<legalAuthenticator>
  <time value="19990522"/>
  <signatureCode code="S"/>
  <assignedEntity>
    <id extension="11111111" root="1.3.5.35.1.4436.7"/>
    <assignedPerson>
      <name>
        <prefix>Dr.</prefix>
        <given>Bernard</given>
        <family>Wiseman</family>
        <suffix>Sr.</suffix>
      </name>
    </assignedPerson>
  </assignedEntity>
</legalAuthenticator>
```

3260 **5.2.3.8 ClinicalDocument/documentationOf**

This `ClinicalDocument/documentationOf` element is used to encode the date/time range of the original content. If the original content is representative of a single point in time then the endpoints of the date/time range shall be the same. Information regarding this date/time range shall be included, if it is known. In many cases this will have to be supplied by the operator. This profile does not restrict the `documentationOf` element beyond statements made in the HL7 CDA R2 documentation.

Example:

```
<documentationOf>
  <serviceEvent >
    <effectiveTime>
      <low value="19800127"/>
      <high value="19990522"/>
    </effectiveTime>
  </serviceEvent>
</documentationOf>
```

3270 **5.2.3.9 ClinicalDocument/component/nonXMLBody**

This `ClinicalDocument/component/nonXMLBody` element shall be present and used to wrap the scanned content. The `nonXMLBody` element is guaranteed to be unique; thus, the x-path to recover the scanned content is essentially fixed. All subelements of the `nonXMLBody` retain their original definition as defined by the HL7 CDA R2 specification, unless noted below.

- 3275
- If the human-readable language of the scanned content is different than that of the wrapper (specified in `ClinicalDocument/languageCode`), then `ClinicalDocument/component/nonXMLBody/languageCode` shall be present. Attribute `code@code` shall be present. Attribute `code@codeSystem` shall be IETF (Internet Engineering Task Force) RFC5646 in accordance with the HL7 CDA R2 documentation.
- 3280
- The `ClinicalDocument/component/nonXMLBody/text` element shall be present and encoded using `xs:base64Binary` encoding and shall contain the scanned content.
 - `ClinicalDocument/component/nonXMLBody/text@mediaType` shall be “application/pdf” for PDF, or “text/plain” for plaintext.
- 3285
- When the character encoding of text/plain content is other than UTF-8, the `@mediaType` shall be `text/plain; charset=XXX`, where XXX is the name of the encoding as specified by RFC2046.
 - `ClinicalDocument/component/nonXMLBody/text@representation` shall be present. The `@representation` for both PDF and plaintext scanned content will be “B64”, because this profile requires the base-64 encoding of both formats.

3290 Example (PDF scanned content is in the *same* language as the wrapper):

```
<component>
  <nonXMLBody>
    <text mediaType="application/pdf" representation="B64">
      JVBERi0xLjMKJcfsj6IKNSAwIG9iago8PC9MZW5ndGggNiAwIFIvRmlsdGVyIC9GbGF0
      ZURlY29kZT4+CnN0cmVhbQp4nGWPMWsDMQyFd/8KjfJwqmVbkr0GQqFbg7fQoSRNWuhB
      Q/4/1L67TEEYme+9J1s3CMQQRm39NLuXg8H17gK89nN1N8eLAbZ2mmHXuql2QDVUhnZx
      a5iBcyQtoMIUM7TZhH5KZEVdgm//SSUswbFHx/JzBLEu5yYxOIzE8bPcRWqdaGDmcZO
      BWc/9bfUNOPfOte4409jxtcIKskqp0JZouJ5deYqeBn58ZmKtIU+2ptjqWQRJpGyrHDu
      K7CXIe2be+/1DzXQP+RlbmRzdHJlYW0KZW5kb2JqCjYgMCAvYmoKMjAxcmVuZG9iago0
      ...
      SW5mbyAyIDAgUgovSUQgWzGNENDN0FFQjU0QjM2RkIyODNDNUMzMjQ3OUFEMjgzRj48
      RjRDQzdBRUIlNEIzNkZCMjgzQzVDMzI0Nz1BRDI4M0Y+XQo+PgpdGFydHhyZWYKMzAx
      Mgo1JUVPRgo=
    </text>
  </nonXMLBody>
</component>
</ClinicalDocument>
```

Example (PDF scanned content is in a *different* language than the wrapper):

```
<component>
  <nonXMLBody>
    <languageCode code="zh-CN"/>
    <text mediaType="application/pdf" representation="B64">
      JVBERi0xLjMKJcfsj6IKNSAwIG9iago8PC9MZW5ndGggNiAwIFIvRmlsdGVyIC9GbGF0
      ZURlY29kZT4+CnN0cmVhbQp4nGWPMWsDMQyFd/8KjfJwqmVbkr0GQqFbg7fQoSRNWuhB
      Q/4/1L67TEEYme+9J1s3CMQQRm39NLuXg8H17gK89nN1N8eLAbZ2mmHXuql2QDVUhnZx
      a5iBcyQtoMIUM7TZhH5KZEVdgm//SSUswbFHx/JzBLEu5yYxOIzE8bPcRWqdaGDmcZO
      BWc/9bfUNOPfOte4409jxtcIKskqp0JZouJ5deYqeBn58ZmKtIU+2ptjqWQRJpGyrHDu
      K7CXIe2be+/1DzXQP+RlbmRzdHJlYW0KZW5kb2JqCjYgMCAvYmoKMjAxcmVuZG9iago0
      ...
      SW5mbyAyIDAgUgovSUQgWzGNENDN0FFQjU0QjM2RkIyODNDNUMzMjQ3OUFEMjgzRj48
      RjRDQzdBRUIlNEIzNkZCMjgzQzVDMzI0Nz1BRDI4M0Y+XQo+PgpdGFydHhyZWYKMzAx
      Mgo1JUVPRgo=
    </text>
  </nonXMLBody>
</component>
</ClinicalDocument>
```

3295 **5.2.4 Complete Example (Wrapped PDF)**

```
3300 <ClinicalDocument xmlns="urn:hl7-org:v3"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" classCode="DOCCLIN"
      moodCode="EVN" xsi:schemaLocation="urn:hl7-org:v3 CDA.xsd">
      <typeId extension="POCD_HD000040" root="2.16.840.1.113883.1.3"/>
      <templateId root="1.3.6.1.4.1.19376.1.2.20"/>
      <id root="1.3.6.4.1.4.1.2835.2.7777"/>
      <code code="34133-9" codeSystem="2.16.840.1.113883.6.1"
      codeSystemName="LOINC" displayName="SUMMARIZATION OF EPISODE NOTE"/>
      <title>Good Health Clinic Care Record Summary</title>
      <effectiveTime value="20050329224411+0500"/>
      <confidentialityCode code="N" codeSystem="2.16.840.1.113883.5.25"/>
      <languageCode code="en-US"/>
      <recordTarget>
      <patientRole>
      <id extension="12345" root="2.16.840.1.113883.3.933"/>
      <addr>
      <streetAddressLine>17 Daws Rd.</streetAddressLine>
      <city>Blue Bell</city>
      <state>MA</state>
      <postalCode>02368</postalCode>
      <country>USA</country>
      </addr>
      <patient>
      <name>
      <prefix>Mrs.</prefix>
      <given>Ellen</given>
      <family>Ross</family>
      </name>
      <administrativeGenderCode code="F"
      codeSystem="2.16.840.1.113883.5.1"/>
      <birthTime value="19600127"/>
      </patient>
      </patientRole>
      </recordTarget>
      <author>
      <templateId root="1.3.6.1.4.1.19376.1.2.20.1"/>
      <time value="19990522"/>
      <assignedAuthor>
      <id extension="11111111" root="1.3.5.35.1.4436.7"/>
      <assignedPerson>
      <name>
      <prefix>Dr.</prefix>
      <given>Bernard</given>
      <family>Wiseman</family>
      <suffix>Sr.</suffix>
      </name>
      </assignedPerson>
      <representedOrganization>
      <id extension="aaaaabbbbb" root="1.3.5.35.1.4436.7"/>
      <name>Dr. Wiseman's Clinic</name>
      </representedOrganization>
      </assignedAuthor>
```

```

3350   </author>
      <author>
        <templateId root="1.3.6.1.4.1.19376.1.2.20.2"/>
        <time value="20050329224411+0500"/>
        <assignedAuthor>
          <id root="1.3.6.4.1.4.1.2835.2.1234"/>
          <assignedAuthoringDevice>
3355   <code code="CAPTURE" displayName="Image Capture" codeSystem="
1.2.840.10008.2.16.4" />
      <manufacturerModelName>SOME SCANNER NAME AND MODEL </manufacturerModelName>
        <softwareName>SCAN SOFTWARE NAME v0.0</softwareName>
        </assignedAuthoringDevice>
3360   <representedOrganization>
        <id root="1.3.6.4.1.4.1.2835.2"/>
        <name>SOME Scanning Facility</name>
          <addr>
            <streetAddressLine>21 North Ave</streetAddressLine>
3365   <city>Burlington</city>
            <state>MA</state>
            <postalCode>01803</postalCode>
            <country>USA</country>
          </addr>
3370   </representedOrganization>
        </assignedAuthor>
      </author>
      <dataEnterer>
        <templateId root="1.3.6.1.4.1.19376.1.2.20.3"/>
        <time value="20050329224411+0500"/>
        <assignedEntity>
          <id extension="22222222" root="1.3.6.4.1.4.1.2835.2"/>
          <assignedPerson>
            <name>
3380   <prefix>Mrs.</prefix>
            <given>Bernice</given>
            <family>Smith</family>
          </name>
          </assignedPerson>
3385   </assignedEntity>
        </dataEnterer>
        <custodian>
          <assignedCustodian>
            <representedCustodianOrganization>
3390   <id root="1.3.6.4.1.4.1.2835.2"/>
            <name>SOME Scanning Facility</name>
              <addr>
                <streetAddressLine>21 North Ave</streetAddressLine>
3395   <city>Burlington</city>
                <state>MA</state>
                <postalCode>01803</postalCode>
                <country>USA</country>
              </addr>
            </representedCustodianOrganization>
3400   </assignedCustodian>

```

```

3405   </custodian>
      <legalAuthenticator>
        <time value="19990522"/>
        <signatureCode code="S"/>
3410   <assignedEntity>
        <id extension="11111111" root="1.3.5.35.1.4436.7"/>
        <assignedPerson>
          <name>
            <prefix>Dr.</prefix>
3415   <given>Bernard</given>
            <family>Wiseman</family>
            <suffix>Sr.</suffix>
          </name>
        </assignedPerson>
      </assignedEntity>
    </legalAuthenticator>
    <documentationOf>
      <serviceEvent >
3420   <effectiveTime>
        <low value="19800127"/>
        <high value="19990522"/>
      </effectiveTime>
    </serviceEvent>
  </documentationOf>
3425  <component>
    <nonXMLBody>
      <text mediaType="application/pdf" representation="B64">
3430  JVBERi0xLjMKJcfsj6IKNSAwIG9iago8PC9MZW5ndGggNiAwIFIvRmlsdGVyIC9GbGF0
      ZURlY29kZT4+CnN0cmVhbQp4nGWPmWsdMQyFd/8KjfJwqmVbkr0GQqFbg7fQoSRNWuhB
      Q/4/1L67TEEYme+9J1s3CMQQRm39NLUxg8H17gK89nN1N8eLABZ2mmHXuql2QDVUhnZx
      a5iBcyQtoMIUM7TZHbH5KZEVDgm//SSUswbFHx/JzBLEu5yYxOIzE8bPcRWqdaGDmcZO
      BWc/9bfUNOPfOte4409jxtcIKskqp0JZouJ5deYqeBn58ZmKtIU+2ptjqWQRJpGyrHDu
      K7CXIe2be+/1DzXQP+RlbnRzdHJlYW0KZW5kb2JqCjYgMCBvYmoKMjAxcmVuZG9iago0
      ...
3435  SW5mbyAyIDAgUgovSUQgWzxnENENDN0FFQjU0QjM2RkIyODNDNUMzMjQ3OUFEMjgzRj48
      RjRDQzdBRUI1NEIzNkZCMjgzQzVDMzI0Nz1BRDI4M0Y+XQo+PgpzdGFydHhyZWYKMzAx
      Mgo1JUVPRgo=
    </text>
    </nonXMLBody>
3440  </component>
</ClinicalDocument>

```


5.3 Intentionally Left Blank

3445 Reserved for Document Encryption (DEN).

5.4 XDW Workflow Content Module

3450 This section defines the XDW Workflow Document by providing a schema and explaining its use. This document does not include clinical information about the patient directly. It shall only contain information necessary for organizing and defining work tasks. All clinical information regarding any task shall be provided through separate documents that are referenced from the associated input or output documents.

5.4.1 Referenced Standards

HL7 CDA Release 2.0 (denoted HL7 CDA R2, or just CDA, in subsequent text)

Web Services – Human Task (WS-HumanTask) Specification Version 1.1, OASIS

3455 5.4.2 Discussion of Content Standards

3460 The XDW Workflow Document is a document that incorporates elements from the HL7 CDA document structure and from the WS-HumanTask structure. The Workflow Document exists to coordinate the activities of multiple people in different organizations. They agree to share these documents as a method of exchanging work information. These documents are used by these organizations to feed what is often considered their own internal task management systems and have their own administrative rules for managing activities.

3465 Sharing clinical documents is often accomplished as a normal part of providing healthcare. The XDW workflow allows the work information to be shared in the same way as other patient related clinical information. Integrating the internal workflow management systems of independent organizations with independent administrative rules, and perhaps in different legal and regulatory systems, is avoided.

The XDW Workflow Document does not contain clinical information about the patient. The input, output, and other elements of the task data shall contain references to documents (DocumentEntry.uniqueId) that contain the clinical information.

3470 XDW Workflow uses the XDS lifecycle management tools to coordinate updates to the Workflow Document instead of requiring an integration of all the different task management systems in the different organizations.

The XDW Workflow Document builds upon two other standards, HL7 CDA and OASIS WS-Human Task.

3475 The XDW Workflow Document shall comply with the XDW XML Schema that includes elements from the CDA and OASIS Human Task standards. Access to the schema files from those standards will be needed.

The figure below represents the main level structure of the Workflow Document with the first level of the elements that composed the structure.

3480 It is possible to divide the structured into four parts:

- Part 1: elements derived from HL7 CDA standard (Type of the element: CDA),

- Part 2: two elements, patient and author, defined in the XDWSchema with the structure derived from HL7 R-MIM standard (Type of the element: tXDWpatient and tXDWauthor),
- 3485 • Part 3: elements defined by IHE XDW Profile
- Part 4: the element <TaskList> in which is defined by elements derived from the OASIS WS-HumanTask standard. In this last section the <TaskList> is a list of elements <XDWTask> composed of the HumanTask <taskData> (all data that define the XDWTask) and the HumanTask <taskEventHistory> that contains a list of
- 3490 elements <taskEvent>.

All the elements of the Figure 5.4.2-1 are described in Section 5.4.3.

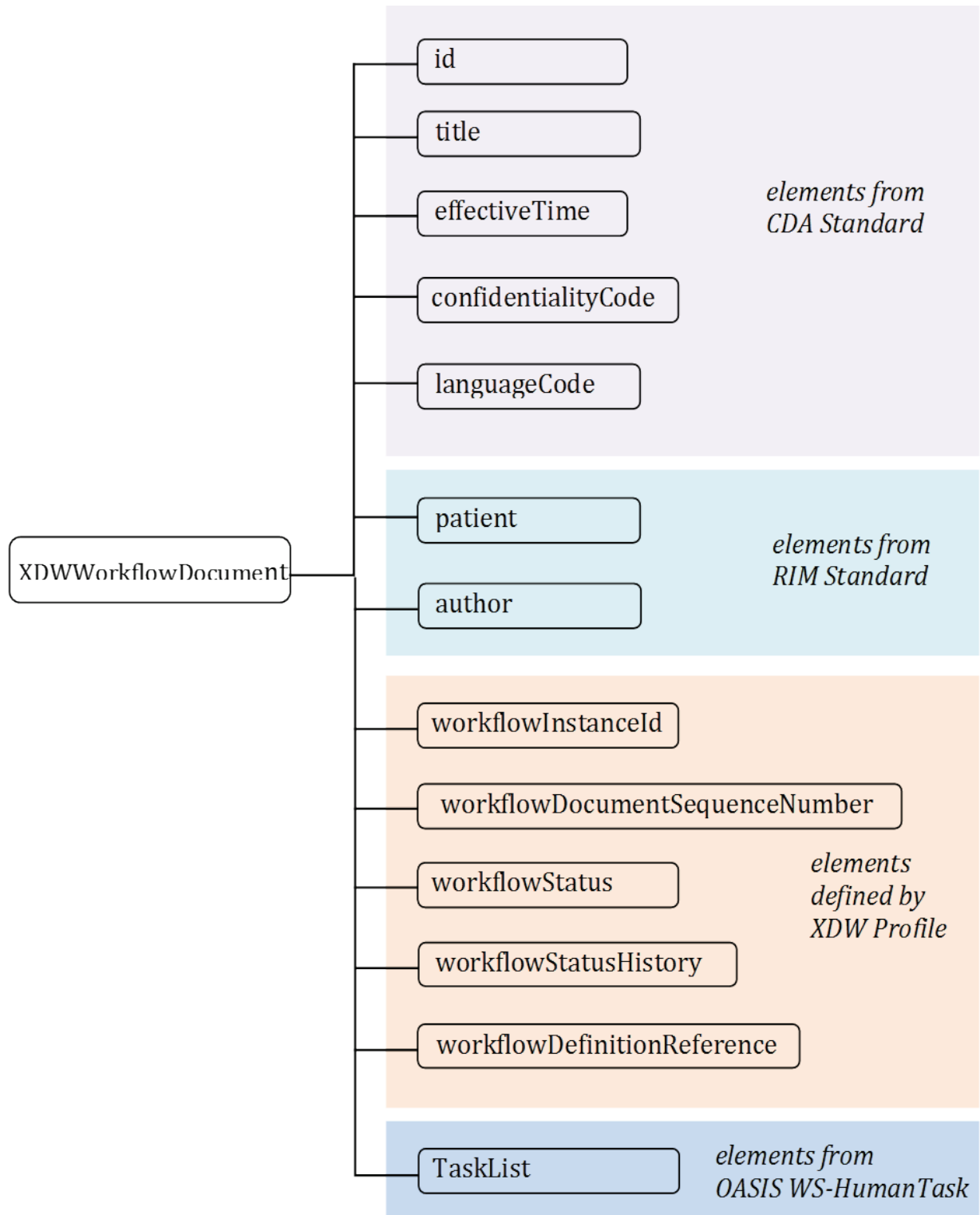


Figure 5.4.2-1: XDWorkFlowDocument Structure

3495 **5.4.2.1 XDW Workflow Document Elements from HL7 CDA Standard**

Some elements are incorporated directly from the HL7 CDA standard. This means that the elements, their definitions, and the rules for interpreting them are in the HL7 standard. These are summarized here for convenience.

3500 <patient> and <author> elements have been defined based upon the HL7 CDA R-MIM. The XDW schema defines these elements using elements from CDA, and was derived by eliminating all elements that are not needed for workflow identification purposes. The R-MIM includes elements that are of clinical value. These have been removed for workflow use.

5.4.2.2 XDW Workflow Document Elements defined by IHE XDW Profile

The XDW Workflow Document also has elements that are defined by IHE (see Table 5.4.3-1):

- 3505 • <workflowInstanceId> Every version of the Workflow Document shall have the same workflowInstanceId value. This value shall be an OID. It is conveyed in the DocumentEntry.referenceIdList attribute of the workflow document's metadata. It shall be globally unique, because it is shared by many organizations.
- 3510 • <workflowDocumentSequenceNumber> This is used to simplify management of the changes to the Workflow Document as the workflow is executed. It shall be created as "1", and be incremented for each update to the Workflow Document.
- <workflowStatus> This shall be either:
 - 3515 • OPEN– which means that further updates are expected for this Workflow Document. These updates could be modifications to existing tasks or addition of new tasks or update to an existing task. Tasks shall not be deleted.
 - CLOSED– which means that further updates to this Workflow Document are not expected. A workflow with a CLOSED workflowStatus may continue to be updated, after which the value of workflowStatus may be transitioned back to OPEN or remain CLOSED. These constraints will be defined by the Workflow Definition referenced.
- 3520 • <workflowStatusHistory> This element represents the history of changes of status of the workflow document. It consists of sub-elements named documentEvent. Each documentEvent describes a change of status of the workflow document. In case that the workflowDefinitionReference describes a type of workflow that can't change its status from CLOSED to OPEN, the workflowStatusHistory contain at most two
- 3525 documentEvent elements, one for the opening of the workflow corresponding to the creation of the workflow document, and one to track the closing of the process related. Instead, if the workflowDefinitionReference permits the change of status from CLOSED to OPEN (e.g., OPEN-->CLOSED-->OPEN...) the element workflowStatusHistory will contain from 1 to N documentEvent elements to track these changes. A documentEvent is
- 3530 described by sub-elements defined in Table 5.4.3-5.

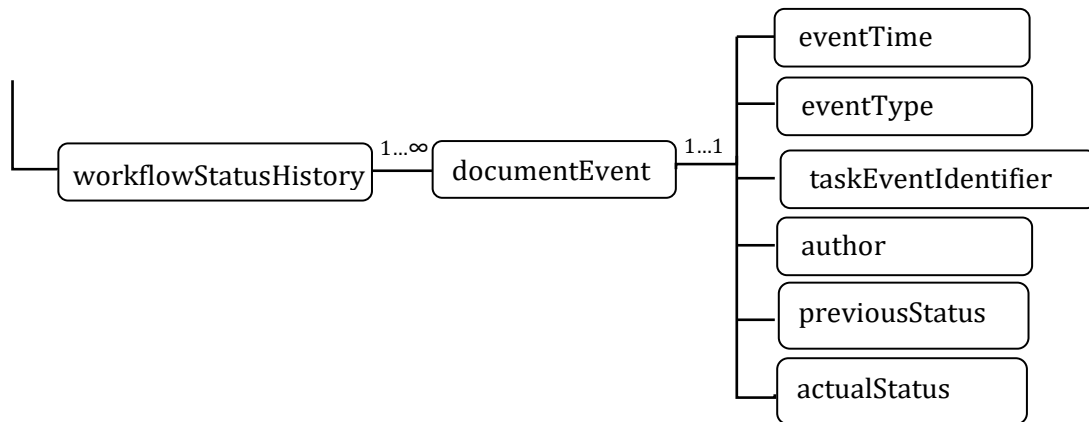


Figure 5.4.2.2-1: workflowStatusHistory Element

- `<workflowDefinitionReference>`. This is the reference to the workflow definition. This is usually contained in policy or procedure document or may be defined by IHE as a specific workflow definition profile. This profile places no restriction on the style used to document such Workflow definition. It is recommended to assign an OID to those. It shall be recorded by the creator of the initial Workflow Document and shall be preserved unchanged in all subsequent versions of the document.

5.4.2.3 XDW Workflow Document Elements from the OASIS Human Task

The descriptions of a task and of `<taskEvent>` are taken from the OASIS Human Task standard. This standard defines a way to describe a human task. It was defined as an extension to the BPEL and BPMN workflow standards. These standards are in use to manage the workflow of automated tasks under the control of an integrated task management system. It was recognized that while these standards do not have the ability to control human task, they needed a way to describe tasks to be performed by humans and other organizations.

The element `<XDWTask>` groups all information about one task in the workflow, the `<XDWTask>` is structured in two sub elements: `<taskData>` and `<taskEventHistory>`.

- `<taskData>` describes a single task. This is a list of details about the task, a description, the inputs to the task (e.g., documents), the outputs from the task (e.g., documents), fault descriptions and comments. The `<taskDetails>` include elements like the task ID, description, state, etc. (see Table 5.4.3-8)
- `<taskEventHistory>` contains a list of the `<taskEvent>` elements that describe the changes of the task. For each task, there is one or more `<taskEvent>` that describes the history of the task. There is a list of the `<taskEvent>`: an `<eventType>`, a description, the inputs to the `<taskEvent>` (e.g., documents), the outputs from the `<taskEvent>` (e.g., documents), fault descriptions, comments, and

3560 attachments (other documents that do not represent outputs). The details include elements like the task ID, status, etc. (see Table 5.4.3-10)

The definitions and rules such as the state machine that defines status are in the Human Task standard. There are other datatypes and web services also defined in Human Task standard that are not used by XDW.

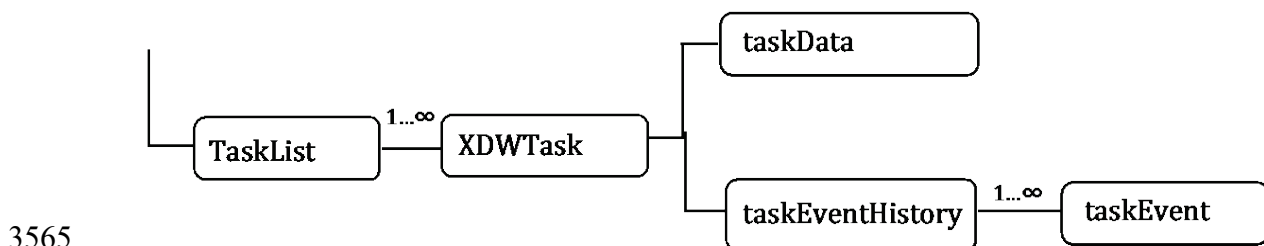


Figure 5.4.2.3-1: XDW Workflow elements derived from OASIS WS-HumanTask

5.4.2.4 Relationship between Task and <taskEvent>

3570 When a Task is generated it has a first <taskEvent>. A Task can either have only one <taskEvent> if the status of the task is not modifiable and it is born just completed or it can have more status and so more taskEvents. In this case at any time the task changed a new <taskEvent> is created.

3575 When a new Task is generated, zero or more references to external documents, associated with the Task, either as input or output, are put in the respective element of the Task. As a Task changes new input or output documents may be added (cumulative list of references). However, for each Task Event, only the input and output document related to the specific task Event shall be included. The inputs documents of a <taskEvent> are the documents that have been used as input for performing the Task change. The Output documents are those that have been created as a result of the Task Change. As a consequence, all input and output document references, present one or more times in the task Events list shall be listed (without duplicates) in the Task. Likewise for output document references.

3580 The clinical documents referenced in the input or output data elements of Tasks and task Events shall be accessible in the affinity domain (if XDW is used along with XDS) or Media Interchange (if used along with XDM) or Point-to-point submission set (if used along with XDR). In anticipation of the use of XDW in a cross-community environment, both the document uniqueId and homeCommunityId are permitted to be included.

The XDW Workflow Document defines a task list which is a series of task descriptions. The relationship between the task, the order of the elements in this list and the possible status of a task, all of the rules are defined in the Workflow Definition Document.

3590

The XDW Profiles define the recommended statuses processable in a Task with the `<taskEvent>`. These statuses are a subset of the HumanTask Standard. There are other task status values possible, but these are not normally used.

Table 5.4.2.4-1: Description of Task Status

Task status	Description
CREATED	The workflow is open, the task is created but not assigned to an owner
READY	The task created is assigned to an owner and is ready to be performed
IN_PROGRESS	The task is started and the owner is performing the task actions
FAILED	The task is completed with fault response (it is not possible conclude the action of the task)
COMPLETED	The task is completed with response

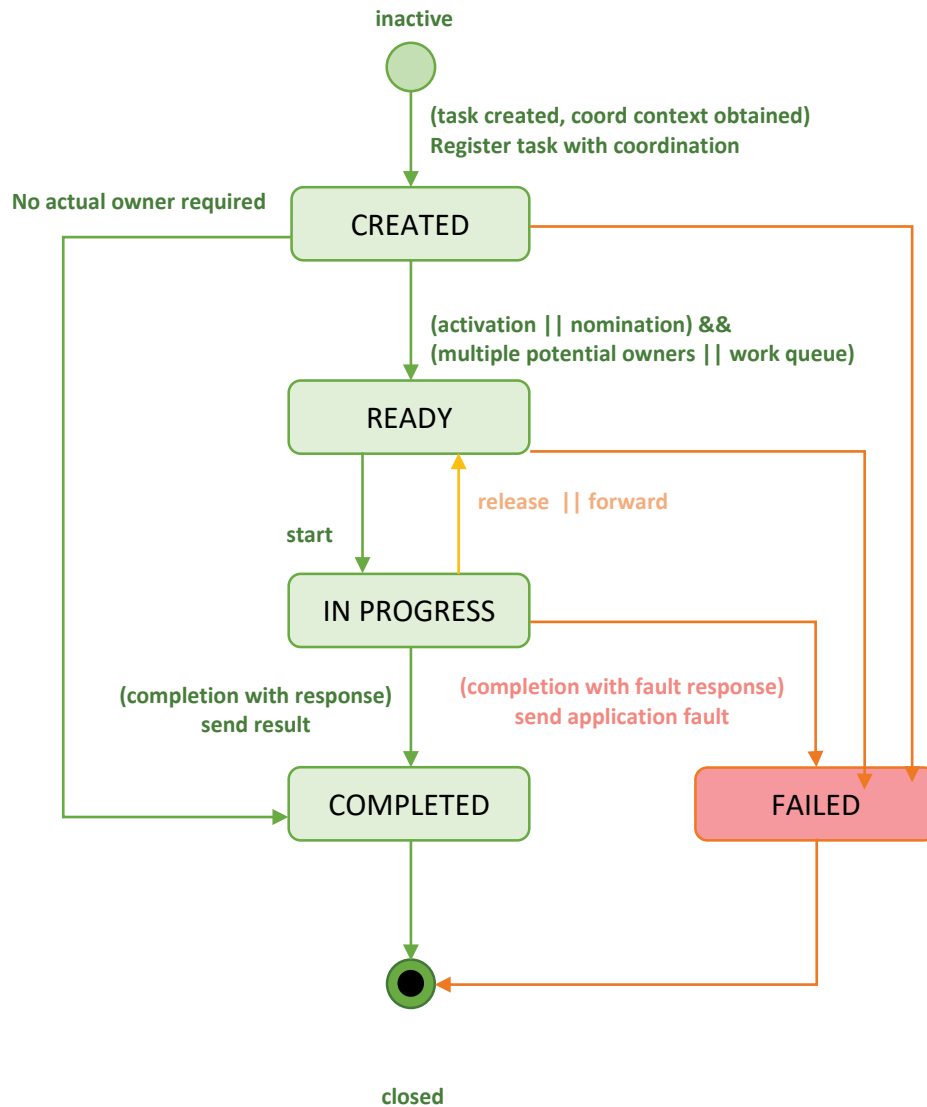


Figure 5.4.2.4-1: Task Status Transition

Note: See HumanTask standard specification for the complete list of task statuses and transitions between them (OASIS Web Services – Human Task (WS-HumanTask) Specification Version 1.1 Section 4.10 “Human Task Behavior and State Transitions”).

The elements `<XDWTask>` and `XDW <taskEvent>` are constrained by XDW with a minimal set of elements required. These elements are fully extensible with any kind of attributes defined by Human Task standard. This allows specific Workflow Definition profiles to add elements defined in Human Task to manage for example intertask relationships, additional status, etc. to address more advanced specific workflow requirements.

5.4.3 Content Specification

The tables below represent all Workflow Document elements. The tables show for each element the Optionality and the standard from which the definition and the structure of the element derive.

3610 Optionality:

R = element Required for XDW Profile

R2 = element Required if known for XDW Profile

O = element Optional for XDW Profile

X = element shall not be used

3615 Inside the tables the column description is used to constrain the use of the attribute when referring to element defined in the underlining standard. When the description is blank no constraints is required. When the element is defined by XDW this is the complete description.

There are three functional roles for interacting with these elements.

- 3620
 - The "create" role specifies what elements shall be created. The Content Creator is permitted to include any optional element, and may include other elements.
 - The "view" role specifies what elements shall be presented by Content Consumer or Content Updater that support viewing of the document. It may present for viewing any other element that it understands or has a means of presenting. There are elements that are required for viewing, while being optional for both creation and viewing.
- 3625
 - The "update" role specifies what elements shall be maintained with correct values when updating a document. An "update" operation shall preserve the value of all elements that are present, even if their meaning is unknown. This means that an updater might not update the contents of optional elements when updating a workflow document.

3630 If one of the following tables does not specify separate values for the three roles, then the specified value applies to all three roles.

Tables uses the following namespace conventions:

- cda="urn:hl7-org:v3";
- ht="http://docs.oasis-open.org/ns/bpel4people/ws-humantask/types/200803"
- xs="http://www.w3.org/2001/XMLSchema"
- 3635
 - xdw="urn:ihe:iti:xdw:2011"
- <XDW.WorkflowDocument>

Table 5.4.3-1: Elements of the Workflow Document

XDW.WorkflowDocument element	Standard	Data Type	Optionality	Description
id	HL7 CDA	cda:II	R	Document ID
title	HL7 CDA	cda:ST	O	Displayable title
effectiveTime	HL7 CDA	cda:TS	R	Time of most recent update
confidentialityCode	HL7 CDA	cda:CE	R	
languageCode	HL7 CDA	cda:CS	O	
patient	HL7 CDA	xdw:tXDWpatient	R	Patient information derived from R-MIM. Restricted to non-clinical necessary content. See Table 5.4.3-2
author	HL7 CDA	xdw:tXDWAuthor	R	Author information derived from R-MIM. Restricted to non-clinical necessary content. See Table 5.4.3-3
workflowInstanceId	IHE	OID	R	Conveys the workflow identifier. It shall contain the same value as the CXi.1 component of the DocumentEntry.referenceIdList metadata attribute.
workflowDocumentSequenceNumber	IHE	xs:int	R	
workflowStatus	IHE	xs:token	R	OPEN if modifications are permitted to the document contents. CLOSED if modifications are not expected.
workflowStatusHistory	IHE	xdw:workflowStatusHistory_type	R	List of changes of the workflowStatus See Table 5.4.3-4
workflowDefinitionReference	IHE	xs:anyURI	R	References (urn:OID:) to the documents that define this kind of workflow.
TaskList	IHE	xdw:TaskList_type	R	List of all tasks and their history See Table 5.4.3-6

- <patient>

3640

Table 5.4.3-2: Patient Element

Patient element	Standard	Data Type	Optionality	Description
id	HL7 CDA	cda:II	R	
name	HL7 CDA	cda:PN	O	
administrativeGenderCode	HL7 CDA	cda:CE	O	
birthTime	HL7 CDA	cda:TS	O	
maritalStatusCode	HL7 CDA	cda:CE	O	

- <author>

Table 5.4.3-3: Author Element

Author element	Standard	Data Type	Optionality	Definition
assignedAuthor	HL7 CDA	cda:POCD_MT000040 .AssignedAuthor	R	Either assignedAuthoringDevice or assignedPerson should be specified

3645

- <workflowStatusHistory>

Table 5.4.3-4: workflowStatusHistory Element

workflowStatusHistory element	Standard	Data Type	Optionality	Description
documentEvent	IHE	xdw:tXDWdocumentEvent_type	R	A detailed event that represents a change of the workflowStatus The first documentEvent element is added when the workflow document is created. A documentEvent element is then added whenever the workflowStatus of the workflow document changes. See Table 5.4.3-5

- <documentEvent>

Table 5.4.3-5: documentEvent Element

documentEvent element	Standard	Data Type	Optionality	Description
eventTime	OASIS_WS-HumanTask	xs:dateTime	R	Time when the specific documentEvent element is added to the workflow document.
eventType	OASIS_WS-HumanTask	ht:tTaskEventType	R	The type of event that happens that solicits the modification of the workflowStatus. Valued with one of the types defined in the HumanTask specification (C. WS-HumanTask Data Types Schema, <!-- Defines the human task event types -->).
taskEventIdentifier	IHE	xs:anyURI	R	Element that permits to track the reference to the taskEvent that solicits the modification of the workflowStatus. It stores the same value of the element taskEvent/identifier of the taskEvent of reference.
author	IHE	xs:string	R	Actual owner of the workflow after the event
previousStatus	IHE	xs:token	R	The previous value of workflowStatus. Either "OPEN" or "CLOSED". In case of a Workflow Document just created this element shall be valorized with ""
actualStatus	IHE	xs:token	R	Equal to the current value of the workflowStatus element. Either "OPEN" or "CLOSED".

3650

- <TaskList>

Table 5.4.3-6: TaskList Element

TaskList element	Standard	Data Type	Optionality	Description
XDWTask	IHE	x dw:tXDWTask	R	List of tasks See Table 5.4.3-7

3655 • <XDWTask>

Table 5.4.3-7: XDWTask Element

XDWTask element	Standard	Data Type	Optionality	Description
taskData	OASIS_WS-HumanTask	ht:tTaskInstanceData	R	Description of the current task (status, inputs, outputs, etc.) See Table 5.4.3-8
taskEventHistory	IHE	xdw:tXDWeventHistory	R	History of the changes to the current task (dates, changes, etc.) See Table 5.4.3-11

• <taskData>

The XDW Profile adds the following restrictions to the OASIS definition for taskData:

- 3660 • The taskData/input shall contain a taskData/input/part for every clinical document or workflow that is to be used as input to the task. This element is of type tMessagePartsData. An element <part> shall have a child element <AttachmentInfo> of type tAttachmentInfo. Table 5.4.3-9 describes how to assign values to each AttachmentInfo child elements.
- 3665 • The taskData/output shall contain a taskData/output/part for every clinical document or workflow that is created as a result of the task that is to be shared. This element is of type tMessagePartsData. An element <part> shall have a child element <AttachmentInfo> of type tAttachmentInfo. Table 5.4.3-9 describes how to assign values to each AttachmentInfo child element.
- 3670 • Any clinical documents that are registered in an XDS Document Registry shall be identified in the taskData/input/part, taskData/output/part, or taskData/attachmentInfos/info as described in Table 5.4.3-9.
- 3675 • The element <part> shall have an attribute @name. The value of this attribute identifies the role played by the referenced object within the task. A Workflow Definition profile shall define a list of acceptable values for this attribute. If no Workflow Definition profile is supported and if no values are defined by local policies, this value shall be set to “XDSRegisteredDocument”.

Table 5.4.3-8: taskData Element

taskData element	Standard	Data Type	Optionality			Description
			Create	View	Update	
taskDetails	OASIS_WS-HumanTask	ht:tTaskDetails	R	R	R	See Table 5.4.3-10

taskData element	Standard	Data Type	Optionality			Description
			Create	View	Update	
description	OASIS_WS-HumanTask	xs:string	R	R	R	Textual description
input	OASIS_WS-HumanTask	ht:tMessagePartsData	R	R	R	This element lists documents/workflows referenced by the task as inputs, using a child <part> element for each document/workflow.
output	OASIS_WS-HumanTask	ht:tMessagePartsData	R	R	R	This element lists documents/workflows referenced by the task as outputs, using a child <part> element for each document/workflow.
fault	OASIS_WS-HumanTask	ht:tFaultData	O	R	O	Description of fault
comments	OASIS_WS-HumanTask	ht:tComment	O	R	O	Structured comments about the task

3680 • <AttachmentInfo>

Each document referenced in input or output elements is structured using a tAttachmentInfo data type. The XDW Profile extends this data type, adding a new optional child element (homeCommunityId) that can be used to convey the home community Id of the referenced document. The structure of the <AttachmentInfo> element is described in Table 5.4.3-9. An <AttachmentInfo> element can be used to refer to another workflow. An <AttachmentInfo> element that stores a reference to a child or parent workflow shall contain an accessType with the value urn:ihe:iti:xdw:2013:workflowInstanceId.

3685

Table 5.4.3-9: AttachmentInfo Element

AttachmentInfo element	Standard	Data Type	Optionality			Description
			Create	View	Update	
identifier	OASIS_WS-HumanTask	xs:anyURI	R	R	R	If the accessType is urn:ihe:iti:xdw:2011:XDSregistered; the identifier shall contain the value of DocumentEntry.uniqueId If the accessType is urn:ihe:iti:xdw:2013:workflowInstanceI.; the identifier shall contain the value of the DocumentEntry.referenceIdList in the referenced workflow. See Note 1.
name	OASIS_WS-HumanTask	xs:string	R	R	R	Stores the same value of the part/@name attribute
accessType	OASIS_WS-HumanTask	xs:string	R	R	R	If the attachment is a document, the value of accessType shall be urn:ihe:iti:xdw:2011:XDSregistered. If the part element references another workflow, the value of accessType shall be urn:ihe:iti:xdw:2013:workflowInstanceI.. See Note 1.
contentType	OASIS_WS-HumanTask	xs:string	R	R	R	Conveys the MIME type of the referenced document. If the attachment refers to a child/parent workflow then this element shall be empty.
contentCategory	OASIS_WS-HumanTask	xs:anyURI	R	R	R	Fixed value http://www.iana.org/assignments/media-types
attachedTime	OASIS_WS-HumanTask	xs:dateTime	R	R	R	The date/time when the document is attached as reference

AttachmentInfo element	Standard	Data Type	Optionality			Description
			Create	View	Update	
attachedBy	OASIS_WS-HumanTask	ht:tUser	R	R	R	The owner that attached the reference to the task
homeCommunityId	IHE	OID	O	O	O	The home community Id of the referenced document

Note 1: The XDW Profile allows for reference to objects other than XDS documents or XDW Workflows. In this case the <identifier> element identifies the uid of the referenced object. The <accessType> of this referenced objects shall be “URL”. No further constraints are defined for other elements.

- <taskDetails>

Table 5.4.3-10: taskDetails Element

taskDetails element	Standard	Data Type	Optionality			Description
			Create	View	Update	
id	OASIS_WS-HumanTask	xs:anyURI	R	R	R	Internal ID for the task
taskType	OASIS_WS-HumanTask	xs:string	R	R	R	
name	OASIS_WS-HumanTask	xs:QName	R	R	R	The name of the task
status	OASIS_WS-HumanTask	ht:tstatus	R	R	R	Recommend limiting values to the statuses described above.
priority	OASIS_WS-HumanTask	ht:tpriority	O	R	O	
taskInitiator	OASIS_WS-HumanTask	ht:tuser	O	O	O	
taskStakeholders	OASIS_WS-HumanTask	ht:torganizationalEntity	O	O	O	

taskDetails element	Standard	Data Type	Optionality			Description
			Create	View	Update	
potentialOwners	OASIS_WS- HumanTask	ht:tO rgani zatio nalEn tity	O	O	O	Owners in Human Task terminology are people/organizations / etc. that perform the task.
businessAdministrators	OASIS_WS- HumanTask	ht:tO rgani zatio nalEn tity	O	O	O	
actualOwner	OASIS_WS- HumanTask	ht:tU ser	R	R	R	The actual performer of the task.
notificationRecipients	OASIS_WS- HumanTask	ht:tO rgani zatio nalEn tity	O	R	O	Notification Recipient may be used to contain information about persons to be notified. Use of this element does not imply that Human Task "notification" will be used. This element may be used to trigger notification mechanisms outside of XDW (e.g., IHE DSUB Profile). This combined use is not part of this profile specification
createdTime	OASIS_WS- HumanTask	xs:da teTim e	R	R	O	
createdBy	OASIS_WS- HumanTask	ht:tU ser	R	R	O	
lastModifiedTime	OASIS_WS- HumanTask	xs:da teTim e	R (Note 1)	R	R	
lastModifyBy	OASIS_WS- HumanTask	ht:tU ser	O	R	R	
activationTime	OASIS_WS- HumanTask	xs:da teTim e	O	R	O	

taskDetails element	Standard	Data Type	Optionality			Description
			Create	View	Update	
expirationTime	OASIS_WS-HumanTask	xs:dateTime	O	R	O	
isSkipable	OASIS_WS-HumanTask	xs:boolean	O	R	O	
hasPotentialOwners	OASIS_WS-HumanTask	xs:boolean	O	O	O	
startedByTimeExists	OASIS_WS-HumanTask	xs:boolean	X	X	X	
completedByTimeExists	OASIS_WS-HumanTask	xs:boolean	X	X	X	
presentationName	OASIS_WS-HumanTask	ht:tPresentationName	O	O	O	
presentationSubject	OASIS_WS-HumanTask	ht:tPresentationSubject	O	O	O	
renderingMethodExists	OASIS_WS-HumanTask	xs:boolean	R	R	R	Value shall be "false"
hasOutput	OASIS_WS-HumanTask	xs:boolean	X	X	X	
hasFault	OASIS_WS-HumanTask	xs:boolean	X	X	X	
hasAttachments	OASIS_WS-HumanTask	xs:boolean	X	X	X	
hasComments	OASIS_WS-HumanTask	xs:boolean	X	X	X	
escalated	OASIS_WS-HumanTask	xs:boolean	O	R	O	
searchBy	OASIS_WS-HumanTask	xs:string	X	X	X	
outcome	OASIS_WS-HumanTask	xs:string	X	X	X	
parentTaskId	OASIS_WS-HumanTask	xs:anyURI	X	X	X	XDW prohibits use of subTasks
hasSubTasks	OASIS_WS-HumanTask	xs:boolean	X	X	X	XDW prohibits use of subTasks.

3695

Note 1: lastModifiedTime shall be the same as createdTime

- <taskEventHistory>

Table 5.4.3-11: taskEventHistory Element

taskEventHistory element	Standard	Data Type	Optionality	Description
taskEvent	OASIS_WS-HumanTask	ht:taskEvent_type	R	See Table 5.4.3-12

3700

- <taskEvent>

Table 5.4.3-12: taskEvent Element

taskEvent element	Standard	Data Type	Optionality	Description
id	OASIS_WS-HumanTask	xs:integer	R	
eventTime	OASIS_WS-HumanTask	xs:dateTime	R	
identifier	OASIS_WS-HumanTask	xs:anyURI	R	
principal	OASIS_WS-HumanTask	xs:string	O	
eventType	OASIS_WS-HumanTask	ht:taskEventType	R	The type of event that happens that solicits the modification of the status of the task (adding a new taskEvent). Valued with one of the types defined in the HumanTask specification (C. WS-HumanTask Data Types Schema, <!-- Defines the human task event types -->).
startOwner	OASIS_WS-HumanTask	xs:string	O	
endOwner	OASIS_WS-HumanTask	xs:string	O	
status	OASIS_WS-HumanTask	ht:taskStatus	R	
hasData	OASIS_WS-HumanTask	xs:boolean	O	
eventData	OASIS_WS-HumanTask	xs:anyType	R2	This structure includes the data elements that were changed by this event.
faultName	OASIS_WS-HumanTask	xs:string	O	

5.4.4 Complete Example

3705 In the example in Figure 5.4.4-1 represents the XML of the XDW Workflow Document for the use case described in ITI TF-1: 30.4.2.1. This example represents the complete Workflow Document at the end of the process (see column C of ITI TF-1: Figure 30.4.2.2-1).

In this case there are two tasks:

- the first task has been created in status “COMPLETED” and so it has only one taskEvent in the taskEventHistory;
- 3710 • the second task ends the process in status “COMPLETED” and it has two taskEvent.

```

3715 <?xml version="1.0" encoding="UTF-8"?>
<xdw:XDW.WorkflowDocument xmlns:hl7="urn:hl7-org:v3"
    xmlns:ws-ht="http://docs.oasis-open.org/ns/bpel4people/ws-
humantask/types/200803"
    xmlns:xdw="urn:ihe:iti:xdw:2011"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
3720 xsi:schemaLocation="urn:ihe:iti:xdw:2011 XDW-2014-12-23.xsd">
    <xdw:id root="1.2.3.4.5"/>
    <xdw:effectiveTime value="20110401031520"/>
    <xdw:confidentialityCode code="1.24.3.3.3"/>
    <xdw:patient>
3725     <xdw:id root="1.3.6.1.4.1.21367.13.20.1000" extension="33333"
        assigningAuthorityName="IHERED"/>
    </xdw:patient>
    <xdw:author>
        <xdw:assignedAuthor>
3730         <hl7:id root="1.2.3.4.5" extension="11111"/>
        <hl7:assignedPerson>
            <hl7:name>
                <hl7:family>Blum</hl7:family>
                <hl7:prefix>Dr.</hl7:prefix>
3735             </hl7:name>
            </hl7:assignedPerson>
        </xdw:assignedAuthor>
    </xdw:author>
    <xdw:workflowInstanceId>1.2.3.4</xdw:workflowInstanceId>
3740 <xdw:workflowDocumentSequenceNumber>3</xdw:workflowDocumentSequenceNumber>
    <xdw:workflowStatus>CLOSED</xdw:workflowStatus>
    <xdw:workflowStatusHistory>
        <xdw:documentEvent>
3745         <xdw:eventTime>2011-03-28T10:00:12.0Z</xdw:eventTime>
        <xdw:eventType>create</xdw:eventType>
        <xdw:taskEventIdentifier>
urn:oid:1.2.3.4.5</xdw:taskEventIdentifier>
        <xdw:author>Mr. Rossi</xdw:author>
3750         <xdw:previousStatus/>
        <xdw:actualStatus>OPEN</xdw:actualStatus>
        </xdw:documentEvent>
        <xdw:documentEvent>
            <xdw:eventTime>2011-04-01T03:15:20.0Z</xdw:eventTime>
3755         <xdw:eventType>complete</xdw:eventType>
            <xdw:taskEventIdentifier>
urn:oid:1.2.3.4.7</xdw:taskEventIdentifier>
            <xdw:author>Dr. Brum</xdw:author>
            <xdw:previousStatus>OPEN</xdw:previousStatus>
3760         <xdw:actualStatus>CLOSED</xdw:actualStatus>
        </xdw:documentEvent>
    </xdw:workflowStatusHistory>

    <xdw:workflowDefinitionReference>urn:oid:1.2.3.4.5.6.7.8.9</xdw:workflowDefin
3765 itionReference>
    <xdw:TaskList>

```

```

3770      <xdw:XDWTask>
3775      <xdw:taskData>
3780      <ws-ht:taskDetails>
3785      <ws-ht:id>1</ws-ht:id>
3790      <ws-ht:taskType>Requested</ws-ht:taskType>
3795      <ws-ht:name>ReferralRequested</ws-ht:name>
3800      <ws-ht:status>COMPLETED</ws-ht:status>
3805      <ws-ht:actualOwner>Mr. Rossi</ws-ht:actualOwner>
3810      <ws-ht:createdTime>2011-03-28T10:00:12.0Z</ws-
3815      ht:createdTime>
3820      <ws-ht:createdBy>Mr. Rossi</ws-ht:createdBy>
3825      <ws-ht:lastModifiedTime>2011-03-28T10:00:12.0Z</ws-
3830      ht:lastModifiedTime>
3835      <ws-ht:renderingMethodExists>false</ws-
3840      ht:renderingMethodExists>
3845      </ws-ht:taskDetails>
3850      <ws-ht:description>Request for a specialist visit</ws-
3855      ht:description>
3860      <ws-ht:input/>
3865      <ws-ht:output/>
3870      </xdw:taskData>
3875      <xdw:taskEventHistory>
3880      <xdw:taskEvent>
3885      <xdw:id>101</xdw:id>
3890      <xdw:eventTime>2011-03-28T10:00:12.0Z</xdw:eventTime>
3895      <xdw:identifier>urn:oid:1.2.3.4.5</xdw:identifier>
3900      <xdw:eventType>create</xdw:eventType>
3905      <xdw:status>COMPLETED</xdw:status>
3910      </xdw:taskEvent>
3915      </xdw:taskEventHistory>
3920      </xdw:XDWTask>
3925      <xdw:XDWTask>
3930      <xdw:taskData>
3935      <ws-ht:taskDetails>
3940      <ws-ht:id>2</ws-ht:id>
3945      <ws-ht:taskType>Referral Referred</ws-ht:taskType>
3950      <ws-ht:name>Referred</ws-ht:name>
3955      <ws-ht:status>COMPLETED</ws-ht:status>
3960      <ws-ht:actualOwner>Dr. Brum</ws-ht:actualOwner>
3965      <ws-ht:createdTime>2011-03-29T09:20:01.0Z</ws-
3970      ht:createdTime>
3975      <ws-ht:createdBy>Dr. Brum</ws-ht:createdBy>
3980      <ws-ht:lastModifiedTime>2011-04-01T03:15:20.0Z</ws-
3985      ht:lastModifiedTime>
3990      <ws-ht:renderingMethodExists>false</ws-
3995      ht:renderingMethodExists>
4000      </ws-ht:taskDetails>
4005      <ws-ht:description>Specialist visit</ws-ht:description>
4010      <ws-ht:input>
4015      <!-- one part element for each document in input -->
4020      <ws-ht:part name="eReferralDoc1">
4025      <ws-ht:attachmentInfo>
4030      <ws-ht:identifier>1.2.3.4.56.7.78</ws-

```

```

3820 ht:identifier>
                                <ws-ht:name>eReferralDoc1</ws-ht:name>
                                <ws-ht:accessType>urn:ihe:iti:
xdw:2011:XDSregistered</ws-ht:accessType>
                                <ws-ht:contentType>application/pdf</ws-
3825 ht:contentType>
                                <ws-
ht:contentCategory>http://www.iana.org/assignments/media-types</ws-
ht:contentCategory>
                                <ws-ht:attachedTime>2011-04-
3830 01T03:15:20.0Z</ws-ht:attachedTime>
                                <ws-ht:attachedBy>Dr. Brum</ws-ht:attachedBy>

<xdw:homeCommunityId>urn:oid:1.2.3.4.5</xdw:homeCommunityId>
                                </ws-ht:attachmentInfo>
3835 <!--eReferralDoc1-->
                                </ws-ht:part>
                                </ws-ht:input>
                                <ws-ht:output>
                                <!-- one documentReference element for each document in
3840 input -->
                                <ws-ht:part name="ChildWorkflow">
                                    <ws-ht:attachmentInfo>
                                        <ws-ht:identifier>1.2.3.4.12312.34</ws-
3845 ht:identifier>
                                        <ws-ht:name>ChildWorkflow</ws-ht:name>
                                        <ws-
ht:accessType>urn:ihe:iti:xdw:2013:workflowInstanceId</ws-ht:accessType>
                                        <ws-ht:contentType>application/xml</ws-
ht:contentType>
3850 <ws-
ht:contentCategory>http://www.iana.org/assignments/media-types</ws-
ht:contentCategory>
                                <ws-ht:attachedTime>2011-04-01T03:15:20.0Z</ws-
3855 ht:attachedTime>
                                <ws-ht:attachedBy>Dr. Brum</ws-ht:attachedBy>
                                </ws-ht:attachmentInfo>
                                </ws-ht:part>
                                </ws-ht:output>
                                </xdw:taskData>
3860 <xdw:taskEventHistory>
                                <xdw:taskEvent>
                                    <xdw:id>201</xdw:id>
                                    <xdw:eventTime>2011-03-29T09:20:01.0Z</xdw:eventTime>
3865 <xdw:identifier>urn:oid:1.2.3.4.6</xdw:identifier>
                                    <xdw:eventType>create</xdw:eventType>
                                    <xdw:status>IN_PROGRESS</xdw:status>
                                </xdw:taskEvent>
                                <xdw:taskEvent>
                                    <xdw:id>202</xdw:id>
3870 <xdw:eventTime>2011-04-01T03:15:20.0Z</xdw:eventTime>
                                    <xdw:identifier>urn:oid:1.2.3.4.7</xdw:identifier>
                                    <xdw:eventType>complete</xdw:eventType>

```



```
3875      <xdw:status>COMPLETED</xdw:status>
      </xdw:taskEvent>
      </xdw:taskEventHistory>
    </xdw:XDWTask>
  </xdw:TaskList>
</xdw:XDW.WorkflowDocument>
```

Figure 5.4.4-1: Sample XDW Workflow Document

3880 5.4.5 Workflow Document Management

5.4.5.1 Workflow Document Lifecycle Management

The Cross-Enterprise Document Workflow Profile takes advantage of the lifecycle management of XDS when used in an XDS environment.

3885 A Workflow Document shall be created and be assigned a workflow identifier. The initial document shall include at least one task on the TaskList, and have a workflowStatus of OPEN. The Workflow Document is updated when:

- The information about a task is modified. This may be due to a change in some other task related information like updating the output information.
- A new task is added to the <TaskList>.
- 3890 • The workflow status is changed to CLOSED.

Each update shall be done using the XDS Document Replace when in an XDS environment. The series of steps to be taken is:

- 3895 • Update the XDW document to reflect the desired changes. This is often replacement of the <TaskData>. It may also be a change by adding a new task to the <TaskList> or a new <taskEvent> to a Task.
- Use the XDS Replace operation to replace the old document with this modified document. This replacement document shall carry the same workflow identifier as the original Workflow Document.
- 3900 • It is possible that a document replace will be rejected by the XDS Document Registry if another actor has also done a replace in the time since the Workflow Document instance was obtained. In this case (attempting to replace a document already replaced), the XDW Document Creator or Updater shall obtain the most recent version of the Workflow Document which was updated by another XDW actor, consider the evolution of the workflow, and performed a new content update. This kind of race condition should be
3905 very rare because updating is much faster than the rate at which people perform tasks. If certain workflows definitions require reducing the likelihood of such race conditions, one should consider placing in the Workflow Description one or more tasks "In Progress" and requiring that other actor wait while such tasks are in-progress.

When using XDR or XDM, the receiving actor shall perform an equivalent local update process.

3910 When an XDW actor decides that a workflow status code shall be placed in a CLOSED status, a
final update to set the workflow status code to CLOSED shall be performed. The specific rules
for determining when and which XDW actors are allowed or should set the workflow status code
to CLOSED are not specified by the XDW Profile. They may be determined within the
Workflow Definition. XDW Content Consumer and Content Updater Actors shall support the
3915 means to query for Workflow Documents that are in a workflow status OPEN.

This profile does not further constrain the rules for document lifecycle management, but a specific Workflow Definition may add requirements requiring that certain kinds of tasks be created initially, restricting the kinds of tasks that can be added, and requiring that updates be performed for specific task changes.

3920 5.4.5.2 Associations Types

A clinical document can be referenced by many Workflow Documents in different steps and for different reasons. When the content of a Workflow Document is known, the related clinical documents are always reached through the references (DocumentEntry.uniqueId and homeCommunityId) tracked inside the different task in the “input” and “output” elements.

3925 The use of a workflow identifier is necessary to have a fixed id to identify the whole workflow. Since the Workflow Document will be replaced many times (it is replaced at each step), its DocumentEntry.uniqueId metadata attribute is not useful for maintaining a fixed reference. The document uniqueId of each of the successive XDW documents can be used to identify a particular state of the workflow.

3930 XDW uses a workflow identifier stored in the DocumentEntry.referenceIdList metadata attribute
of each workflow document to group all versions of the workflow document.

- The Content Creator shall create a workflow identifier, as an OID, when a new workflow is created.
- The Content Creator shall create a single value in DocumentEntry.referenceIdList containing the workflow identifier. Only the CXi.1 and CXi.5 component shall be present.

An example workflow identifier in `DocumentEntry.referenceIdList` is:

2.16.840.1^^^urn:ihe:iti:xdw:2013:workflowInstanceId

- 3940
- The Content Updater shall use the same value for the workflow identifier when it creates a new version of the Workflow Document.

Since every version of the Workflow Document replaces the previous, there is always one and only one approved document with a given workflow identifier.

If a workflow generates another workflow there shall be two different workflow identifiers, one for each workflow. The relationship between the different workflows is always guaranteed to be inside the Workflow Documents using the `DocumentEntry.referenceIdList` as output of the task of the parent Workflow Document and as the input of the first task in the child Workflow Document.

5.4.5.3 Create workflow

When the first step of a new workflow is completed, the XDW Content Creator shall:

- 3950 • create the first version of the Workflow Document.

Then the XDW Content Creator shall use Provide and Register Document Set-b [ITI-41] (in the case of XDS):

- 3955 • submit the Workflow Document to the XDS Document Repository, using a new workflow identifier in the document's DocumentEntry.referencedIdList metadata attribute, using Provide and Register Document Set-b [ITI-41].

5.4.5.4 Update Workflow Document

For each subsequent step in the Workflow an XDW Content Updater shall:

- 3960 • obtain the most recent version of the Workflow Document, the only version approved with the specific workflow identifier in the DocumentEntry.referenceIdList (e.g., using a grouped XDS Document Consumer)
- update the content in the Workflow Document (by adding a new task or updating an existing task with a new <taskEvent>)
- re-register (update) the Workflow Document by performing a document replace (e.g., in a XDS environment using a grouped XDS Document Source).

3965 This new version of the workflow document has the same workflow identifier as the previous version.

In a Document Sharing infrastructure (e.g., an XDS environment) two different Content Updaters could be in the situation of race condition when they both update the same Workflow Document at the same time.

3970 In this case two actors (Content Updater A and Content Updater B) retrieve the same Workflow Document (e.g., Workflow Document with document uniqueId 1) and change it.

Content Updater A publishes a new version updated with a new document uniqueId (e.g., document uniqueId 2) and the previous version (with document uniqueId 1) is deprecated.

3975 When Updater Creator B tries to replace the same Workflow Document (document uniqueId 1) with his updated version this transaction generates an error because the document uniqueId 1 is deprecated and replaced with document uniqueId 2.

Content Updater B shall retrieve the current version of the Workflow Document (document uniqueId 2) and update it with a new version of the document with document uniqueId 3.

5.4.5.5 Association of a clinical document to a task and <taskEvent>

3980 Any clinical documents included as input or output documents within the taskData element that are registered in an XDS Document Registry shall be referenced using uniqueId and homeCommunityId of the Clinical Document referenced.

5.4.5.6 Get the Workflow Document and a clinical document associated to the workflow

3985 The most recent version of the Workflow Document may be retrieved at any point during the workflow.

The version of the Workflow Document with an approved status contains the most current information on the workflow and its tasks. So, an XDW Content Consumer needs to analyze only the approved version to get all current information.

3990 Any Workflow Document contains details of each task that has been performed. A task or `<taskEvent>` includes the references (`DocumentEntry.uniqueId` and `homeCommunityId`) to zero or more input and/or output clinical documents. These documents may be obtained by means of XDS, or should be included along with the Workflow Document if XDR or XDM is used.

3995 5.4.5.7 Use of the eventCodeList to manage the status of a Workflow Document

An overall workflow status is required to be set by each author of a new step. This value is either OPEN or CLOSED.

This workflow status is required to be present in every workflow step, and shall take either the value OPEN or CLOSED.

4000 By setting this workflow status to OPEN, a step author indicates that, for the workflow definition and the step author further steps are expected to be performed.

By setting this workflow status to CLOSED, a step author indicates that, for the workflow definition and the step author no further steps are expected to be performed.

This workflow status shall be present for all XDW documents in its eventCodeList metadata.

4005 This use of workflow status enables the use of query to locate OPEN or CLOSED workflows with certain other properties.

The EventCodeList contains the workflow status with two possible code values: either OPEN or CLOSED.

5.4.5.8 Parameters for Required Queries

4010 The section below documents some examples of the possible queries in an XDS environment (defined in the Registry Stored Query [ITI-18] transaction) to obtain the different documents related to the workflow from some parameters available:

- Find all open Workflow Documents for a patient

4015 A Registry Stored Query “FindDocuments” maybe used with patientId, XDW document formatCode and eventCodeList with the value “urn:ihe:iti:xdw:2011:eventCode:open” for the Workflow Document.

- Find all particular type of open Workflow Documents for a patient

- 4020 A Registry Stored Query “FindDocuments” may be used with patientId, XDW document formatCode, eventCodeList with the value “urn:ihe:iti:xdw:2011:eventCode:open” for the Workflow Document and a specific XDW document typeCode.
- Get one or more documents referenced in a Workflow Document
- 4025 A Registry Stored Query “FindDocuments” which retrieves the Workflow Document (like in the first example) and a Registry Stored Query “GetDocuments” with document uniqueId and homeCommunityId to retrieve one or more documents referenced inside the Workflow Document.
- Find the latest version of a Workflow Document for a given workflow identifier
- A Registry Stored Query “FindDocumentsByReferenceId” may be used with patientId and the workflow identifier.

5.4.6 XDS Metadata

4030 5.4.6.1 Document Metadata

The following metadata elements shall be used to describe the Workflow Document in an XDS Affinity Domain. The XDW Profile does not introduce new metadata and all the metadata elements used are the common Document Sharing specified in Section 4.2.3.2.

Table 5.4.6.1-1: XDW Constraints for Document Metadata Attributes

DocumentEntry Attribute	XDW Constraints
author	Represents the humans and/or machines that authored the document. In the Workflow Document the Author is the human and/or machine which most recently updated the Workflow Document. This means that when a Workflow Document is updated by a different person or machine, the author changes.
authorInstitution (sub-attribute of author)	No special requirements for Workflow Document
authorPerson (sub-attribute of author)	No special requirements for Workflow Document
authorRole (sub-attribute of author)	No special requirements for Workflow Document
authorSpecialty (sub-attribute of author)	No special requirements for Workflow Document
availabilityStatus	No special requirements for Workflow Document
classCode	This code is specified by the XDS Affinity Domain. The XDS Affinity Domain should specify a code for non-clinical Workflow Management documents.
comments	No special requirements for Workflow Document
confidentialityCode	No special requirements for Workflow Document
creationTime	No special requirements for Workflow Document
entryUUID	No special requirements for Workflow Document

DocumentEntry Attribute	XDW Constraints
eventCodeList	For a Workflow Document, one code of this list shall be used to define the overall status of the workflow. This code shall have one of the following two values: - code: urn:ihe:iti:xdw:2011:eventCode:open codingScheme: 1.3.6.1.4.1.19376.1.2.3 - code: urn:ihe:iti:xdw:2011:eventCode:closed codingScheme: 1.3.6.1.4.1.19376.1.2.3 (See Section 5.4.5.7.)
formatCode	Each XDW Workflow Document shall have the following value for the formatCode attribute: code: urn:ihe:iti:xdw:2011:workflowDoc codingScheme: 1.3.6.1.4.1.19376.1.2.3
hash	No special requirements for Workflow Document
healthcareFacility TypeCode	No special requirements for Workflow Document
homeCommunityId	No special requirements for Workflow Document
languageCode	No special requirements for Workflow Document
legalAuthenticator	No special requirements for Workflow Document
contentType	No special requirements for Workflow Document
patientId	No special requirements for Workflow Document
practiceSettingCode	No special requirements for Workflow Document
referenceIdList	Contains the workflow identifier. Only a single value shall be sent in this list. Only the CXi.1 and CXi.5 components shall be used: CXi.1 shall contain same value as XDW.WorkflowDocument.workflowInstanceId CXi.5 shall contain urn:ihe:iti:xdw:2013:workflowInstanceId.
repositoryUniqueId	No special requirements for Workflow Document
serviceStartTime	Shall be the starting time the service being documented took place For the Workflow Document the serviceStartTime is the time at which work began on the earliest task for this workflow. If present, shall have a single value.
serviceStopTime	No special requirements for Workflow Document
size	No special requirements for Workflow Document
sourcePatientId	No special requirements for Workflow Document
sourcePatientInfo	No special requirements for Workflow Document
title	No special requirements for Workflow Document
typeCode	For Workflow Documents defined by an IHE profile, the profile specifies the value of typeCode used. For other Workflow Documents defined in the XDS Affinity Domain, the XDS Affinity Domain specifies the value for typeCode.
uniqueId	No special requirements for Workflow Document
URI	No special requirements for Workflow Document

4035 **5.4.6.2 XDS SubmissionSet Metadata**

No additional constraints. See Section 4.2.3.3.

5.4.6.3 XDS Folder Metadata

No additional constraints.

5.5 Document Digital Signature (DSG) Document Content

4040 Document Digital Signature content shall conform to XAdES schema for signatures, with extensions and restrictions defined in the following. IHE is not changing any optionality, prohibiting use of options, or mandating options. Issues such as long-term archival management of certificates are out of scope of this profile.

5.5.1 References

4045 **5.5.1.1 Normative References**

[XAdES]: XML Advanced Electronic Signatures XAdES <http://www.w3.org/TR/XAdES/> -- aka. ETSI TS 101 903

[W3C XMLDSIG] XML-Signature Syntax and Processing. W3C Recommendation. Donald Eastlake. June 2008. <https://www.w3.org/TR/xmlsig-core/>

4050 [ASTM-E1762-05] ASTM E1762-95(2013) – Standard Guide for the Authentication of Health Care Information http://www.astm.org/cgi-bin/SoftCart.exe/STORE/filtrexx40.cgi?U+mystore+odvl4256+-L+ASTM:E1762+/usr6/htdocs/astm.org/DATABASE.CART/REDLINE_PAGES/E1762.htm

5.5.1.2 Informative References

4055 [ASTM-E1985] E1985-98 -- Standard guide for user authentication and authorization http://www.astm.org/cgi-bin/SoftCart.exe/DATABASE.CART/REDLINE_PAGES/E1985.htm?E+mystore

4060 [ASTM-E2212] ASTM E2212 – Standard Practice for Healthcare Certificate Policy http://www.astm.org/cgi-bin/SoftCart.exe/STORE/filtrexx40.cgi?U+mystore+odvl4256+-L+ASTM:E2212+/usr6/htdocs/astm.org/DATABASE.CART/REDLINE_PAGES/E2212.htm

[ASTM-E2084] ASTM E2084 – Standard Specification for the Authentication of Healthcare Information using Digital Signatures http://www.astm.org/cgi-bin/SoftCart.exe/STORE/filtrexx40.cgi?U+mystore+odvl4256+-L+ASTM:E2084+/usr6/htdocs/astm.org/DATABASE.CART/REDLINE_PAGES/E2084.htm

4065 [ISO17090] ISO/TS 17090-4 – Health Informatics – Public Key Infrastructure – Part 4: Digital Signatures for Healthcare Documents <http://www.iso.org/iso/en/CatalogueDetailPage.CatalogueDetail?CSNUMBER=35489&ICS1=35&ICS2=240&ICS3=80>

- 4070 **[ISO 21091]** ISO/TS 21091- Health Informatics – Directory Services for Security, Communications, and Identification of Professionals and Patients
<http://www.iso.org/iso/en/CatalogueDetailPage.CatalogueDetail?CSNUMBER=35647&scopelist=PROGRAMME>
- [IETF RFC5280]** IETF/RFC5280 – Internet X.509 Public Key Infrastructure and Certificate Revocation List (CRL) Profile <https://datatracker.ietf.org/doc/rfc5280/>
- 4075 **[ISO14533-2]** ISO 14533-2:2012 – Process, data elements and documents in commerce, industry and administration – Long term signature profiles – Part 2: Long term signature profiles for XML Advanced Electronic Signatures (XAdES)
- 4080 **[ETSI TS 119 172-1]** ETSI Technical Specifications 119 172-1 v1.1.1, Electronic Signatures and Infrastructures (ESI); Signature Policies; Part 1: Building blocks and table of contents for human readable signature policy documents; Annex B: Commitment types.
https://www.etsi.org/deliver/etsi_ts/119100_119199/11917201/01.01.01_60/ts_11917201v010101p.pdf
- 4085 **[ETSI TS 101 903]** ETSI Technical Specifications 101 903, XML Advanced Electronic Signatures, Section 7.2.6, The CommitmentTypeIdentificationElement.
http://uri.etsi.org/01903/v1.1.1/ts_101903v010101p.pdf
- 4090 **[ETSI TS 101 733]** ETSI Technical Specifications, commitment-type-indication Attribute 101 733, Electronic Signature and Infrastructures (ESI); CMS Advanced Electronic Signature (CAAdES).
https://www.etsi.org/deliver/etsi_ts/101700_101799/101733/02.02.01_60/ts_101733v020201p.pdf

5.5.2 Signature Specification

The following constraints define the Digital Signature block. This block is common to the detached signature and Enveloping signature.

- 4095
- Shall conform to XAdES-X-L – for support of Long Term signatures. The XAdES-X-L specification adds the timestamp of the signing and inclusion of the certificate and statement of revocation.
 - Shall use the hash algorithm sha256.
 - Shall use the canonicalization algorithm “Canonical XML 1.1 with Comments”
(<http://www.w3.org/2006/12/xml-c14n11#WithComments>).
- 4100
- The policy may be identified as **urn:ihe:iti:dsg:detached:2014** when the signature document is a Detached Signature and **urn:ihe:iti:dsg:enveloping:2014** when the signature document is an Enveloping Signature to indicate that the signature document complies with the DSG Profile.

- 4105 Shall include a “CommitmentTypeIndication” element for the Purpose(s) of Signature (aka purposeOfSignature). The Purpose can be the action being attested to, or the role associated with the signature. The value should come from ASTM E1762-95(2013) if applicable, and reproduced in Table 5.5.2-1. The coding scheme for ASTM is
- 4110 “1.2.840.10065.1.12”. Note that Content Creators and Content Consumers should be capable of being configured to other conformance policies to support local policy. For example, some environments may choose a different XAdES profile, hashing algorithm, policy identifier, or signature purpose vocabulary. Content Creators would thus create Digital Signature blocks that are not conformant to this profile. Content Consumers can validate these Digital Signature blocks, and be capable of configured behavior according
- 4115 to the local policy.

Some regions also require conformance to ISO 17090, which includes additional Certificate issuing, content, and validation rules.

Table 5.5.2-1: Digital Signature Purposes from ASTM E1762-95(2013)

Code	Term	Definition
1.2.840.10065.1.12.1.1	Author’s Signature	The signature of the primary or sole author of a health information document. There can be only one primary author of a health information document.
1.2.840.10065.1.12.1.2	Co-Author’s Signature	The signature of a health information document co-author. There can be multiple co-authors of a health information document.
1.2.840.10065.1.12.1.3	Co-participant’s Signature	The signature of an individual who is a participant in the health information document but is not an author or co-author. (e.g., a surgeon who is required by institutional, regulatory, or legal rules to sign an operative report, but who was not involved in the authorship of that report.)
1.2.840.10065.1.12.1.4	Transcriptionist/R ecorder Signature	The signature of an individual who has transcribed a dictated document or recorded written text into a digital machine -readable format.
1.2.840.10065.1.12.1.5	Verification Signature	A signature verifying the information contained in a document. (e.g., a physician is required to countersign a verbal order that has previously been recorded in the medical record by a registered nurse who has carried out the verbal order.)
1.2.840.10065.1.12.1.6	Validation Signature	A signature validating a health information document for inclusion in the patient record. (e.g., a medical student or resident is credentialed to perform history or physical examinations and to write progress notes. The attending physician signs the history and physical examination to validate the entry for inclusion in the patient’s medical record.)
1.2.840.10065.1.12.1.7	Consent Signature	The signature of an individual consenting to what is described in a health information document.
1.2.840.10065.1.12.1.8	Signature Witness Signature	The signature of a witness to any other signature.
1.2.840.10065.1.12.1.9	Event Witness Signature	The signature of a witness to an event. (Example the witness has observed a procedure and is attesting to this fact.)

Code	Term	Definition
1.2.840.10065.1.12.1.10	Identity Witness Signature	The signature of an individual who has witnessed another individual who is known to them signing a document. (e.g., the identity witness is a notary public.)
1.2.840.10065.1.12.1.11	Consent Witness Signature	The signature of an individual who has witnessed the health care provider counselling a patient.
1.2.840.10065.1.12.1.12	Interpreter Signature	The signature of an individual who has translated health care information during an event or the obtaining of consent to a treatment.
1.2.840.10065.1.12.1.13	Review Signature	The signature of a person, device, or algorithm that has reviewed or filtered data for inclusion into the patient record. (e.g., (1) a medical records clerk who scans a document for inclusion in the medical record, enters header information, or catalogues and classifies the data, or a combination thereof; (2) a gateway that receives data from another computer system and interprets that data or changes its format, or both, before entering it into the patient record.)
1.2.840.10065.1.12.1.14	Source Signature	The signature of an automated data source. (e.g., (1) the signature for an image that is generated by a device for inclusion in the patient record; (2) the signature for an ECG derived by an ECG system for inclusion in the patient record; (3) the data from a biomedical monitoring device or system that is for inclusion in the patient record.)
1.2.840.10065.1.12.1.15	Addendum Signature	The signature on a new amended document of an individual who has corrected, edited, or amended an original health information document. An addendum signature can either be a signature type or a signature sub-type (see ASTM E1762-Section 8.1). Any document with an addendum signature shall have a companion document that is the original document with its original, unaltered content, and original signatures. The original document shall be referenced via an attribute in the new document, which contains, for example, the digest of the old document. Whether the original, unaltered, document is always displayed with the addended document is a local matter, but the original, unaltered, document must remain as part of the patient record and be retrievable on demand.
1.2.840.10065.1.12.1.16	Modification Signature	The signature on an original document of an individual who has generated a new amended document. This (original) document shall reference the new document via an additional signature purpose. This is the inverse of an addendum signature and provides a pointer from the original to the amended document.
1.2.840.10065.1.12.1.17	Administrative (Error/Edit) Signature	The signature of an individual who is certifying that the document is invalidated by an error(s), or is placed in the wrong chart. An administrative (error/edit) signature must include an addendum to the document and therefore shall have an addendum signature sub-type (see ASTM E1762-Section 8.1). This signature is reserved for the highest health information system administrative classification, since it is a statement that the entire document is invalidated by the error and that the document should no longer be used for patient care, although for legal reasons the document must remain part of the permanent patient record.
1.2.840.10065.1.12.1.18	Timestamp Signature	The signature by an entity or device trusted to provide accurate timestamps. This timestamp might be provided, for example, in the signature time attribute.

4120 **5.5.3 Detached Signature**

The Detached Signature utilizes the XML Signature - Reference element (ds:reference) to identify and provide a hash for each document that is signed. This set of Reference elements is considered the manifest. The URI attribute shall be used and hold the document uniqueID. For documents that do not use a URI as the uniqueId, the Affinity Domain should determine an appropriate way to encode the DocumentEntry.uniqueId.

5.5.3.1 SubmissionSet Signature

The SubmissionSet Signature is a variant of the Detached Signature used to digitally sign a complete SubmissionSet. The signature can later be validated to assure that the SubmissionSet is complete and the same as when it was created.

4130 The SubmissionSet Signature shall be a Detached Signature that has Reference elements for:

- the SubmissionSet uniqueID with a hash value of “0”
- the document uniqueID for each of the documents contained in the SubmissionSet not including the SubmissionSet Signature document

4135 The SubmissionSet Signature creation is informatively described here with the Content Creator grouped with an XDS Document Source and is equally applicable with grouping the Content Creator with the other Document Sharing infrastructure (e.g., XDR, and XDM). The document publication transaction is not specific to the SubmissionSet Signature process or content, and is included here only to show overall workflow.

Informative process for creating a SubmissionSet Signature:

- 4140 1. A set (n) of Documents of interest are gathered, or generated to be published
2. A SubmissionSet is created for the Documents, for example in preparation for using the Provide and Register Document Set-b [ITI-41] transaction or equivalent
3. A Digital Signature document is created which includes Reference elements of:
 - 4145 a. The SubmissionSet.uniqueId is included in the manifest, with a zero hash value (the value “0”).
 - b. All of the (n) documents to be included in the SubmissionSet, other than the signature document, are listed in the manifest with their hash.
 - c. The signature document is processed according to Section 5.5.2, and thus signed.
- 4150 4. The signature document would be added to the SubmissionSet according to Section 5.5.6. The SubmissionSet may, but is not required, include all the “SIGNS” association defined in Section 5.5.6.4 with associations to all the other documents in the SubmissionSet. The “SIGNS” association is redundant in this case as the SubmissionSet already groups these documents.

- 4155 5. The SubmissionSet with the (n) documents and the Digital Signature document is submitted using the Provide and Register Document Set-b [ITI-41] transaction, or equivalent from the other Document Sharing infrastructures.

5.5.4 Enveloping Signature

4160 The Enveloping Signature utilizes the XML Signature – “Include” capability where the full content of the signed document is encoded inside the signature document in the Object element (ds:object).

The signed document shall be base64 encoded, unless some other policy overrides.

The object element Encoding shall be specified (<http://www.w3.org/2000/09/xmlsig#base64>).

5.5.5 Signature Verification

There are three levels of signature verification:

- 4165 1. verifying that the Digital Signature block itself has integrity through verifying the signature across the XML-Signature,
2. confirming that the signer was authentic, not revoked, and appropriate to the signature purpose,
- 4170 3. confirming that the signed Documents of interest are unmodified using the hash algorithm.

The Content Consumer shall verify the Digital Signature block has integrity.

4175 The Content Consumer shall be able to be configured with local policy on PKI trust models, and management that supports the confirmation that the signer was authentic, not revoked, and appropriate to the signature purpose. The Content Consumer shall use this configuration when confirming the validity of the signature.

The Content Consumer shall be able to confirm the validity of the documents that are signed.

- Workflow or local policy may direct that all or a subset of the signed documents be validated. There are use cases where only one document within a signed set of documents is all that is called for by the workflow.
- 4180 • Workflow or local policy may direct that all or a subset of the signatures found within a Digital Signature Document be validated. The Digital Signature Document may contain signatures for purposes that are not relevant to the Content Consumer purpose that may not be possible to fully validate. A Content Consumer should silently ignore signatures that are not necessary to the purpose of the Content Consumer. For example, a signature
- 4185 may be from a different organization.
- The document may not be accessible to the user, for example authorization denied, so confirmation of valid signed content may be impossible.
- If there is a SubmissionSet unique ID included in the manifest, then the Content Consumer shall be able to verify that the submission set reference in the manifest is the

- 4190 one containing the documents which are listed in the manifest and the documents listed in the manifest are the complete list of documents in the submission set on the XDS Registry.

The decision on what degree of verification is needed is determined by the application and use case.

- 4195 The Content Consumer shall be able to validate content that uses SHA256 as well as SHA1.

5.5.6 Document Sharing Metadata

This section applies when the Content Creator or Content Consumer is utilizing a Document Sharing Profile for transport. This section defines the source for all required Document Sharing attributes and as many optional attributes as makes sense for implementers' applications.

4200 5.5.6.1 Document Sharing – DocumentEntry Metadata

The Signature Document shall have a compliant DocumentEntry with the following constraints:

5.5.6.1.1 XDSDocumentEntry.formatCode

- 4205 The XDSDocumentEntry.formatCode shall be **urn:ihe:iti:dsg:detached:2014** when the signature document is a Detached Signature and **urn:ihe:iti:dsg:enveloping:2014** when the signature document is an Enveloping Signature. The formatCode codeSystem shall be **1.3.6.1.4.1.19376.1.2.3**.

5.5.6.1.2 XDSDocumentEntry.classCode

The classCode value will be a value representing the high-level classification of Digital Signature type documents within the XDS Affinity Domain or Community.

4210 5.5.6.1.3 XDSDocumentEntry.typeCode

Where policy does not define a workflow specific typeCode, the following code should be used:

Coding schema = "ASTM"

Code value = "E1762"

Code value display name = "Full Document"

4215 5.5.6.1.4 XDSDocumentEntry.author

The author should represent the signer.

5.5.6.1.5 XDSDocumentEntry.eventCodeList

The eventCodeList shall contain the signature Purpose(s) from the Digital Signature block "CommitmentTypeIndication" element, using Table 5.5.2-1.

4220 **5.5.6.1.6 XDSDocumentEntry.mimeType**

Shall be “text/xml”

5.5.6.1.7 XDSDocumentEntry.title

Should be the same as the display name for the signature purpose

5.5.6.1.8 XDSDocumentEntry.language

4225 The language of the signature content shall be ‘art’ as in “artificial”.

5.5.6.2 Document Sharing – SubmissionSet Metadata

This document content profile makes no changes to the structure of Submission Sets.

5.5.6.3 Document Sharing - Folder Metadata

This document content profile makes no changes to the structure of Folders.

4230 **5.5.6.4 Document Associations**

When Detached Signature Option is used, the Content Creator shall use the “SIGNS” associationType Document Relationship to associate the signature (sourceObject) to the documents that it signs (targetObjects). See Section 4.2.2.

4235 When SubmissionSet Signature Option is used, the Content Creator may use the “SIGNS” associationType Document Relationship to associate the signature (sourceObject) to the documents that it signs (targetObjects). See Section 4.2.2.

5.5.7 Security Considerations

See XAdES specification for risk assessment and mitigation plan on Digital Signatures.

5.5.7.1 Content Creator

4240 When a Content Creator is grouped with an ATNA Secure Node or Secure Application, it shall create an Audit Message indicating the Signature Creation event.

4245

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(113031, DCM, "Signed Manifest")
	EventActionCode	M	"C" (Create)
	EventDateTime	M	not specialized
	EventOutcomeIndicator	M	not specialized
	EventTypeCode	M	EV("urn:ihe:iti:dsg", "IHE Transactions", "Document Digital Signature")
Audit Source (Content Consumer) (1)			
ActiveParticipant (User/System that requested Signature Creation) (0..n)			
ActiveParticipant (Patient indicated in the Signature Document) (0..n)			
ParticipantObjectIdentification (Digital Signature Document) (1)			

5.5.7.2 Content Consumer

When a Content Consumer is grouped with an ATNA Secure Node or Secure Application, it shall create an Audit Message indicating the Signature Verification event.

4250

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110007, DCM, "Report Verification")
	EventActionCode	M	"R" (Read)
	EventDateTime	M	not specialized
	EventOutcomeIndicator	M	not specialized
	EventTypeCode	M	EV("urn:ihe:iti:dsg", "IHE Transactions", "Document Digital Signature")
Audit Source (Content Consumer) (1)			
ActiveParticipant (User/System that requested Signature Validation) (0..n)			
ActiveParticipant (Patient indicated in the Signature Document) (0..n)			
ParticipantObjectIdentification (Digital Signature Document) (1)			

5.6 Intentionally Left Blank

Reserved for Advanced Patient Privacy Consents (APPC).

6 IHE Namespaces, Concept Domains, and Vocabularies

- 4255 This section references the namespaces, concept domains, and identifiers defined or referenced by the IHE ITI Technical Framework, and the vocabularies defined or referenced herein.

6.1 IHE ITI Namespaces

For a listing of the IHE Namespaces, see

http://wiki.ihe.net/index.php/OID_Registration#IHE_Domain_Namespaces

6.2 IHE ITI Concept Domains

Concept Domains are named categories of things that are used when it isn't possible to bind to a specific set of codes. There are a number of reasons you might not be able to define and bind to a specific set of codes, one of the most common being that the codes set needs to vary depending on locale or context.

- 4265 For a listing of the ITI Concept Domains see: *N/A* – none for ITI.

6.3 IHE ITI Format Codes and Vocabularies

The following vocabularies are referenced in the IHE ITI Technical Framework. An extensive list of registered vocabularies can be found at <http://hl7.amg-hq.net/oid/frames.cfm>.

6.3.1 IHE Format Codes

- 4270 For IHE Format Codes please see the IHE Format Codes wiki page at http://wiki.ihe.net/index.php/IHE_Format_Codes.

6.3.2 IHEActCode Vocabulary

- CCD⁵ ASTM/HL7 Continuity of Care Document
- CCR ASTM CCR Implementation Guide

- 4275 The IHEActCode vocabulary is a small vocabulary of clinical acts that are not presently supported by the HL7 ActCode vocabulary. The root namespace (OID) for this vocabulary is 1.3.5.1.4.1.19376.1.5.3.2. These vocabulary terms are based on the vocabulary and concepts used in the CCR and CCD standards listed above.

Please see the IHEActCode Vocabulary at

- 4280 http://wiki.ihe.net/index.php/IHEActCode_Vocabulary.

⁵ CCD is the registered trademark of Health Level Seven International and the use does not constitute endorsement by HL7.

6.3.3 IHERoleCode Vocabulary

The IHERoleCode vocabulary is a small vocabulary of role codes that are not presently supported by the HL7 Role Code vocabulary. The root namespace (OID) for this vocabulary is 1.3.5.1.4.1.19376.1.5.3.3.

4285 Please see the IHERoleCode Vocabulary at
http://wiki.ihe.net/index.php/IHERoleCode_Vocabulary

6.3.4 Other ITI Identifiers

URN or Identifier	Reference or Description
urn:ihe:iti:xpid:2017:patientIdentifierType	This distinguishes the usage of patient identifiers submitted in a Notify XAD-PID Link Change [ITI-64] transaction audit message. See ITI TF-2b: 3.64.5.1.

4290