

Diagnostic Imaging Common Services – Release 2

CDA & XDS Implementation Guide

Version: 2.0

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1. Introduction

1.1 Purpose

The purpose of this Implementation Guide is to provide formal, implementable specifications for exchange of Diagnostic Imaging reports and manifests using the Cross-Enterprise Document Sharing (XDS) and the Cross-enterprise Document Sharing for Imaging (XDS-I) profiles from Integrating the Healthcare Enterprise International (IHE).

1.2 Background

This guide contains information about the format of the CDA Header to be utilized for reports and the XDS services as they should be implemented, including the affinity domain configuration in Ontario. It also contains information on how to transform an HL7 v2 ORU message into a CDA document.

1.2.1 Ontario vs. Pan-Canadian Standards

If pan-Canadian standards are available, why does Ontario create their own standards?

- Pan-Canadian standards have been developed in a number of clinical and administrative domains. These standards are intended to cover the needs and requirements of all jurisdictions across the country. As such, there are elements of these standards that are not appropriate in Ontario and need to be removed / constrained. We would expect jurisdictional differences to be small and manageable, primarily focused on legislative and practice differences amongst the jurisdictions.
- Standards being developed/proposed for use in Ontario by eHealth Ontario are subsets of pan-Canadian standards and quite closely aligned, taking into account Ontario constraints.
- Where there are no pan-Canadian standards, the eHealth standards team works with projects to develop Ontario standards which are subsequently proposed for consideration as pan-Canadian standards.
- For all Ontario standards, the eHealth standards team works with Infoway Standards Collaborative working groups to ensure that Ontario requirements are incorporated into relevant pan-Canadian standards.

1.3 Audience

The audience for this document includes eHealth Ontario Programs and any organizations implementing the specifications contained in this Implementation Guide.

The intended audience includes technical and business audiences who will use the guide to develop implementations and validate that these implementations conform to the specifications and to the requirements of stakeholder organizations. Readers are expected to have some basic understanding of XDS and CDA methodology and implementations.

1.4 Scope

The scope of this Implementation Guide is primarily on the specifications required by the external implementers of Diagnostic Imaging Common Service, Release 1. As such, any additional information that is related to the internal services for testing is not included.

1.5 Release Mechanism and Updates

1.5.1 Distribution

A copy of this implementation guide and related documentation are available in electronic format upon request from eHealth Ontario Standards team.

1.5.2 Update frequency

Future updates will be made on an as-needed basis.

1.6 Approach

In the development of this Implementation Guide, the Project team referenced material from various sources. (See [Table 1: Reference Document](#))

1.7 Referenced Documents

Document Name	Version	Comments
eHealth DI CS Interoperability Vocabulary	v0104	Released with this Implementation Guide as a bundle
CDA R2 Normative Standard	R2, 2005	http://www.hl7.org/implement/standards/product_brief.cfm?product_id=7
Pan-Canadian CDA Header Implementation Guide	1.0 Final	https://infocentral.infoway-inforoute.ca/2_Standards/1_pan-Canadian_Standards/Messaging/t_Clinical_Document_Architecture_(CDA)
Diagnostic Imaging Common Services Project – Release 1, Business Requirements Document	1.0 Final	To obtain this document, please contact DI Program Support Specialist - servicedesk@ehealthontario.on.ca
Diagnostic Imaging Consumer Implementation Guide – Transport Specification	0.01 Draft	To obtain this document, please contact eHealth Ontario standards at - architecture@ehealthontario.on.ca

Document Name	Version	Comments
ELGA CDA Implementierungsleitfaden: Registrierung von CDA Dokumenten in ELGA mit IHE Cross-Enterprise Document Sharing: XDS Metadaten (XDSDocumentEntry)	2.01a	http://www.elga.gv.at/fileadmin/user_upload/uploads/download_Papers/Harmonisierungsarbeit/150129_upload/HL7_Implementation_Guide_for_CDA_R2_-_Pflegerischer_Entlassungsbrief_V2.05.pdf
epSOS CDA Guide, Appendix C – Pivot Documents Specification	0.0.7	http://www.epsos.eu/uploads/tx_epsosfileshare/D3.5.2_Appendix_C_Pivot_Document_Specifications_01.pdf
HL7 Messaging Standard Version 2	Normative	http://www.hl7.org/implement/standards/product_matrix.cfm
HL7 Version 2: XML Encoding Syntax	Release 1	http://www.hl7.org/implement/standards/product_brief.cfm?product_id=83
IHE ITI Technical Framework	Revision 9.0, August 2012	http://ihe.net/Technical_Frameworks/#ITI
IHE Patient Care Coordination Technical Framework, Volume 2, section 4.1	Revision 8.0, August 2012	http://www.ihe.net/Technical_Framework/upload/IHE_PCC_TF_Vol2.pdf
The CDA Book by Keith W. Boone		Springer; ISBN 978-0-85729-335-0
US Consolidated CDA guide	May 2012	http://www.hl7.org/implement/standards/product_brief.cfm?product_id=258
The DICOM Standard	2014	http://medical.nema.org/standard.html

Table 1: Reference Documents

1.8 Acronyms

Acronym	Description
CDA	Clinical Document Architecture
DI CS	Diagnostic Imaging Common Services

DICOM	Digital Imaging and Communications in Medicine
ebXML	Electronic Business eXtensible Markup Language
EHR	Electronic Health Record
HL7	Health Level Seven
iEHR	Interoperable Electronic Health Record
IHE	Integrating the Health Care Enterprise
ITI	(IHE) IT Infrastructure
LOINC	Logical Observation Identifiers Names and Codes
OID	Object Identifier
ORU	Observation Result message
RIM	Reference Information Model
RIS	Radiology Information System
SNOMED CT	Systematized Nomenclature Of Medicine Clinical Terms
XDS	Cross-Enterprise Document Sharing
XDS-I.b	Cross-Enterprise Document Sharing for Imaging

Table 2: Acronyms

1.9 Assumptions

The following assumptions have been identified as applicable to this Implementation Guide Volume.

Subject Area	Assumption
CDA R2	The specifications have been developed following the HL7 CDA R2 (Health Level 7 Clinical Document Architecture Release 2) development methodology. For those readers who do not have an understanding of the HL7 Reference Information Model (RIM), the HL7 methodology, the authors recommend that the reader refer to the HL7 Release documentation (available to HL7 members at www.hl7.org) and Canada Health Infoway Draft CDA Header Implementation Guide (available to members at https://svn.emri.infoway-inforoute.ca/2/Standards) to augment this document.
DI CS Business requirements	For those readers who do not have an understanding of the objectives, scope, assumptions and constraints of the Diagnostic Imaging Common Services (DI CS) Project – Release 1, refer to the Business Requirements Document for more information.

Subject Area	Assumption
OID	Object Identifiers (OIDs), except for those pertaining to terminology / vocabulary systems, are expected to be addressed across all specifications and are not specifically called out in this document.
Privacy & Security	Privacy and security policy implications are typically addressed across all specifications (i.e. they apply not only to DI CS but also to eReferral, Registries, Medication Management, etc.), but are not specifically called out in this document. Refer to the Diagnostic Imaging Consumer Implementation Guide – Transport Specification
XDS/XDS-I	The specifications have been developed following the Cross-enterprise Document Sharing (XDS) and the Cross-enterprise Document Sharing for Imaging (XDS-I) development methodology. For those readers who do not have an understanding of the Integrating the Health Care Environment (IHE) technical framework, the authors recommend that the reader refer to the IHE Release documentation (available to public at http://www.ihe.net/Technical_Framework/index.cfm) to augment this document.

Table 3: Assumptions

1.10 Risks

None identified.

2. Business-based Considerations

The following sections identify business-based considerations.



The developers of this Standard do not assert that the set of implementation considerations and guidelines are complete.

2.1 Security and Privacy Considerations

Prior to implementing Diagnostic Imaging Common Service (DI CS) interface, an organization should appropriately complete security and privacy risk assessments and implement the recommendations of those assessments. Care should be taken to ensure that the confidentiality and integrity of Personal Health Information in transit and at rest can be maintained at a level that is appropriate for the implementing organization.

Information from the Document Repository and Registry Common Services is considered to be Personal Information and Personal Health Information in the context of an EHR. As a result, access to the health client information must be restricted to only appropriately authorized users and used on a need-to-know basis.

For more information refer to the Diagnostic Imaging Consumer Implementation Guide – Transport Specification available upon request from the DI CS project team.

2.2 Vocabularies

Any value sets or vocabularies mentioned in this document are found in *eHealth DI CS Interoperability Vocabulary*, released as a bundle. See also Section 4 Vocabulary-based considerations.

2.3 OID

There are many places in this implementation guide that the use of OIDs is required. OIDs are object identifiers that serve as worldwide unique names for objects. All OIDs used in eHealth Ontario projects must conform to eHealth Ontario's OIDs Policy.

For more information, or to obtain the proper OIDs for use in the DI project, contact the eHealth Ontario Standards Team at architecture@ehealthontario.on.ca

2.4 Requests for change

Change requests for this implementation guide can be directed to the eHealth Ontario standards email address at: architecture@ehealthontario.on.ca

3. Implementation Considerations



The developers of this Standard do not assert that the set of implementation considerations and guidelines are complete.

3.1 Conformance Conventions Used in This Guide

3.1.1 Open and Closed Templates

In open templates, all of the features of the CDA R2 base specification are allowed except as constrained by the templates. By contrast, a closed template specifies everything that is allowed and nothing further may be included. Open templates allow HL7 implementers to develop additional structured content not described within this guide. HL7 encourages implementers to bring their use cases forward as candidate requirements to be formalized in a subsequent version of the standard to maximize the use of shared semantics.

eHealth Ontario has decided to make the header of the CDA template presented in this document an open template. This decision is made in order to enable implementers to include as much information as possible about the CDA document.

3.1.2 Conformance Verbs (Keywords)

The following definitions of the conformance verbs are provided in the HL7 Version 3 Publishing Facilitator's Guide (<http://www.hl7.org/v3ballot/html/help/pfg/pfg.htm>):

- **SHALL:** Required/Mandatory.
- **SHOULD:** Best Practice/Recommendation
- **MAY:** Acceptable/Permitted

The following are the definitions of the attribute conformance as defined in the Pan-Canadian Implementation Guide volume 0:

- **Mandatory (Must Exist)**
A valid instance of this message must include all mandatory content elements.
- **Populated (Expected to Exist)**
Content elements in this category must be present in all circumstances. However, on occasion, values for these elements will not be present and a Null Flavour must be provided to indicate why the data is not being provided (e.g. masked for hidden/protected data, unable to send due to regulatory constraint).
- **Required (May Exist)**
These content elements may or may not be present in the message but implementers are required to support the interchange of this information.
- **Optional (May or May Not be Supported)**
These content elements may or may not be present and there is no requirement for implementers to support the interchange of this information.

The following table summarizes the mapping between conformance verbs and attributes conformance as they are used in this document:

Conformance Verbs	Attribute conformance defined in Pan-Canadian context
SHALL	Mandatory: expressed with the keyword "SHALL". The data SHALL be sent and the use of nullFlavor is explicitly precluded. Note that any element declared to be Mandatory must have a minimum cardinality of one. Populated: expressed with the keyword "SHALL". The data SHALL be sent if available and the use of nullFlavor is explicitly required to indicate why valid data is not provided. The receiving system must support incoming of the standardized, agreed upon data. Note that any element declared to be Populated must have a minimum cardinality of one. Required: expressed with the keyword "SHALL SUPPORT". The data SHALL be sent if available. Note that any element declared to be Required has a minimum cardinality of zero.
SHOULD	Optional: expressed with the keyword "SHOULD". The data SHOULD be sent if available, but may be omitted. Note that any element declared Optional has a minimum cardinality of zero.

Table 4: Conformance verbs and attributes mapping

Examples of use conformance verbs to convey attribute conformance

1. Example of use of the conformance verbs to express Mandatory attributes:
SHALL contain at least one [1..*] id and SHALL NOT contain nullFlavor.
<id extension="999021" root="2.16.840.1.113883.19"/>
2. Example of use of the conformance verbs to express Populated attributes:
SHALL contain exactly one [1..1] id and SHALL contain a nullFlavor if no value is provided.
<id nullFlavor="NI"/>
3. Example of use of the conformance verbs to express Required attributes:
SHALL SUPPORT up to one [0..1] effectiveTime
4. Example of use of the conformance verbs to express Optional attributes:
SHOULD contain zero or one [0..1] effectiveTime

3.1.3 Cardinality

When the conformance is Mandatory or Populated the number of allowable occurrences of an element must be at least 1. The cardinality is expressed as [1..1] or [1..*], depending on whether or not the element can repeat. Furthermore, both Mandatory and Populated use the verb SHALL. As explained above, the former prohibits the use of NullFlavors and the latter allows the use of NullFlavors when the values are not available to indicate where the data is not being provided.

If an element is Required or Optional, the number of allowable occurrences of an element may be 0; the cardinality will be expressed as [0..1] or [0..*], depending on whether or not the element can repeat.

3.1.4 Vocabulary Conformance

See Section 4. Vocabulary-base Considerations

3.1.5 Null Flavor

Sometimes data is not available to be sent in the messages or clinical documents: an item may be unknown, not relevant, or not computable. In HL7, a flavor of null, or nullFlavor, describes the reason for missing data.

Example: NullFlavor

```
<effectiveTime nullFlavor="NA"/>
```

Refer to *eHealth DI CS Interoperability Vocabulary* for detail.

3.1.6 XPath Notation

This document uses XML Path Language (XPath) notation in conformance statements and elsewhere to identify the Extended Markup Language (XML) elements and attributes within the CDA document instance to which various constraints are applied. The implicit context of these expressions is the root of the document. This notation provides a mechanism that will be familiar to developers for identifying parts of an XML document.

The path is constructed from node names and attribute names (prefixed by a '@') and concatenated with a '/' symbol.

Example: XML document example

```
<author>
  <assignedAuthor>
    ...
    <code codeSystem='2.16.840.1.113883.6.96' codeSystemName='SNOMED CT' code='
    310512001' displayName='Medical oncologist (occupation)' />
    ...
  </assignedAuthor>
</author>
```

In the above example, the code attribute of the code could be selected with the XPath expression below.

```
author/assignedAuthor/code/@code
```

4. Vocabulary-based Considerations



The developers of this Standard do not assert that the set of implementation considerations and guidelines are complete.

4.1 Vocabulary Conformance

The templates in this document draws vocabulary content from several terminology code systems such as LOINC® and SNOMED CT®. These vocabularies are defined in various supporting specifications and may be maintained by other bodies, as is the case for the LOINC® and SNOMED CT® vocabularies.

Note that value-set identifiers (e.g., Value Set 2.16.840.1.113883.1.11.78 Observation Interpretation (HL7) STATIC) do not appear in CDA submissions; they tie the conformance requirements of an implementation guide to the appropriate code system for validation.

Value-set bindings adhere to HL7 Vocabulary Working Group best practices, and include both a conformance verb (SHALL, SHOULD, and MAY.) with an indication of STATIC binding. For Ontario implementation, the value set binding is set to STATIC value sets only. Static value sets use dates as the versioning mechanism to identify the value set required to support the specified CDA attribute for implementation. In case of using static value set binding, HL7 International best practice encourages system be using the latest version of the value set available.

Dynamic value sets on the other hand does not specify the specific version of value set and implementation would be expected to check against the currency of value set content prior to data transmission. This type of value set increases complexity for initial implementation and will be considered as business requirements arise.

- The conformance verb “SHALL” corresponds to the coding strength “Coded with No Extensibility (CNE)” which indicates no codes outside of the defined value set can be used for interoperability.
- The conformance verb “SHOULD” corresponds to “Coded With Extensibility (CWE)” which indicates content from the defined value set is strongly recommended to be implemented first, prior to examining inclusion of local codes. Coding strength CNE is used wherever possible to guarantee the highest level of interoperability. Use of coding strength CWE eases implementation, however interoperability will suffer as further negotiations between systems are required to transmit codes outside of the agreed upon value set content.
- The third type of vocabulary binding is a simplified constraint, used when the binding is to a single code, and includes the meaning of the code.

Example: Binding to a single code Vocabulary Conformance Statement

SHALL be fixed to the code 11405-4 (Problem List) from the code system LOINC having the OID 2.16.840.1.113883.6.1 effective 1995-04-24.

The notation conveys the actual code (11450-4), the code’s displayName (Problem List), the OID of the codeSystem from which the code is drawn (2.16.840.1.113883.6.1), and the codeSystemName (LOINC).

HL7 Data Types Release 1 requires the codeSystem attribute unless the underlying data type is “Coded Simple” or “CS”, in which case it is prohibited. The displayName and the codeSystemName are optional, but recommended, in all cases.

The above example would be properly expressed as follows.

Example: XML expression of a single-code binding

```
<code code="11450-4" codeSystem="2.16.840.1.113883.6.1"/>
<!-- or -->
<code code="11450-4" codeSystem="2.16.840.1.113883.6.1"
  displayName="Problem List" codeSystemName="LOINC"/>
```

A full discussion of the representation of vocabulary is outside the scope of this document; for more information, see the HL7 V3 Normative Edition 2010 sections on Abstract Data Types and XML Data Types Release 1 (R1).

There is a discrepancy in the implementation of translation code versus the original code between HL7 Data Types R1 and the convention agreed upon for this specification. The R1 data type requires the original code in the root. This implementation guide specifies the standard code in the root, whether it is original or a translation. This discrepancy is resolved in HL7 Data Types R2.

Example: XML expression of Translation code example

```
<code code='206525008' displayName='neonatal necrotizing enterocolitis'
  codeSystem='2.16.840.1.113883.6.96' codeSystemName='SNOMED CT'>
  <translation code='NEC-1' displayName='necrotizing enterocolitis' codeSystem='2.16.840.1.113883.19'/>
</code>
```

5. Ontario CDA Header Implementation for Reports

This template describes constraints that apply to the CDA header as it should be implemented in Ontario. Please note that this is an open template to allow implementers to include as much information as possible in the header. This header reflects the constraints that are defined in the other CDA implementation guides (see Section 1.7 Reference Documents), in order to align as closely as possible with existing implementations.

This Header Implementation guide covers only MANDATORY elements of the header; those needed for compliance with the CDA R2 standard, those needed for compliance with the pan-Canadian header approach, and those needed for mapping to XDS metadata. Other OPTIONAL elements are covered in other implementation guides and, if included in compliance with the CDA R2 standards, should be compatible with any implementation.

Note, for DI CS Release 1, the CDA body will contain unstructured, base64-encoded text in the <component>. See B.1.2 for example of <nonXMLBody>.

Exams containing multiple studies would still result in single report document (unless there are addendums). There is no requirement that individual manifests (discussed in section 6) need to be associated with their own report. All documents resulting from the same exam procedure (i.e. two manifests and one report) will all share the same accession number and can be grouped together by a consumer application using that accession number.

5.1 Guiding Principles

All specifications will align with International and pan-Canadian Standards

- Data Types will be from the pan-Canadian Standards, preferentially. If such standard does not exist, Data Types will be taken from HL7 v3 R1. All pan-Canadian data types are based on R1. Those Data Types pre-adopted from R2 are not in use.
- All Date and Time Data Types will conform with the Canadian Realm Date and Time Data Type, except where noted
- All Name Data Types will conform with the Canadian Realm Person Name Data Type, except where noted
- All Address Data Types will conform with the Canadian Realm Address Data Type, except where noted
- All Tele-communications Data Types will conform with the Canadian Realm Telecom Data Type, except where noted

5.2 Clinical Document RIM Attributes

5.2.1 Clinical Document Header/realmCode

Defines the realm code for use by Canada.

SHALL contain exactly one [1..1] realmCode to be fixed to the code CA from the code system HL7Realm having the OID 2.16.840.1.113883.5.1124 effective 2012-08-02.

5.2.2 ClinicalDocument/typeId

The typeId is a technology-neutral explicit reference to this CDA, Release Two specification, and must be valued as follows: ClinicalDocument.typeId.root = "2.16.840.1.113883.1.3" (which is the OID for HL7 Registered models); ClinicalDocument.typeId.extension = "POCD_HD000040".

SHALL contain exactly one [1..1] typeId.

- a. This typeId SHALL contain exactly one [1..1] @root to be fixed to 2.16.840.1.113883.1.3 and SHALL NOT contain nullFlavor.
- b. This typeId SHALL contain exactly one [1..1] @extension to be fixed to "POCD_HD000040" and SHALL NOT contain nullFlavor.

5.2.3 ClinicalDocument/templateId

CDA provides a mechanism to reference a template that has been assigned a unique identifier using the templateId attribute. A ClinicalDocument that conforms to the Ontario Header specification shall contain at least the pan-Canadian header templateId. Clinical Documents for Diagnostic Imaging in Ontario shall also conform to the XDS-I specification and shall contain the XDS-I report templateId.

SHALL contain two or more [2..*] templateId :

- a. SHALL contain exactly one [1..1] @root to be fixed to 2.16.840.1.113883.2.20.4.1.1 that represents the pan-Canadian CDA Header and SHALL NOT contain nullFlavor.
- b. SHALL contain exactly one [1..1] @root to be fixed to 1.3.6.1.4.1.19376.1.2.21 that represents the XDS-I report template id and SHALL NOT contain nullFlavor

5.2.4 ClinicalDocument/@classCode

SHALL contain exactly one [1..1] classCode

- a. SHALL be fixed to the code DOCCLIN from the code system ActClass having the OID 2.16.840.1.113883.5.6 effective 2009-08-01 and SHALL NOT contain nullFlavor.

5.2.5 ClinicalDocument/@moodCode

SHALL contain exactly one [1..1] moodCode

- a. SHALL be fixed to the code EVN (event) from the code system ActMood having the OID 2.16.840.1.113883.5.1001 effective 2009-08-01 and SHALL NOT contain nullFlavor.

5.2.6 ClinicalDocument/id

Represents the unique instance identifier of a clinical document.

SHALL contain exactly one [1..1] globally unique id represented using II from Data Type Release 1 and SHALL NOT contain nullFlavor.

5.2.7 ClinicalDocument/code

The code specifies the particular type of document (e.g. Diagnostic Imaging Report).

SHALL contain exactly one [1..1] code

- a. SHALL be fixed to the code 18748-4 from the code set having the OID 2.16.840.1.113883.6.1 (from Value Set ClinicalReportDocumentTypeDi 2.16.840.1.113883.3.239.12.37 STATIC 2015-01-23)

5.2.8 ClinicalDocument/title

Represents the title of the document. . (See 7.1.1 title and Appendix B for an example of display name)

SHALL contain exactly one [1..1] title and SHALL NOT contain nullFlavor and SHOULD contain the display name of the ClinicalDocument/code.

5.2.9 ClinicalDocument/effectiveTime

Represents the document creation time, when the document first came into being. Where the CDA document is a transform from an original document in some other format, the ClinicalDocument.effectiveTime is the time the original document is created, in this case the time the radiologist created the report.

SHALL contain exactly one [1..1] effectiveTime and SHALL NOT contain nullFlavor

5.2.10 ClinicalDocument/confidentialityCode

Confidentiality code indicates the appropriate control on disclosure of information in the document. Confidentiality is a required contextual component of CDA, where the value expressed in the header holds true for the entire document, unless overridden by a nested value.

SHALL contain exactly one [1..1] confidentialityCode

- a. SHALL comply with the following value set assertion, effective 2008-12-17: - the set of codes in the expansion of pan-Canadian value set 2.16.840.1.113883.2.20.3.139
x_BasicConfidentialityKind STATIC and SHALL NOT contain nullFlavor.

5.2.11 ClinicalDocument/languageCode

Specifies the primary human language the document is represented in.

SHALL contain exactly one [1..1] languageCode

- a. SHALL be fixed to the code “eng-CA” or “fra-CA” (3-letter ISO 639-3 language code and 2-letter ISO 3166-1 country code) from value set assertion, effective 2008-12-17: - the set of codes in the expansion of pan-Canadian value set 2.16.840.1.113883.2.20.3.51 LanguageCode
STATIC and SHALL NOT contain nullFlavor.

5.3 Participations and Roles

5.3.1 RecordTarget

The recordTarget records the information about the patient whose health information is described by the clinical document.

SHALL contain exactly one [1..1] recordTarget.

- a. recordTarget SHALL contain exactly one [1..1] typeCode and SHALL be fixed to the code RCT from the code system ParticipationType having the OID 2.16.840.1.113883.5.90 effective 2012-08-02 and SHALL NOT contain nullFlavor.
- b. recordTarget SHALL contain exactly one [1..1] contextControlCode and SHALL be fixed to the code OP from the code system ContextControl having the OID 2.16.840.1.113883.5.1057 effective 2009-08-01 and SHALL NOT contain nullFlavor.
- c. recordTarget SHALL contain exactly one [1..1] patientRole and SHALL NOT contain nullFlavor.

- i. patientRole SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code PAT from code system RoleClass having the OID 2.16.840.1.113883.5.110 effective 2009-08-01 and SHALL NOT contain nullFlavor.
- ii. patientRole SHALL contain at least one [1..*] id which SHALL NOT contain nullFlavor. The first id SHALL contain the local MRN for the patient.
- iii. patientRole SHALL SUPPORT zero or more [0..*] addr
- iv. patientRole SHALL SUPPORT zero or more [0..*] telecom
- v. patientRole SHALL contain exactly one [1..1] patient and SHALL NOT contain nullFlavor.
 - 1. patient SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code PSN from code system EntityClass having the OID 2.16.840.1.113883.5.110 effective 2009-08-01 and SHALL NOT contain nullFlavor.
 - 2. patient SHALL contain exactly one [1..1] determinerCode and SHALL be fixed to the code INSTANCE from code system EntityDeterminer having the OID 2.16.840.1.113883.5.30 effective 2012-08-02 and SHALL NOT contain nullFlavor.
 - 3. patient SHALL contain exactly one [1..1] name.
 - 4. patient SHALL contain exactly one [1..1] administrativeGenderCode and SHALL comply with the following value set assertion, effective 2008-12-17: - the set of codes in the expansion of pan-Canadian value set 2.16.840.1.113883.1.11.1 AdministrativeGender STATIC and SHALL NOT contain nullFlavor.
 - 5. patient SHALL contain exactly one [1..1] birthTime.

5.3.2 Author

The author element represents the creator of the clinical document. The Author provides demographic information on the author(s) of the document.

SHALL contain at least one [1..*] author and SHALL NOT contain nullFlavor.

- a. author SHALL contain exactly one [1..1] @typeCode
 - i. @typeCode SHALL be fixed to the code AUT from the code system ParticipationType having the OID 2.16.840.1.113883.5.90 effective 2012-08-02.
- b. author SHALL contain exactly one [1..1] contextControlCode and SHALL be fixed to the code OP from the code system ContextControl having the OID 2.16.840.1.113883.5.1057 effective 2009-08-01.
- c. author SHALL contain exactly one [1..1] time.
- d. author SHALL contain exactly one [1..1] assignedAuthor and SHALL contain a nullFlavor if no value is provided.
 - i. assignedAuthor SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code ASSIGNED from code system RoleClass having the OID 2.16.840.1.113883.5.110 effective 2009-08-01 and SHALL NOT contain nullFlavor
 - ii. assignedAuthor SHALL contain at least one [1..*] id which SHALL conform to the II data type.
 - iii. assignedAuthor SHOULD contain zero or one [0..1] code which
 - 1. SHALL comply with the following value set assertion effective 2012-05-31: the set of codes in the value set 2.16.840.1.113883.2.20.3.265 ProviderRoleCode STATIC.
 - iv. SHALL SUPPORT zero or more [0..*] addr
 - v. This assignedAuthor SHALL contain at least one [1..*] telecom
 - vi. This assignedAuthor SHALL contain exactly one [1..1] assignedPerson. This assignedPerson
 - a. SHALL contain exactly one [1..1] @classcode and SHALL be fixed to the code PSN from code system EntityClass having the OID 2.16.840.1.113883.5.41 effective 2012-08-02
 - b. SHALL contain exactly one [1..1] determinerCode and SHALL be fixed to the code INSTANCE from code system EntityDeterminer having the OID 2.16.840.1.113883.5.30 effective 2012-08-02.
 - c. SHALL contain at least one [1..*] name
 - vii. SHALL SUPPORT zero or one [0..1] representedOrganization
 - 1. SHALL contain exactly one [1..1] classCode and SHALL be fixed to the code ORG from code system EntityClass having the OID 2.16.840.1.113883.5.41 effective 2012-08-02.

2. SHALL contain exactly one [1..1] determinerCode and SHALL be fixed to the code INSTANCE from code system EntityDeterminer having the OID 2.16.840.1.113883.5.30 effective 2012-08-02.
3. SHALL contain exactly one [1..1] id which SHALL conform to the II data type and SHALL NOT be NullFlavor.
4. SHALL contain one or more [1..*] name.
5. SHOULD contain zero or more [0..*] addr.
6. SHOULD contain zero or more [0..*] telecom.

5.3.3 Custodian

The custodian element represents the organization that is in charge of maintaining the document. The custodian is the steward that is entrusted with the care of the document. Every CDA document has exactly one custodian.

SHALL contain exactly one [1..1] custodian and SHALL NOT contain NullFlavor.

- a. custodian SHALL contain exactly one [1..1] typeCode and SHALL be fixed to the code CST from the code system ParticipationType having the OID 2.16.840.1.113883.5.90 effective 2012-08-02.
- b. custodian SHALL contain exactly one [1..1] assignedCustodian.
 - i. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code ASSIGNED from code system RoleClass having the OID 2.16.840.1.113883.5.110 effective 2009-08-01.
 - ii. SHALL contain exactly one [1..1] representedCustodianOrganization.
 1. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code ORG from code system EntityClass having the OID 2.16.840.1.113883.5.41 effective 2012-08-02.
 2. SHALL contain exactly one [1..1] determinerCode and SHALL be fixed to the code INSTANCE from code system EntityDeterminer having the OID 2.16.840.1.113883.5.30 effective 2012-08-02."
 3. SHALL contain at least one [1..*] id which SHALL conform to the II data type and SHALL NOT be NullFlavor
 4. SHALL contain exactly one [1..1] name and SHALL NOT be NullFlavor.
 5. SHALL SUPPORT zero or one [0..1] telecom.
 6. SHALL SUPPORT zero or one [0..1] addr.

5.3.4 InformationRecipient

The informationRecipient element records the intended recipient of the information at the time the document is created.

SHALL SUPPORT zero or more [0..*] informationRecipient.

- a. SHALL contain exactly one [1..1] typeCode and SHALL be fixed to the code PRCP from the code system ParticipationType having the OID 2.16.840.1.113883.5.90 effective 2012-08-02.
- b. SHALL contain exactly one [1..1] intendedRecipient.
 - i. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code ASSIGNED from code system RoleClass having the OID 2.16.840.1.113883.5.110 effective 2009-08-01 and SHALL NOT contain nullFlavor
 - ii. SHALL SUPPORT zero or more [0..*] id which SHALL conform to the II data type.
 - iii. SHOULD contain zero or more [0..*] telecom.
 - iv. SHOULD contain zero or more [0..*] addr.
 - v. This intendedRecipient SHALL SUPPORT up to one [0..1] informationRecipient
 1. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code PSN from code system EntityClass having the OID 2.16.840.1.113883.5.41 effective 2012-08-02.
 2. SHALL contain exactly one [1..1] determinerCode and SHALL be fixed to the code INSTANCE from code system EntityDeterminer having the OID 2.16.840.1.113883.5.30 effective 2012-08-02.

3. SHALL contain at least one [1..*] name
- vi. This intendedRecipient SHALL SUPPORT up to one [0..1] receivedOrganization.
 1. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code ORG from code system EntityClass having the OID 2.16.840.1.113883.5.41 effective 2012-08-02.
 2. SHALL contain exactly one [1..1] determinerCode and SHALL be fixed to the code INSTANCE from code system EntityDeterminer having the OID 2.16.840.1.113883.5.30 effective 2012-08-02.
 3. SHALL contain exactly one [1..1] id which SHALL conform to the II data type and SHALL NOT be NullFlavor.
 4. SHALL contain one or more [1..*] name.
 5. SHOULD contain zero or more [0..*] addr.
 6. SHOULD contain zero or more [0..*] telecom.

5.3.5 LegalAuthenticator

The legalAuthenticator identifies the person who has legally authenticated the document.

SHOULD contain up to one [0..1] legalAuthenticator.

- a. SHALL contain exactly one [1..1] typeCode and SHALL be fixed to the code LA from the code system ParticipationType having the OID 2.16.840.1.113883.5.90 effective 2012-08-02.
- b. SHALL contain exactly one [1..1] contextControlCode and SHALL be fixed to the code OP from the code system ContextControl having the OID 2.16.840.1.113883.5.1057 effective 2009-08-01.
- c. SHALL contain exactly one [1..1] time.
- d. SHALL contain exactly one [1..1] signatureCode.
 - i. SHALL contain exactly one [1..1] signatureCode and SHALL be fixed to the code S from the code system Participationsignature having the OID 2.16.840.1.113883.5.89 effective 2012-08-02
- e. SHALL contain exactly one [1..1] assignedEntity.
 - i. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code ASSIGNED from code system RoleClass having the OID 2.16.840.1.113883.5.110 effective 2009-08-01.
 - ii. SHALL contain at least one [1..*] id which SHALL conform to the II data type and SHALL NOT contain nullFlavor.
 - iii. SHOULD contain up to one [0..1] code and SHALL comply with the following value set assertion effective 2012-05-31: the set of codes in the value set 2.16.840.1.113883.2.20.3.265 ProviderRoleCode STATIC.
 - iv. SHALL contain at least one [1..*] addr and SHALL NOT contain NullFlavor.
 - v. SHALL contain at least one [1..*] Telecom and SHALL NOT contain NullFlavor.
 - vi. SHALL contain exactly one [1..1] assignedPerson.
 1. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code PSN from code system EntityClass having the OID 2.16.840.1.113883.5.41 effective 2012-08-02.
 2. SHALL contain exactly one [1..1] determinerCode and SHALL be fixed to the code INSTANCE from code system EntityDeterminer having the OID 2.16.840.1.113883.5.30 effective 2012-08-02.
 3. SHALL contain at least one [1..*] name and SHALL NOT contain NullFlavor.
 - vii. SHALL SUPPORT up to one [0..1] representedOrganization.
 1. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code ORG from code system EntityClass having the OID 2.16.840.1.113883.5.41 effective 2012-08-02.
 2. SHALL contain exactly one [1..1] determinerCode and SHALL be fixed to the code INSTANCE from code system EntityDeterminer having the OID 2.16.840.1.113883.5.30 effective 2012-08-02.
 3. SHALL contain exactly one [1..1] id which SHALL conform to the II data type and SHALL NOT be NullFlavor.
 4. SHALL contain one or more [1..*] name.
 5. SHOULD contain zero or more [0..*] addr.
 6. SHOULD contain zero or more [0..*] telecom.

5.4 Related Acts and Related Documents

5.4.1 InFulfillmentOf

The inFulfillmentOf element represents orders that are fulfilled by this document.

SHALL contain one or more [1..*] inFulfillmentOf.

- a. SHALL contain exactly one [1..1] typeCode and SHALL be fixed to the code FLFS from the code system ActRelationshipType having the OID 2.16.840.1.113883.5.1002 effective 2012-08-02
- b. SHALL contain exactly one [1..1] order.
 - i. SHALL contain exactly one [1..1] @classCode and SHALL comply with the following value set assertion, effective 2012-08-02: - the set of codes in the expansion of value set 2.16.840.1.113883.1.11.13856 ActClassRoot STATIC
 - ii. SHALL contain one or more [1..*] id .The first id SHALL contain the Accession number.
 - iii. SHOULD contain zero or one [0..1] priorityCode and SHALL comply with the following value set assertion, effective 2008-12-17:: - the set of codes in the expansion of value set 2.16.840.1.113883.2.20.3.15 ActPriority STATIC

5.4.2 DocumentationOf

The documentationOf represents the main act, such as a colonoscopy or a cardiac stress study, being documented.

SHALL contain one or more [1..*] documentationOf.

- a. SHALL contain exactly one [1..1] typeCode and SHALL be fixed to the code DOC from the code system ActRelationshipType having the OID 2.16.840.1.113883.5.1002 effective 2012-07-24.
- b. SHALL contain exactly one [1..1] serviceEvent.
 - i. SHALL contain exactly one [1..1] @classCode and SHALL comply with the following value set assertion, effective 2012-08-02: - the set of codes in the expansion of value set 2.16.840.1.113883.1.11.13856 ActClassRoot STATIC
 - ii. SHALL contain exactly one [1..1] @moodCode and SHALL be fixed to the code "EVN" (event) from the code system ActMood having the OID 2.16.840.1.113883.5.1001 effective 2009-08-01.
 - iii. SHOULD contain zero or more [0..*] id.
 - iv. SHALL contain exactly one [1..1] code,
 1. SHOULD contain the local procedure code.
 - v. SHALL contain exactly one [1..1] effectiveTime.
 - vi. SHOULD contain zero or more [0..*] performer
 1. The content SHALL contain one [1..1] typeCode and SHALL comply with the following value set assertion effective 2012-08-02: the set of codes in the expansion of value set 2.16.840.1.113883.1.11.19601 x_ServiceEventPerformer STATIC.
 2. SHOULD contain up to one [0..1] functionCode and SHALL comply with the following value set assertion effective 2012-08-02: the set of codes in the expansion of value set 2.16.840.1.113883.2.20.3.87 ParticipationFunction STATIC.
 3. SHOULD contain up to one [0..1] time
 4. SHALL contain exactly one [1..1] assignedEntity.
 - a. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code ASSIGNED from code system RoleClass having the OID 2.16.840.1.113883.5.110 effective 2009-08-01 and SHALL NOT contain nullFlavor
 - b. SHALL contain at least one [1..*] id which SHALL conform to the II data type and SHALL NOT contain NullFlavor.
 - c. SHOULD contain up to one [0..1] code and SHALL comply with the following value set assertion effective 2012-05-31: the set of codes in the value set 2.16.840.1.113883.2.20.3.265 ProviderRoleCode STATIC..
 - d. SHOULD contain zero or more if available [0..*] addr
 - e. SHOULD contain zero or more [0..*] telecom

- f. SHALL SUPPORT up to one [0..1] assignedPerson.
 - i. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code PSN from code system EntityClass having the OID 2.16.840.1.113883.5.41 effective 2012-08-02.
 - ii. SHALL contain exactly one [1..1] determinerCode and SHALL be fixed to the code INSTANCE from code system EntityDeterminer having the OID 2.16.840.1.113883.5.30 effective 2012-08-02.
 - iii. SHALL contain exactly one [1..1] name
- g. SHALL SUPPORT up to one [0..1] representedOrganization.
 - i. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code ORG from code system EntityClass having the OID 2.16.840.1.113883.5.41 effective 2012-08-02.
 - ii. SHALL contain exactly one [1..1] determinerCode and SHALL be fixed to the code INSTANCE from code system EntityDeterminer having the OID 2.16.840.1.113883.5.30 effective 2012-08-02.
 - iii. SHALL contain exactly one [1..1] id which SHALL conform to the II data type and SHALL NOT be NullFlavor.
 - iv. SHALL contain one or more [1..*] name.
 - v. SHOULD contain zero or more [0..*] addr.
 - vi. SHOULD contain zero or more [0..*] telecom.

5.4.3 ComponentOf

The componentOf element contains the encompassing encounter for this document. The encompassing encounter represents the setting of the clinical encounter during which the document act(s) or ServiceEvent occurred.

In order to represent providers associated with a specific encounter, they are recorded within the encompassingEncounter as participants.

SHOULD contain zero or one [0..1] componentOf

- a. SHALL contain exactly one [1..1] typeCode and SHALL be fixed to the code COMP from the code system ActRelationshipType having the OID 2.16.840.1.113883.5.1002 effective 2013-03-18.
- b. SHALL contain exactly one [1..1] encompassingEncounter
 - i. SHALL SUPPORT zero or more [0..*] id
 - ii. SHALL SUPPORT up to one [0..1] code and SHALL comply with the following value set assertion, effective 2008-12-17: the set of codes in the expansion of value set 2.16.840.1.113883.2.20.3.2 ActCareEventType STATIC
 - iii. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code ENC from the code system ActClass having the OID 2.16.840.1.113883.5.1002 effective 2013-03-18.
 - iv.
 - v. SHALL contain exactly one [1..1] @moodCode and SHALL be fixed to the code EVN (event) from the code system ActMood having the OID 2.16.840.1.113883.5.1001 effective 2013-03-18.
 - vi. SHALL contain exactly one [1..1] effectiveTime
 - vii. SHALL SUPPORT zero or one [0..1] location.
 - a. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code PLC from the code system EntityClass having the OID 2.16.840.1.113883.5.41 effective 2013-03-18.
 - b. SHALL contain exactly one [1..1] healthCareFacility.
 - i. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code SDLOC from the code system RoleClass having the OID 2.16.840.1.113883.5.110 effective 2013-03-18.
 - ii. SHALL SUPPORT zero or more [0..*] id.
 - iii. SHALL SUPPORT zero or one [0..1] code and SHALL comply with the following value set assertion effective 2008-12-17: the set of codes in the

- expansion of 2.16.840.1.113883.3.239.12.33
ServiceDeliveryLocationRoleType STATIC.
- iv. SHALL SUPPORT up to one [0..1] location.
 - 1. SHALL contain exactly one [1..1] name.
 - 2. SHALL SUPPORT zero or one [0..1] addr.
 - 3. SHALL contain exactly one [1..1] determinerCode and SHALL be fixed to the code INSTANCE from code system EntityDeterminer having the OID 2.16.840.1.113883.5.30 effective 2013-03-18.
 - v. SHALL SUPPORT zero or one [0..1] serviceProviderOrganization.
 - 1. SHALL contain one or more [1..*] id.
 - 2. SHALL contain one or more [1..*] name.
 - 3. SHOULD contain zero or more [0..*] telecom.
 - 4. SHOULD contain zero or more [0..*] addr.
 - 5. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code ORG from code system EntityClass having the OID 2.16.840.1.113883.5.41 effective 2013-03-18.
 - 6.
 - viii. SHALL contain exactly one [1..1] determinerCode and SHALL be fixed to the code INSTANCE from code system EntityDeterminer having the OID 2.16.840.1.113883.5.30 effective 2013-03-18.
 - ix. SHALL SUPPORT zero or more [0..*] encounterParticipant
 - a. SHALL contain exactly one [1..1] @classCode and SHALL be fixed to the code ASSIGNED from code system RoleClass having the OID 2.16.840.1.113883.5.110 effective 2013-03-18 and SHALL NOT contain nullFlavor
 - b. SHALL contain exactly one [1..1]@ typeCode and SHALL comply with the following value set assertion, effective 2008-12-17: the set of codes in the expansion of the value set 2.16.840.1.113883.1.11.19600 x_EncounterParticipant STATIC
 - c. SHALL SUPPORT zero or one [0..1] time
 - d. SHALL contain exactly one [1..1] assignedEntity
 - i. SHALL contain at least one [1..*] id and SHALL contain a nullFlavor if no value is provided. <id nullFlavor="UNK"/>
 - ii. SHALL SUPPORT up to one [0..1] code and SHALL comply with the following value set assertion effective 2008-12-17: the set of codes in the value set 2.16.840.1.113883.3.239.12.7 HealthcareProviderRoleType STATIC.
 - iii. SHALL SUPPORT zero or more if available [0..*] addr
 - iv. SHALL SUPPORT zero or more [0..*] telecom
 - v. SHALL contain exactly one [1..1] assignedPerson.
 - 1. SHALL contain at least one[1..*] name
 - vi. SHALL SUPPORT up to one [0..1] representedOrganization.
 - 1. SHALL contain exactly one [1..1] id.
 - 2. SHALL contain exactly one [1..1] name
 - 3. SHALL SUPPORT zero or more [0..*] addr.
 - 4. SHALL SUPPORT zero or more [0..*] telecom.

5.4.4 RelatedDocument

The relatedDocument section identifies and is required any related parent documents, such as an earlier version, or a document being replaced.

(See *eHealth DI CS Interoperability Vocabulary* for the types of related documents supported by DI CS Release 1.)

SHOULD contain zero or one [0..1] relatedDocument

- a. SHALL contain exactly one [1..1] typeCode and SHALL comply with the following value set assertion, effective 2012-08-02: the set of codes in the value set 2.16.840.1.113883.1.11.11610 x_ActRelationshipDocument
- b. SHALL contain exactly one [1..1] parentDocument
 - i. SHALL contain exactly one [1..1] classCode and SHALL be fixed to the code DOCCLIN from the code system ActClass having the OID 2.16.840.1.113883.5.6 effective 2009-08-01 and SHALL NOT contain nullFlavor.
 - ii. SHALL contain exactly one [1..1] moodCode and SHALL be fixed to the code EVN (event) from the code system ActMood having the OID 2.16.840.1.113883.5.1001 effective 2009-08-01 and SHALL NOT contain nullFlavor.
 - iii. SHALL contain exactly one or more [1..*] id which SHALL conform to the II data type represented using II from Data Type Release 1 and SHALL NOT contain nullFlavor.
 - iv. SHALL contain exactly one [1..1] code and SHALL be fixed to the code 18748-4 from the code set having the OID 2.16.840.1.113883.6.1

5.5 Canadian Realm Data Types

5.5.1 Canadian Realm Address Data Type

The proposed Canadian Realm Data Type for the Address datatype flavor:

- a. SHALL SUPPORT use, which SHALL comply with the following value set assertion, effective 2008-12-17: - the set of codes in the expansion of pan- Canadian value set 2.16.840.1.113883.2.20.3.143 which SHOULD be selected from value set x_BasicPostalAddressUse STATIC
- b. SHOULD contain zero to four [0..4] lines of address information sent as plain text and separated by delimiter tag.
- c. SHALL SUPPORT up to one [0..1] postalcode.
- d. SHALL SUPPORT up to one [0..1] city.
- e. SHALL SUPPORT up to one [0..1] state, which SHOULD be selected from the code system ISO 3166-2 alpha codes having the OID 1.0.3166.2
- f. SHALL SUPPORT address parts (part types), which SHOULD comply with the following value set assertion, effective 2008-12-17: the set of codes in the expansion of 2.16.840.1.113883.2.20.3.143 x_BasicAddressPartType STATIC.

5.5.2 Canadian Realm Date time Data Type

The Canadian Realm Date and Time is based on TS.DATETIME flavor defined in the pan-Canadian Data Type Specification (R02.04.03).

This flavour constraints the timestamp to permit the “date”, “time” and “timezone” portions of the timestamp to be specified. Partial dates may be specified only if no time component is specified. Time may be omitted, and partial times may be specified. If a time is specified, the “timezone” portion of the timestamp must be specified. Local time is calculated as an offset of GMT (e.g. “- 0800” for Pacific Time Zone, -0500 for Eastern Time Zone).

The grammar for the date/time is: YYYY[MM[DD[HH[MM[SS[.S[S[S[S]]]]]]][+/-ZZZZ] (24 characters) and

- a. SHALL contain the year
- b. SHOULD be precise to the month
- c. SHOULD be precise to the day
- d. SHOULD be precise to the hour
- e. SHOULD be precise to the minute
- f. SHOULD be precise to the second
- g. MAY be provided with up to 4 decimal places of precision if the seconds are provided.
- h. If more precise than day, SHALL include time-zone offset

5.5.3 Canadian Realm Date time Interval Data Type

- a. SHALL contain 2 of the attributes: low, high and width.
- b. The content of low and high SHALL be conformant Canadian Realm Data and Time Data Type.
- c. The content of width SHALL be conformant to PQ Data Type R1.

5.5.4 Personal Name Data Type

- a. SHALL contain one [1..1] attribute use and the content SHOULD be selected from value set x_BasicPersonNameUse.
- b. SHOULD contain up to one [0..1] prefix element
- c. SHALL contain one or more [1..*] given element and SHALL NOT be NullFlavor
- d. SHALL contain one [1..1] family element and SHALL NOT be NullFlavor
- e. SHOULD contain up to one [0..1] suffix element
- f. SHOULD contain up to one [0..1] qualifier, if present, SHOULD comply with the following value set assertion, effective 2008-12-17: the set of codes in the expansion of 2.16.840.1.113883.2.20.3.149 x_FullPersonNamePartqualifier STATIC
- g. The name parts SHALL comply with the following value set assertion, effective 2008-12-17: the set of codes in the expansion of 2.16.840.1.113883.2.20.3.141 x_BasicPersonNamePartType STATIC
- h. Each part SHALL be constrained to a maximum of 50 characters

5.5.5 Canadian Telecom Data Type

- a. SHALL contain one [1..1] attribute use and the content SHOULD be selected from value set x_BasicTelecommunicationAddressUse.
- b. SHALL contain one [1..1] attribute value and the content SHOULD follow the specifications as described in <http://www.ietf.org/rfc/rfc3966.txt>.
- c. SHOULD contain up to one [0..1] scheme and SHOULD be selected from x_PhoneURLScheme Value Set.
- d. MAY contain up to one [0..1] useablePeriod

6. Image Manifests

As set out by the XDS-I standard, images themselves are not stored within the XDS repository; instead a document that provides a set of references back to the images at the document imaging source location is stored. This document is typically referred to as an ‘image manifest’. The XDS-I standard further specifies that the DICOM Key Object Selection (KOS) information object is to be used as the document format for the image manifest. As we discussed in the previous section, exams containing multiple studies result in CDA document (unless there are addendums). There is no requirement that individual manifests need to be associated with their own report. All documents resulting from the same exam procedure (i.e. two manifests and one report) will all share the same accession number and can be grouped together by a consumer application using that accession number.

6.1 Key Object Selection Format

The eHealth Ontario XDS implementation will utilize the KOS object for image manifests as defined by the DICOM standard with additional constraints defined by eHealth Ontario and the XDS-I specification. The reader is encouraged to reference the DICOM standard for the full details of the KOS document format (see PS 3.3-2011 of the DICOM standard), however, for convenience some of that information is included here. Only the DICOM type 1 and 2 attributes are included here as they must be included. Additional type 3 attributes as defined by the DICOM specification may be included in the KOS document but are not required. Note that some DICOM type 2 and 3 attributes have been elevated to type 1. Please refer to PS 3.5 and PS 3.6 of the DICOM standard for details related to the specific type and format of the individual attributes listed below.

The definition the DICOM attribute types are as follows:

- Type 1 – This attribute must be provided and have a valid value.
- Type 2 – This attribute must be provided but may have an empty value.
- C – Inclusion of the specified attribute is ‘Conditional’ based on a particular requirement.

6.1.1 Key Object Selection IOD

The following table illustrates the mandatory modules only for the KOS Document IOD. Note that the KOS document is formatted as a DICOM Part10 file and must include the necessary Part10 file related attributes in addition to the IOD attributes.

Information Entity	Module	Usage
DICOM File Meta Information	DICOM File Meta Information	M
Patient	Patient	M
Study	General Study	M
Series	Key Object Document Series	M
Equipment	General Equipment	M

Document	Key Object Document	M
	SR Document Content	M
	SOP Common	M

6.1.2 DICOM File Meta Information

Attribute Name	Tag	Type	Attribute Description
File Meta Information Group Length	(0002,0000)	1	Number of bytes following this File Meta Element (end of the Value field) up to and including the last File Meta Element of the Group 2 File Meta Information.
File Meta Information Version	(0002,0001)	1	This is a two byte field where each bit identifies a version of this File Meta Information header. In version 1 the first byte value is 00H and the second value byte value is 01H.
Media Storage SOP Class UID	(0002,0002)	1	Uniquely identifies the SOP Class associated with the Data Set. Should be set with a value of: 1.2.840.10008.5.1.4.1.1.88.59
Media Storage SOP Instance UID	(0002,0003)	1	Uniquely identifies the SOP Instance associated with the Data Set placed in the file and following the File Meta Information.
Transfer Syntax UID	(0002,0010)	1	Uniquely identifies the Transfer Syntax used to encode the following Data Set. This Transfer Syntax does not apply to the File Meta Information. <i>TBD – We may need to limit this to certain transfer syntaxes depending on the procured Viewer capabilities.</i>
Implementation Class UID	(0002,0012)	1	Uniquely identifies the implementation that wrote this file and its content.

6.1.3 Patient Module

The following table includes the basic attributes for the Patient module.

Attribute Name	Tag	Type	Attribute Description
Patient's Name	(0010,0010)	2	Patient's full name.
Patient ID	(0010,0020)	2	Primary hospital identification number (MRN) or code for the patient. This value should reflect the patient ID used in the DICOM data within the DI-r. This value will typically (but not necessarily) match the sourcePatientId metadata attribute value.
Patient's Birth Date	(0010,0030)	2	Birth date of the patient
Patient's Sex	(0010,0040)	2	Sex of the named patient. Enumerated Values: M = male

F=female
O=other

6.1.4 General Study Module

The following table includes the basic attributes for the General Study module.

Attribute Name	Tag	Type	Attribute Description
Study Instance UID	(0020, 000D)	1	Unique identifier for the study.
Study Date	(0008,0020)	2	Date the study started.
Study Time	(0008,0030)	2	Time the study started
Referring Physician's Name	(0008,0090)	2	Name of the patient's referring physician
Study Id	(0020,0010)	2	User or equipment generated study identifier
Accession Number	(0008,0050)	2	A RIS generated number that identifies the order for the study.

6.1.5 Key Object Document Series Module

Attribute Name	Tag	Usage	Attribute Description
Modality	(0008,0060)	1	Modality type. Enumerated Value: KO = Key Object Selection
Series Instance UID	(0020,000E)	1	Unique identifier of the Series.
Series Number	(0020,0011)	1	A number that identifies the Series.
Referenced Performed Procedure Step Sequence	(0008,1111)	2	Uniquely identifies the Performed Procedure Step SOP Instance for which the Series is created. Zero or one item shall be included in this sequence.

6.1.6 General Equipment Module

Attribute Name	Tag	Usage	Attribute Description
Manufacturer	(0008,0070)	2	Manufacturer of the equipment that produced the composite instances.

6.1.7 Key Object Document Module

Attribute Name	Tag	Usage	Attribute Description
Instance Number	(0020,0013)	1	A number that identifies the Document.

Content Date	(0008,0023)	1	The date the document content creation started.
Content Time	(0008,0033)	1	The time the document content creation started.
Current Requested Procedure Evidence Sequence	(0040,A375)	1	List of all Composite SOP Instances referenced in the Content Sequence (0040,A730) , including all presentation states, real world value maps and other accompanying composite instances that are referenced from the content items. One or more Items shall be included in this sequence.
>Study Instance UID	(0020,000D)	1	Unique identifier for the Study
>Referenced Series Sequence	(0008,1115)	1	Sequence of Items where each Item includes the Attributes of a Series containing referenced Composite Object(s). One or more Items shall be included in this sequence.
>>Series Instance UID	(0020,000E)	1	Unique identifier of a Series that is part of this Study and contains the referenced Composite Object(s).
>>Retrieve AE Title	(0008,0054)	1	Title of the DICOM Application Entity where the Composite Object(s) may be retrieved on the network.
>>Retrieve Location UID	(0040,E011)	1	Unique identifier of the system where the Composite Object(s) may be retrieved on the network. An OID will be assigned to each of the DI-r's for this attribute.
>>Referenced SOP Sequence	(0008,1199)	1	References to Composite Object SOP Class/SOP Instance pairs that are part of the Study defined by Study Instance UID and the Series defined by Series Instance UID (0020,000E). One or more Items shall be included in this sequence.
>>>Referenced SOP Class UID	(0008,1150)	1	Uniquely identifies the referenced SOP Class.
>>>Referenced SOP Instance UID	(0008,1155)	1	Uniquely identifies the referenced SOP Instance.

6.1.8 SR Document Content Module

Attribute Name	Tag	Usage	Attribute Description
Value Type	(0040,A040)	1	The type of the value encoded in this Content Item. Should be set to the value of 'CONTAINER'.
Concept Name Code Sequence	(0040,A043)	1	Code describing the concept represented by this Content Item. Also conveys the value of Document Title and section headings in documents. Only a single Item shall be included in this sequence
>Code Value	(0008,0100)	1	Unambiguous identifier within the coding scheme.
>Coding Scheme Designator	(0008,0102)	1	Identifies the coding scheme in which the code value is defined.

>Coding Scheme Version	(0008,0103)	1C	Required if the value of Coding Scheme Designator (0008,0102) is not sufficient to identify the Code Value (0008,0100) unambiguously. May be present otherwise.
>Code Meaning	(0008,0104)	1	Human readable text that conveys the meaning of the specified code value.
Continuity of Content	(0040,A050)	1	This flag specifies for a CONTAINER whether or not it's contained Content Items are logically linked in a continuous textual flow, or are separate items. Enumerated Values: SEPARATE CONTINUOUS
Content Sequence	(0040,A730)	1	A potentially recursively nested Sequence of Items that conveys content that is the Target of Relationships with the enclosing Source Content Item. One or more Items shall be included in this sequence. <i>Please refer to the DICOM Part 3 specification for the details related to the contents of this sequence.</i>

6.1.9 SOP Common Module

Attribute Name	Tag	Usage	Attribute Description
SOP Class UID	(0008,0016)	1	Uniquely identifies the SOP Class. Should set to a value of: 1.2.840.10008.5.1.4.1.1.88.59
SOP Instance UID	(0008,0018)	1	Uniquely identifies the SOP Instance.

6.2 Usage Scenario's

There are logically two different ways in which an image manifest document can be utilized. The first is to represent all images within a given DI study (or exam). The second is to represent a subset of images within a DI study (or exam) that are considered clinically significant for some reason. Each of these logical types of image manifests is best suited towards a specific use case and/or user. For example, a referring physician would presumably only be interested in the clinically significant images in a study while a radiologist would typically like to be able to view all images. The eHealth Ontario XDS implementation will require all new DI exams to contain an image manifest for the complete study as part of DI/CS release 2. In the future, DI exams may also contain partial image manifests.

Another scenario that needs to be considered is the handling of multi-modality exams that consist of multiple studies (i.e. PET-CT exams). While the DICOM KOS object is capable of handling multi studies within a single KOS, currently the eHealth Ontario implementation requires each KOS to only contain a single study. Exams consisting of multiple studies should be published using multiple manifests. Please note that there is no single modality per exam requirement. The requirement is when exams consist of multiple studies; the document source actor must create a separate manifest for each study.

7. XDS Services

This section will provide detailed information on utilizing the following XDS services supported by eHealth Ontario's Diagnostic Imaging Common Services (DI CS):

- ProvideAndRegisterDocumentSet
- RetrieveDocumentSet
- RegistryStoredQuery
- UpdateDocumentSet

Note that only the synchronous versions of these transactions are supported.

7.1 XDS Metadata

The XDS metadata requirements, as defined by the eHealth Ontario XDS affinity domain, are detailed in the following sections. While these sections try to summarize the relevant information defined by the XDS specification, the reader is still encouraged to consult the IHE XDS specifications for additional details and clarity.

The values for Optionality in the following tables are defined in section 3 above. Note that an additional value of 'Mandatory*' is used to describe some attributes that are omitted on the submission of a document but returned in any subsequent queries as they are generated by the registry or repository service. Also note that in the Optionality field, some attributes are designated as only being required based on the type of document being submitted (i.e. reports or manifests.)

The 'Value' description for each attribute may contain some content specific information based on the type of document being submitted. If no document specific details are provided, the content applies to all document types.

7.1.1 XDSDocumentEntry

The XDSDocumentEntry element describes the characteristics of a given document in the submission. There should be one XDSDocumentEntry element for each document in the request transaction. The following table lists the metadata attributes for the XDSDocumentEntry and reflects the constraints/requirements defined by the ProvideAndRegisterImagingDocumentSet transaction (RAD-68) and the DI CS affinity domain configuration. Note additional information on required data types and values can be found in the XDS specification.

Attribute	Optionality	Value
author	Mandatory	Represents the person or system responsible for generating the content of the document being submitted. This attribute is comprised of the authorPerson, authorInstitution, authorRole, authorSpecialty and authorTelecommunication components. Reports: The authorPerson is recommended and the authorInstitution is required for DI reports. The authorPerson should represent the radiologist who generated the report. The CDA header mappings are as follows:

```

authorInstitution:
/ClinicalDocument/author/assignedAuthor/representedOrganization/name

authorPerson:
concat(
/ClinicalDocument/author/id/@extension,"^",
/ClinicalDocument/author/assignedAuthor/assignedPerson/name/family,"^",
/ClinicalDocument/author/assignedAuthor/assignedPerson/name/given[1],"^",
"/ClinicalDocument/author/assignedAuthor/assignedPerson/name/given[2],"
^",
/ClinicalDocument/author/assignedAuthor/assignedPerson/name/suffix,"^",
/ClinicalDocument/author/assignedAuthor/assignedPerson/name/prefix[@qualifier="AC"],"^^^&",
/ClinicalDocument/author/id/@root,"&ISO"
)

authorSpecialty: mapped from
/ClinicalDocument/author/assignedAuthor/code

```

Image Manifests:

Only the authorInstitution is required for image manifests. The DICOM InstitutionName (0008, 0080) could be used if available. Where possible, it is suggested to use the same naming for the institution as used in the reports to ensure consistency in the user interface of the consuming applications. Please note that how institution name is obtained is not in the scope of this document.

Encoding example

```

<rim:Classification id="CL_01"
  classificationScheme="urn:uuid:93606bcf-9494-43ec-9b4e-a7748d1a838d"
  classifiedObject="Document01" nodeRepresentation="">
  <rim:Slot name="authorPerson">
    <rim:ValueList>
      <!-- Based on HL7 V2 XCN type, first and Last name are required,
        all other optional. If 'ID' is provided, then an Assigning
        Authority OID (AA) is recommended -->
      <rim:Value>ID^Last^First^Second^Suffix^Prefix^^^&AA&ISO</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="authorInstitution">
    <rim:ValueList>
      <!-- Based on HL7 V2 XON type, fields 1 and 10 are required-->
      <rim:Value>HospitalName^^^^^^^^^SiteOID</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="authorRole">
    <rim:ValueList>
      <rim:Value>free text</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="authorSpecialty">

```

		<pre> <rim:ValueList> <rim:Value>free text</rim:Value> </rim:ValueList> </rim:Slot> <rim:Slot name="authorTelecommunication"> <rim:ValueList> <!--Based on HL7 V2 XTN type, only fields 3 and 4 are specified --> <rim:Value>^^type^value</rim:Value> </rim:ValueList> </rim:Slot> </rim:Classification> </pre>
--	--	---

availabilityStatus	Mandatory*	Status of the document. This value is generated by the XDS registry and is returned in any subsequent queries. The defined values for this attribute are as follows: - urn:oasis:names:tc:ebxml-regrep:StatusType:Approved - urn:oasis:names:tc:ebxml-regrep:StatusType:Deprecated
--------------------	------------	--

Encoding example

```

<rim:ExtrinsicObject ...
  status="urn:oasis:names:tc:ebxml-regrep:StatusType:Approved" ... >

```

classCode	Mandatory	Code specifying the category of the document being submitted.
-----------	-----------	---

Reports

The following code is to be used for reports:

- 18748-4 from LOINC (Diagnostic Imaging Report)

The CDA header mapping is as follows:

/ClinicalDocument/code/@code

Image Manifests

The following code is to be used for image manifests:

- 18726-0 from LOINC (Radiology Studies)

Encoding example

```

<rim:Classification id="CL_02"
  classificationScheme="urn:uuid:41a5887f-8865-4c09-adf7-e362475b143a"
  classifiedObject="Document01" nodeRepresentation="18748-4">
  <rim:Slot name="codingScheme">
    <rim:ValueList>
      <rim:Value>2.16.840.1.113883.6.1</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name>

```

		<pre> <rim:LocalizedString value="Diagnostic Imaging Report"/> </rim:Name> </rim:Classification> </pre>
comments	Optional	Specifies comments associated with the document. Reports Recommendation is to use the description of the associated procedure code. Image Manifests Recommendation is to use the DICOM Study Description attribute (0008,1030) if available. Encoding example <pre> <rim:Description> <rim:LocalizedString value="Chest 1 View"/> </rim:Description> </pre>
confidentialityCode	Mandatory	Code specifying the level of confidentiality of the document. The currently accepted values for this code are a subset of the x_BasicConfidentialityKind terminology value set: • N (Normal) • R (Restricted) Only documents with a value of 'N' will be returned during queries. Documents with a value of 'R' will be hidden from end users. Reports The CDA header mapping is as follows: /ClinicalDocument/confidentialityCode Encoding example <pre> <rim:Classification id="CL_03" classificationScheme="urn:uuid:f4f85eac-e6cb-4883-b524-f2705394840f" classifiedObject="Document01" nodeRepresentation="N"> <rim:Slot name="codingScheme"> <rim:ValueList> <rim:Value> 2.16.840.1.113883.5.25</rim:Value> </rim:ValueList> </rim:Slot> <rim:Name> <rim:LocalizedString value="Normal"/> </rim:Name> </rim:Classification> </pre>
creationTime	Mandatory	Specifies the date and time that the clinical content in the document was

created. The value must be specified in the following UTC format (with no time zone specified):

YYYY[MM[DD[hh[mm[ss]]]]]

Reports

The CDA header mapping is as follows:

/ClinicalDocument/effectiveTime

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The value should reflect the study creation time for the study referenced by the manifest.

Encoding example

```
<rim:Slot name="creationTime">
  <rim:ValueList>
    <rim:Value>20130101223000</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

The example shows the encoding of January 1, 2013 at 5:30 pm EST.

entryUUID	Mandatory	Uniquely identifies the XDSDocumentEntry. On submissions, the entryUUID may contain either a symbolic identifier that uniquely identifies a given document within the transaction or a globally unique UUID. In the case where a symbolic identifier is used, the XDS registry will in turn assign a UUID to the document which will be returned on subsequent queries. On all other transactions, the entryUUID should always contain the UUID value.
-----------	-----------	--

Encoding example

```
<rim:ExtrinsicObject id="Document01" ... >
OR
<rim:ExtrinsicObject id="urn:uuid:a6e06ca8-0c75-4064-9e5c-88b9045a96f6" ... >
```

eventCodeList	Mandatory*	This attribute will include the list of provincial codes for the acquisition modality, anatomic region, and laterality associated with the exam. The list of valid codes includes those from DCMR Context Group CID 29 for modality, DCMR Context Group CID 4 for anatomic region, and DCMR Context Group 244 for laterality.
---------------	------------	---

These values are generated based on the specified typeCode (local procedure code) using the system terminology services. If this attribute contains any values on the submission of a document, they will be copied to the sourceEventCodeList private attribute and replaced with the provincial values.

Encoding

Note each code in the 'list' is encoded with its own classification object.

```
<rim:Classification id="CL_08"
  classificationScheme="urn:uuid:2c6b8cb7-8b2a-4051-b291-b1ae6a575ef4"
  classifiedObject="Document01" nodeRepresentation="CT">
  <rim:Slot name="codingScheme">
    <rim:ValueList>
      <rim:Value>1.2.840.10008.2.16.4</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name>
    <rim:LocalizedString value="Computed Tomography"/>
  </rim:Name>
</rim:Classification>
<rim:Classification id="CL_09"
  classificationScheme="urn:uuid:2c6b8cb7-8b2a-4051-b291-b1ae6a575ef4"
  classifiedObject="Document01" nodeRepresentation="T-12710">
  <rim:Slot name="codingScheme">
    <rim:ValueList>
      <rim:Value>2.16.840.1.113883.6.5</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name>
    <rim:LocalizedString value="Femur"/>
  </rim:Name>
</rim:Classification>
<rim:Classification id="CL_10"
  classificationScheme="urn:uuid:2c6b8cb7-8b2a-4051-b291-b1ae6a575ef4"
  classifiedObject="Document01" nodeRepresentation="L">
  <rim:Slot name="codingScheme">
    <rim:ValueList>
      <rim:Value>2.16.840.1.113883.6.5</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name>
    <rim:LocalizedString value="Left"/>
  </rim:Name>
</rim:Classification>
```

formatCode	Mandatory	Code specifying the format of the document.
------------	-----------	---

Reports

Reports are submitted as CDA wrapped text reports and should use the following code:

- urn:ihe:rad:TEXT from coding system 1.3.6.1.4.1.19376.1.2.3 (Text Report)

Image Manifests

Image manifests are submitted as DICOM KOS objects and should use the following code:

- 1.2.840.10008.5.1.4.1.1.88.59 from coding system 1.2.840.10008.2.6.1 (DICOM KOS)

Encoding example

```
<rim:Classification id="CL_04"
  classificationScheme="urn:uuid:a09d5840-386c-46f2-b5ad-9c3699a4309d"
  classifiedObject="Document01" nodeRepresentation="urn:ihe:rad:TEXT">
  <rim:Slot name="codingScheme">
    <rim:ValueList>
      <rim:Value>1.3.6.1.4.1.19376.1.2.3</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name>
    <rim:LocalizedString value="Text Report"/>
  </rim:Name>
</rim:Classification>
```

hash	Mandatory*	Hash key of the document stored in the repository. This value is computed by the Document Repository and typically omitted on submissions by the source.
------	------------	--

Encoding example

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

healthcareFacility TypeCode	Mandatory	Specifies the type of organizational setting of the clinical encounter during which the documented act occurred. The currently accepted values for this code are a subset of the ServiceDeliveryLocationRoleTypeDI terminology value set:
--------------------------------	-----------	---

- HOSP (Hospital)
- DX (Diagnostics or therapeutic clinic)

Encoding example

```
<rim:Classification id="CL_05"
  classificationScheme="urn:uuid:f33fb8ac-18af-42cc-ae0e-ed0b0bdb91e1"
  classifiedObject="Document01" nodeRepresentation="HOSP">
  <rim:Slot name="codingScheme">
    <rim:ValueList>
      <rim:Value>2.16.840.1.113883.5.111</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name>
    <rim:LocalizedString value="Hospital"/>
  </rim:Name>
</rim:Classification>
```

languageCode	Mandatory	Specifies the language code of character data in the document. The currently accepted values for this code are:
--------------	-----------	---

- eng-CA
- fra-CA

Reports

The CDA header mapping is as follows:

/ClinicalDocument/languageCode

Image Manifests

May be set to a fixed value of 'eng-CA' (either value will be accepted)

Encoding example

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

legalAuthenticator	Optional	Represents the person who has legally authenticated the document being submitted.
--------------------	----------	---

Reports

The CDA header mapping is as follows:

```
concat(
  /ClinicalDocument/legalAuthenticator /id/@extension,"^",
  /ClinicalDocument/legalAuthenticator /assignedPerson/name/family,"^",
  /ClinicalDocument/legalAuthenticator /assignedPerson/name/given[1],"^",
  /ClinicalDocument/legalAuthenticator /assignedPerson/name/given[2],"^",
  /ClinicalDocument/legalAuthenticator /assignedPerson/name/suffix,"^",
  /ClinicalDocument/legalAuthenticator /assignedPerson/name/prefix,"^",
  "^^^&", /ClinicalDocument/legalAuthenticator /id/@root,"&ISO")
```

Image Manifests

Not applicable

Encoding example

```
<rim:Slot name="legalAuthenticator">
  <rim:ValueList>
    <!-- Based on HL7 V2 XCN type, first and Last name are required,
         all other optional. If 'ID' is provided, then an Assigning
         Authority OID (AA) is required -->
    <rim:Value>ID^Last^First^Second^Suffix^Prefix^^^&AA&ISO</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

logicalId	Mandatory*	A globally unique identifier used to identify the logical DocumentEntry. All versions of a DocumentEntry carry the same logicalID but different and unique entryUUIDs. If not present in a submission, logicalID defaults to the value of the entryUUID attribute. The first version of a DocumentEntry has logicalID equal to entryUUID. Other versions have logicalID not equal to entryUUID Encoding example <pre><rim:ExtrinsicObject ... lid="urn:uuid:a6e06ca8-0c75-4064-9e5c-88b9045a96f6" ... ></pre>
contentType	Mandatory	MIME type of the document in the Repository. Reports The following value should be used: - text/xml Image Manifests The following value should be used: - application/dicom Encoding example <pre><rim:ExtrinsicObject ... mimeType="text/xml" ... ></pre>
patientId	Mandatory	Specifies the subject of care of the document. On submissions, the patientId may be specified as either a fully qualified local MRN, a provincial health card number, or as an enterprise wide identifier (EID). In the cases where a local MRN or a health card number is specified on a submission, the DI CS ProvideAndRegisterDocumentSet service will translate this value to an EID prior to the final submission. Note this requires that when an MRN is specified it must match exactly the value that was previously submitted to the eHealth Ontario Client Registry (e.g. strip MRN prefixes/suffixes if necessary). The patientId value returned on any subsequent queries will always contain the EID. The patientId value must adhere to the following format: <pre>ID^^^&AssigningAuthority&ISO</pre> where <i>ID</i> is either the local MRN, health card number, or the EID and <i>AssigningAuthority</i> is the corresponding OID for the source of the <i>ID</i>. Note that the assigning authority for the EID's supported by the registry is : <pre>2.16.840.1.113883.3.239.20</pre> Encoding example

		<pre> <rim:ExternalIdentifier id="EI_01" registryObject="Document01" identificationScheme="urn:uuid:58a6f841-87b3-4a3e-92fd-a8ffeff98427" value="12345^^^&2.16.840.1.113883.3.239.20&ISO"> <rim:Name> <rim:LocalizedString value="XSDDocumentEntry.patientId"/> </rim:Name> </rim:ExternalIdentifier> </pre>
practiceSettingCode	Mandatory	Specifies the clinical specialty where the act that resulted in the document was performed. The currently accepted values for this code are a subset of the ServiceDeliveryLocationRoleTypeDI terminology value set: RADDX (Radiology Diagnostics) Encoding example <pre> <rim:Classification id="CL_06" classificationScheme="urn:uuid:cccf5598-8b07-4b77-a05e-ae952c785ead" classifiedObject="Document01" nodeRepresentation="RADDX"> <rim:Slot name="codingScheme"> <rim:ValueList> <rim:Value> 2.16.840.1.113883.5.111</rim:Value> </rim:ValueList> </rim:Slot> <rim:Name> <rim:LocalizedString value="Radiology Diagnostics"/> </rim:Name> </rim:Classification> </pre>
repositoryUniqueId	Mandatory*	Specifies the globally unique identifier for the repository where the document is stored. This value is assigned by the repository on submission and returned on subsequent queries. The identifier for the DI CS repository is: 2.16.840.1.113883.3.239.30.1 Encoding example <pre> <rim:Slot name="repositoryUniqueId"> <rim:ValueList> <rim:Value> 2.16.840.1.113883.3.239.30.1</rim:Value> </rim:ValueList> </rim:Slot> </pre>
serviceStartTime	Mandatory	Specifies the start date and time for the associated imaging service. The value must be specified in the following UTC format (with no time zone included): YYYY[MM[DD[hh[mm[ss]]]]] Reports The CDA header mapping is as follows:

/ClinicalDocument/documentationOf/serviceEvent/effectiveTime/low/@value

Image Manifests

Value can be derived from the DICOM Study Date (0008,0020) and Study Time (0008,0030) attributes.

Encoding

```
<rim:Slot name="serviceStartTime">
  <rim:ValueList>
    <rim:Value>20120601183000</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

The example shows the encoding of June 1, 2012 at 2:30 pm EDT

serviceStopTime	Optional	Specifies the stop date and time for the associated imaging service. The value must be specified in the following UTC format (with no time zone included):
-----------------	----------	--

YYYY[MM[DD[hh[mm[ss]]]]]

Reports

The CDA header mapping is as follows:

/ClinicalDocument/documentationOf/serviceEvent/effectiveTime/high/@value

Encoding example

```
<rim:Slot name="serviceStopTime">
  <rim:ValueList>
    <rim:Value>20120601184500</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

The example shows the encoding of June 1, 2012 at 2:45 pm EDT.

size	Mandatory*	Size in bytes of the document stored in the repository. This value is computed by the repository on submission and returned on any subsequent queries.
------	------------	--

Encoding example

```
<rim:Slot name="size">
  <rim:ValueList>
    <rim:Value>2048</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

sourcePatientId	Mandatory	Specifies the fully qualified local identifier (MRN) or health card number (HCN) for the subject of care of the document. The MRN, if specified, must
-----------------	-----------	---

match exactly the value that was previously submitted to the eHealth Ontario Client Registry (e.g. strip MRN prefixes/suffixes if necessary). The patientId value must adhere to the following format:

ID^^^&AssigningAuthority&ISO

where *ID* is the local MRN or HCN and *AssigningAuthority* is the corresponding OID for the source of that *ID*.

Reports

The CDA header mapping is as follows:

concat(/ClinicalDocument/recordTarget/patientRole/id /@extension,"^^^&",
/ClinicalDocument/recordTarget/patientRole/id /@root,"&ISO")

Image Manifests

The value can be derived from the DICOM Patient ID (0010,0020) and Issuer of Patient ID (0010,0021) attribute.

Encoding example

```
<rim:Slot name="sourcePatientId">
  <rim:ValueList>
    <rim:Value>56789^^^&2.16.840.1.113883.3.239.18.144&ISO</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

sourcePatientInfo	Mandatory	This attribute contains demographic information of the patient to whose medical record this document belongs. Note this demographic information may only be accurate at the time the document was submitted as it is not subsequently updated with any changes. The source patient identifier (PID-3) and patient's name (PID-5) are mandatory, and it is recommended to include the date of birth (PID-7), sex (PID-8), and address (PID-11) if known.
-------------------	-----------	---

Reports

The CDA header mapping is as follows:

PID-3 value:
concat("PID-3|",
/ClinicalDocument/recordTarget/patientRole/id /@extension,"^^^&",
/ClinicalDocument/recordTarget/patientRole/id /@root,"&ISO")

PID-5 value:
concat("PID-5|",
/ClinicalDocument/recordTarget/patientRole/patient/name/family,"^",
/ClinicalDocument/recordTarget/patientRole/patient/name/given[1],"^",
/ClinicalDocument/recordTarget/patientRole/patient/name/given[2])

PID-7 value:
concat("PID-7|",

/ClinicalDocument/recordTarget/patientRole/patient/birthTime)

PID-8 value:

```
concat("PID-8|",  
/ClinicalDocument/recordTarget/patientRole/patient/administrativeGenderC  
ode)
```

PID-11 value:

```
concat("PID-5|",  
/ClinicalDocument/recordTarget/patientRole/addr/",  
/ClinicalDocument/recordTarget/patientRole/addr/city,"^",  
/ClinicalDocument/recordTarget/patientRole/patient/addr/state,"^",  
/ClinicalDocument/recordTarget/patientRole/patient/addr/postalCode)
```

Image Manifests

The values can be derived from the corresponding DICOM attributes:

PID-3 value: Patient ID (0010,0020)

PID-5 value: Patient's Name (0010,0010)

PID-7 value: Patient's Birth Date (0010,0030)

PID-8 value: Patient's Sex (0010,0040)

PID-11 value: Patient's Address (0010,1040)

Encoding example

```
<rim:Slot name="sourcePatientInfo">  
  <rim:ValueList>  
    <rim:Value>PID-3|5678^^^&2.16.840.1.113883.3.239.18.144&ISO</rim:Value>  
    <!-- The last name must be specified at a minimum -->  
    <rim:Value>PID-5|LAST^FIRST^SECOND</rim:Value>  
    <rim:Value>PID-7|19491208</rim:Value>  
    <rim:Value>PID-8|M</rim:Value>  
    <rim:Value>PID-11|Street^Other^City^Province^Postal Code</rim:Value>  
  </rim:ValueList>  
</rim:Slot>
```

referenceIdList	Mandatory	Contains a list of identifiers associated with the document (e.g. accession number, order number, etc.). This is a new metadata element being added in response to IHE CP-ITI-659. Note that only the accession number is mandatory to be included. The accession number is used by consuming applications to group together related reports and manifests, hence, it is important that the specified value for related reports and manifests match exactly. Each identifier must be specified in the following format:
-----------------	-----------	---

Value^^^&AssigningAuthority&ISO^type

where *type* is one of:

urn:ihe:iti:xds:2013:accession (accession numbers)

urn:ihe:iti:xds:2013:uniqueId (other unique id's)

urn:ihe:pcc:2013:rol:ref (referral numbers)
urn:ihe:pcc:2013:rol:ord (order numbers)

Reports

Each item in the referenceIdList should be entered in an item in
/ClinicalDocument/inFulfillmentOf/order/id

Concat(\$orderID/@root,"^", \$orderID/@extension)

Image Manifests

The value can be derived from the DICOM Accession Number attribute
(0008,0050).

Encoding example

```
<rim:Slot name="urn:ihe:iti:xds:2013:referenceIdList">  
  <rim:ValueList>  
    <rim:Value>  
      A123^^^&2.16.840.1.113883.3.239.32.139&ISO^urn:ihe:iti:xds:2013:accession  
    </rim:Value>  
  </rim:ValueList>  
</rim:Slot>
```

title	Optional	Represents the title of the document. Document sources should append the report status to the procedure description to generate this title.
-------	----------	---

Reports

The CDA header mapping is as follows:

/ClinicalDocument/title

Image Manifests

Set to a fixed value of “Diagnostic Imaging Study”.

Encoding

```
<rim:Name>  
  <rim:LocalizedString value="Diagnostic Imaging Report - Final"/>  
</rim:Name>
```

typeCode	Mandatory	Specifies the RIS procedure code for the imaging exam, Sources are expected to specify the local procedure code for this attribute on submission. This value will be subsequently translated to one of the standard Ontario DI procedure codes and returned as part of any queries. The submitted local procedure code will be made available as the sourceProcedureCode attribute for consumers. Sources need to ensure that the submitted local procedure codes have been included in the terminology maps that have been provided to eHealth Ontario from their respective sites. If the specified value does not have a mapping, the submission will still succeed, however, a warning will be returned to the
----------	-----------	--

submitter. This will also trigger an internal eHealth Ontario alert notification.

Reports

The local procedure code specified in the associated ORU message should be utilized (also referred to as the RIS procedure code).

The CDA header mapping is as follows:

/ClinicalDocument/documentationOf/serviceEvent/code

Image Manifests

The local RIS procedure code should be specified and will typically be obtained using external means. Sources unable to provide this value should contact eHealth Ontario to discuss alternatives. In cases where no value is available, a modality specific default for the source site should be used. These default values must also be provided to eHealth Ontario to allow for the appropriate mapping to be defined.

Encoding example

```
<rim:Classification id="CL_07"
  classificationScheme="urn:uuid:f0306f51-975f-434e-a61c-c59651d33983"
  classifiedObject="Document01" nodeRepresentation="22211">
  <rim:Slot name="codingScheme">
    <rim:ValueList>
      <!-- OID to be provided by eHO for the set of RIS codes for each site -->
      <rim:Value>2.16.840.1.113883.3.239.33.139</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name>
    <rim:LocalizedString value="Chest 1 View"/>
  </rim:Name>
</rim:Classification>
```

uniqueId	Mandatory	The globally unique identifier assigned by the document creator to this document.
----------	-----------	---

Reports

The CDA header mapping is as follows:

/ClinicalDocument/id/@root^/ClinicalDocument/id/@extension

Image Manifests

Should be set to the value of the DICOM SOP Instance UID attribute (0008,0018) of the associated KOS object.

Encoding example

<pre> <rim:ExternalIdentifier id="EI_02" registryObject="Document01" identificationScheme="urn:uuid:2e82c1f6-a085-4c72-9da3-8640a32e42ab" value="2.16.840.1.113883.3.239.23.7.2043249"> <rim:Name> <rim:LocalizedString value="XSDDocumentEntry.uniqueId"/> </rim:Name> </rim:ExternalIdentifier> </pre>		
reportStatus	Mandatory (Reports only)	Private metadata attribute that specifies the status of the associated report. Valid values for this attribute are: Preliminary (or PRELIMINARY) Final (or FINAL) Addendum (or ADDENDUM) Encoding example <pre> <rim:Slot name="urn:eho:reportStatus"> <rim:ValueList> <rim:Value>Final</rim:Value> </rim:ValueList> </rim:Slot> </pre>
intendedRecipientList	Optional	Private metadata attribute containing the person(s) with a vested interest in the associated document. Referring and ordering physicians will typically be included in this list. The format for each person in the list is as follows: organization person telecommunication role where organization is of type XON (see authorInstitution), person is of type XCN (see authorPerson), telecommunication is of type XTN (see authorTelecommunication), and role is a coded value. Note that at least one of the organization, person, or telecommunication values must be specified if this attribute is provided. The following are the possible role values from the HL7 ParticipationType value set: AUT - Originator (i.e. Ordering Physician) REF - Referrer (i.e. Referring Physician) Note that if no role code is specified then the identified recipient is considered to be on the 'cc' list. Reports The CDA header mappings are as follows: <pre> \$person<=/ClinicalDocument/informationRecipient/intendedRecipient concat(\$person/id/@extension,"^", \$person/informationRecipient/name/family,"^", \$person/informationRecipient/name/given[1],"^", \$person/informationRecipient/name/given[2],"^", </pre>

```
$person/informationRecipient/name/suffix,"^",
$person/informationRecipient/name/prefix,"^",
"^^^&", $person/id/@root,"&ISO")
```

Image Manifests

The value may be derived from the DICOM Referring Physician's Name attribute (0008,0090) and Physician of Record attribute (0008,1048).

Encoding example

```
<rim:Slot name="urn:eho:intendedRecipientList">
  <rim:ValueList>
    <rim:Value>
      HospitalName^^^^^^^^^SiteOID |
      ID^Last^First^Second^Suffix^Prefix^^^&AA&ISO |
      ^^type^value |
      roleCode^^2.16.840.1.113883.5.90
    </rim:Value>
  </rim:ValueList>
</rim:Slot>
```

sourceProcedureCode	Mandatory*	Private metadata attribute containing the local procedure code. This private slot will be created and populated with the typeCode value prior to its translation. The value will be formatted as follows:
---------------------	------------	---

code^code description^code system

See the typeCode attribute for additional details.

Encoding example

```
<rim:Slot name="urn:eho:sourceProcedureCode">
  <rim:ValueList>
    <rim:Value>
      22211^Chest 1 View^2.16.840.1.113883.3.239.33.139
    </rim:Value>
  </rim:ValueList>
</rim:Slot>
```

sourceEventCodeList	Optional*	This private metadata attribute will be created if necessary to store any eventCodeList values that were included on input. See the eventCodeList attribute for additional details. The values will be formatted as follows:
---------------------	-----------	--

code^code description^code system

Encoding example

```
<rim:Slot name="urn:eho:sourceEventCodeList">
  <rim:ValueList>
    <rim:Value>CT^Computed Tomography^DCM</rim:Value>
    <rim:Value>T-D6000^Pelvis^SRT</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

		<pre> </rim:ValueList> </rim:Slot> </pre>
iguideVersion	Mandatory	Private metadata attribute to reflect the version of the iGuide on which this document metadata is based. Currently this value should be set to 2. Encoding example <pre> <rim:Slot name="urn:eho:iguideVersion"> <rim:ValueList> <rim:Value>2</rim:Value> </rim:ValueList> </rim:Slot> </pre>
studyInstanceUIDList	Mandatory (Manifests only)	Private metadata attribute that contains the DICOM Study Instance UID attribute. Note that currently only manifests containing a single study are supported. Exams containing multiple studies should be submitted in separate manifests (one per study). Image Manifests Contains the DICOM Study Instance UID (0020,000D) Encoding example <pre> <rim:Slot name="urn:chi:scwg10:studyInstanceUIDList"> <rim:ValueList> <rim:Value>1.2.3.4.5</rim:Value> </rim:ValueList> </rim:Slot> </pre>
instanceCount	Optional (Manifests only)	Private metadata attribute that contains the number of DICOM images (instances) referenced in the manifest. This information is to be used for informational purposes only and is not considered authoritative. Encoding example <pre> <rim:Slot name="urn:eho:instanceCount"> <rim:ValueList> <rim:Value>250</rim:Value> </rim:ValueList> </rim:Slot> </pre>

7.1.2 XDSSubmissionSet

The XDSSubmissionSet object is responsible for describing the overall characteristics of the submission. There is always a single XDSSubmissionSet object per request transaction.

Attribute	Optionality	Value
author	Mandatory	Represents the humans and/or machines that authored the submission set. Only the 'authorInstitution' element of this attribute is mandatory and must include the name of the DI-r that submitted this request. Document sources are also recommended to supply their corresponding software name and version for future trouble shooting purposes. Encoding example <pre> <rim:Classification id="cl08" classificationScheme="urn:uuid:a7058bb9-b4e4-4307-ba5b-e3f0ab85e12d" classifiedObject="SubmissionSet01"> <rim:Slot name="authorPerson"> <rim:ValueList> <!-- HL7 XCN datatype --> <rim:Value>^Company^SoftwareName^Version</rim:Value> </rim:ValueList> </rim:Slot> <rim:Slot name="authorInstitution"> <rim:ValueList> <!-- HL7 XON datatype --> <rim:Value>GTAWest </rim:Value> </rim:ValueList> </rim:Slot> <rim:Slot name="authorRole"> <rim:ValueList> <rim:Value>free text</rim:Value> </rim:ValueList> </rim:Slot> <rim:Slot name="authorSpecialty"> <rim:ValueList> <rim:Value>free text</rim:Value> </rim:ValueList> </rim:Slot> <rim:Slot name="authorTelecommunication"> <rim:ValueList> <!-- Based on XTN type, only fields 3 and 4 are specified --> <rim:Value>^^type^value</rim:Value> </rim:ValueList> </rim:Slot> </rim:Classification> </pre>
availabilityStatus	Mandatory*	Status of the XDSSubmissionSet. This value is generated by the XDS registry and is returned in any subsequent queries. The possible values for this attribute are as follows: - urn:oasis:names:tc:ebxml-regrep:StatusType:Submitted - urn:oasis:names:tc:ebxml-regrep:StatusType:Approved Encoding example <pre> <rim:RegistryPackage ... </pre>

		<code>status="urn:oasis:names:tc:ebxml-regrep:StatusType:Approved" ... ></code>
comments	Optional	Comments associated with the Submission Set. Encoding example <pre><rim:Description> <rim:LocalizedString value="free text"/> </rim:Description></pre>
contentTypeCode	Mandatory	Specifies the type of clinical activity that resulted in placing the documents in the Submission Set. The currently accepted values for this code are: 19005-8 from LOINC (Imaging Study) Encoding example <pre><rim:Classification id="cl09" classificationScheme="urn:uuid:aa543740-bdda-424e-8c96-df4873be8500" classifiedObject="SubmissionSet01" nodeRepresentation="19005-8"> <rim:Slot name="codingScheme"> <rim:ValueList> <rim:Value>2.16.840.1.113883.6.1</rim:Value> </rim:ValueList> </rim:Slot> <rim:Name> <rim:LocalizedString value="Imaging Study"/> </rim:Name> </rim:Classification></pre>
entryUUID	Mandatory	Uniquely identifies the XDSSubmissionSet. On submissions, the entryUUID may contain a symbolic identifier that uniquely identifies the Submission Set within the transaction or it may contain a globally unique UUID. In the case where a symbolic identifier is used, the XDS registry will in turn assign a UUID to the submission set which will be returned on any subsequent queries. On all other transactions, the entryUUID should always contain the UUID value. Encoding example <pre><rim:RegistryPackage id="SubmissionSet01" ... > OR <rim:RegistryPackage id="urn:uuid: a6e06ca8-0c75-4064-9e5d-88b9045a9ab6" ... ></pre>
intendedRecipient	Optional	Represents the organization(s) or person(s) for whom the submission set is intended. Each value specified must follow the following format: organization (XON) person (XCN) telecommunication (XTN) Encoding example <pre><rim:Slot name="intendedRecipient"></pre>

```

<rim:ValueList>
  <rim:Value> org|person|tele </rim:Value>
</rim:ValueList>
</rim:Slot>

```

patientId	Mandatory	Specifies the subject of care of the document. On submissions, the patientId may be specified as either a fully qualified local MRN, health card number (HCN), or as an enterprise wide identifier (EID). In the case where a local MRN or HCN is specified on a submission, the DI CS ProvideAndRegisterDocumentSet service will translate this value to an EID prior to the final submission. As a result, the MRN specified must match exactly the value that was previously submitted to the eHealth Ontario Client Registry (e.g. strip MRN prefixes/suffixes if necessary). The patientId value returned on any subsequent queries will always contain the EID. The patientId value must adhere to the following format: <i>ID^^^&AssigningAuthority&ISO</i> where <i>ID</i> is either the local MRN or the EID and <i>AssigningAuthority</i> is the corresponding OID for the source of the <i>ID</i>. Note that the assigning authority for the EID's supported by the registry is : 2.16.840.1.113883.3.239.20 Encoding example <pre> <rim:ExternalIdentifier id="EI_05" registryObject="SubmissionSet01" identificationScheme="urn:uuid:6b5aea1a-874d-4603-a4bc-96a0a7b38446" value="12345^^^&2.16.840.1.113883.3.239.20&ISO"> <rim:Name> <rim:LocalizedString value="XDSSubmissionSet.patientId"/> </rim:Name> </rim:ExternalIdentifier> </pre>
sourceId	Mandatory	Identifies the source of the submission set. It is required that the OID of the originating location of the data (i.e. hospital) be used in this case. Encoding example <pre> <rim:ExternalIdentifier id="EI_04" registryObject="SubmissionSet01" identificationScheme="urn:uuid:554ac39e-e3fe-47fe-b233-965d2a147832" value="2.16.840.1.113883.3.239.23.7"> <rim:Name> <rim:LocalizedString value="XDSSubmissionSet.sourceId"/> </rim:Name> </rim:ExternalIdentifier> </pre>
submissionTime	Mandatory	Time when the submission set was created. The value must be specified in the following UTC format (with no time zone specified):

YYYY[MM[DD[hh[mm[ss]]]]]

Encoding example

```
<rim:Slot name="submissionTime">
  <rim:ValueList>
    <rim:Value>20130101223000</rim:Value>
  </rim:ValueList>
</rim:Slot>
```

The example shows the encoding of January 1, 2013 at 5:30 pm EST.

title	Optional	Represents the title of the submission set.
-------	----------	---

Encoding example

```
<rim:Name>
  <rim:LocalizedString value="free text"/>
</rim:Name>
```

uniqueId	Mandatory	The globally unique identifier assigned by the document creator to this submission set (specified as an OID)
----------	-----------	--

Encoding example

```
<rim:ExternalIdentifier id="EI_03" registryObject="SubmissionSet01"
  identificationScheme="urn:uuid:96fdda7c-d067-4183-912e-bf5ee74998a8"
  value="2.16.840.1.113883.3.239.23.7.20120101170530">
  <rim:Name>
    <rim:LocalizedString value="XDSSubmissionSet.uniqueId"/>
  </rim:Name>
</rim:ExternalIdentifier>
```

7.2 ProvideAndRegisterDocumentSet

The ProvideAndRegisterDocumentSet (ITI-41) transaction is used to submit documents to an XDS repository. In the context of DI CS, it will be used to submit radiology reports and imaging manifests to the XDS repository and hence will be subject to the constraints defined by the ProvideAndRegisterImagingDocumentSet transaction (RAD-68).

Note that the eHealth Ontario XDS implementation places a further restriction on this transaction such that only submissions with a single document are supported at this time. To submit multiple documents to the XDS repository, multiple ProvideAndRegisterDocumentSet transactions will be required.

7.2.1 Request Overview

The ProvideAndRegisterDocumentSet request is a standard SOAP message consisting of a header and a body. The header should conform to the WS-Addressing standard and includes the action to be performed. The header may also

contain additional security information which is detailed in the DI CS Transport Specification document. The body of the request is comprised of two key components:

- XDS metadata describing the contents of the submission request. This metadata contains the following key subcomponents:
 - XDSDocumentEntry (ebXML ExtrinsicObject) – Primary metadata object responsible for describing the characteristics of a given document in the submission request.
 - XDSSubmissionSet (ebXML RegistryPackage) – Metadata object responsible for describing the characteristics of the submission request itself.
 - ebXML Classification – Required element to define the ebXML RegistryPackage as the XDSSubmissionSet. Note that this classification can optionally be located within the XDSSubmissionSet itself, however, the example presented in this document shows it externally.
 - ebXML Association – Required element to link each document in the submission to the XDSSubmissionSet. One association will be required for each document contained in the submission.
- MTOM/XOP attachment(s) containing the actual document(s) being submitted (in binary format). The individual attachment will contain one of the following document types:
 - CDA wrapped text report
 - DICOM KOS document

The following XML fragment shows the basic structure of a ProvideAndRegisterDocumentSet request and how the various components are included as part of this message.

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">

  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:ProvideAndRegisterDocumentSet-b</a:Action>
    <a:MessageID>urn:uuid:6d296e90-e5dc-43d0-b455-7c1f3eb35d83</a:MessageID>
    <a:ReplyTo>
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
    <a:To s:mustUnderstand="1">https://gateway.ehealthontario.on.ca:7180/index/services/repository</a:To>
  </s:Header>

  <s:Body>
    <ProvideAndRegisterDocumentSetRequest xmlns="urn:ihe:iti:xds-b:2007"
      xmlns:lcm="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:3.0"
      xmlns:rsm="urn:oasis:names:tc:ebxml-regrep:xsd:rsm:3.0"
      xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0">
      <lcm:SubmitObjectsRequest>

        <!-- XDS Metadata -->
        <rsm:RegistryObjectList>
```

```

<!-- XDSDocumentEntry -->
<rim:ExtrinsicObject id="Document01" ... >
  <!-- document metadata details omitted -->
</rim:ExtrinsicObject>

<!-- XDSSubmissionSet -->
<rim:RegistryPackage id="SubmissionSet01" ... >
  <!-- submission set details omitted -->
</rim:RegistryPackage>

<!-- ebXML Classification to designate the above RegistryPackage as an XDSSubmissionSet.
      This classification can be located here or within the XDSSubmissionSet element itself -->
<rim:Classification id="cl10" classifiedObject="SubmissionSet01"
      classificationNode="urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd"/>

<!-- ebXML Association to link the included XDSDocumentEntry object to the XDSSubmissionSet -->
<rim:Association id="as01" associationType="HasMember" sourceObject="SubmissionSet01"
      targetObject="Document01">
  <rim:Slot name="SubmissionSetStatus">
    <rim:ValueList>
      <rim:Value>Original</rim:Value>
    </rim:ValueList>
  </rim:Slot>
</rim:Association>

</rim:RegistryObjectList>
</lcm:SubmitObjectsRequest>

<!-- MTOM/XOP attachment information -->
<Document id="Document01">
  <!-- reference to MTOM/XOP attachment containing CDA document -->
</Document>

</ProvideAndRegisterDocumentSetRequest>
</s:Body>
</s:Envelope>

```

The appropriate XDSDocumentEntry and XDSSubmissionSet elements should be constructed using the XDS metadata specification defined above. An example of a complete ProvideAndRegisterDocumentSet request message can be seen in the appendix.

7.2.2 Response Overview

The ProvideAndRegisterDocumentSet response contains the status of the request and potentially any error or warning information that was detected during the processing of the request. The basic structure of the response is illustrated in the following XML fragment:

```

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
      xmlns:a="http://www.w3.org/2005/08/addressing">

```

```

<s:Header>
  <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:ProvideAndRegisterDocumentSetbResponse</a:Action>
  <a:RelatesTo>urn:uuid:6d296e90-e5dc-43d0-b455-7c1f3eb35d83</a:RelatesTo>
</s:Header>
<s:Body>
  <rs:RegistryResponse status="status value"
    xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0" >

    <!-- The following RegistryErrorList element is optional and will be included
         if there were errors or warnings detected during the processing of the request -->
    <RegistryErrorList highestSeverity="error severity">

      <!-- The following RegistryError element will be repeated for each error and warning -->
      <RegistryError errorCode="error code"
        codeContext="free form text describing the error"
        location="optional free form text describing the location of the error"
        severity="error severity" />

    </RegistryErrorList>
  </rs:RegistryResponse>
</s:Body>
</s:Envelope>

```

where **status value** will be one of the following defined values:

- urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success
- urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Failure

and **error severity** will be one of the following defined values:

- urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Warning
- urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Error

Note that if the **status** is Success, then the RegistryErrorList (if present) may only contain warnings. The list of possible **error codes** and their meaning is contained in the following table:

Error Code	Description
XDSMissingDocument	XDSDocumentEntry exists in metadata with no corresponding attached document
XDSMissingDocumentMetadata	MIME package contains MIME part with Content-Id header not found in metadata
XDSRegistryNotAvailable	Repository was unable to access the Registry
XDSRegistryError XDSRepositoryError	Internal Registry/Repository Error

Error Code	Description
XDSRegistryDuplicateUniqueldInMessage XDSRepositoryDuplicateUniqueldInMessage	A Uniqueld value was found to be used more than once within the submission. Error code indicates where error was detected. CodeContext shall indicate the duplicate Uniqueld
XDSDuplicateUniqueldInRegistry	Uniqueld received was not unique within the Registry. Uniqueld could have been attached to XDSSubmissionSet or XDSFolder. CodeContext shall indicate which and the value of the non-unique uniqueld. This error cannot be thrown for XDSDocumentEntry. See XdsNonIdenticalHash
XDSRegistryBusy XDSRepositoryBusy	Too much activity
XDSRegistryOutOfResources XdsRepositoryOutOfResources	Resources are low.
XDSRegistryMetadataError XDSRepositoryMetadataError	Error detected in metadata. Actor name indicates where error was detected. CodeContext indicates nature of problem.
XDSExtraMetadataNotSaved	This warning is returned if extra metadata was present but not saved in the registry
XDSUnknownPatientId	Patient ID referenced in metadata is not known to the Registry actor via the Patient Identity Feed or is unknown because of patient identifier merge or other reasons. The codeContext shall include the value of patient ID in question
XDSPatientIdDoesNotMatch	XDS specifies where patient IDs must match between documents, submission sets, and folders. 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
XDSRegistryDeprecatedDocumentError	The Register transaction was rejected because it submitted an Association referencing a deprecated document
XDSTerminologyWarning	The system was unable translate the specified local terminology to a provincial term.

7.2.3 Document Replacement and Addendums

The previous section detailed how a new document can be stored in the XDS repository. The ProvideAndRegisterDocumentSet transaction can also be used to replace an existing report or manifest as well as adding an addendum to an existing report. To perform one of these operations, the entryUUID for that document must be known and should be obtained using the RegistryStoredQuery transaction. Once that value is determined, then a similar ProvideAndRegisterDocumentSet request is made that also includes an additional ebXML Association element. This additional Association element directs the XDS registry to replace or link the specified existing document with the new one included in the request.

The following XML fragment should be included to replace or add an addendum to an existing document (whose entryUUID is urn:uuid:550e8400-e29b-41d4-a716-446655440000):

```
<rim:Association id="AS_02" associationType="operation"
  sourceObject="Document01" targetObject="urn:uuid:550e8400-e29b-41d4-a716-446655440000" />
```

where **operation** is one of the following values:

- urn:ihe:iti:2007:AssociationType:APND (for reports only)
- urn:ihe:iti:2007:AssociationType:RPLC (for reports or manifests)

In the case of document replacement, the existing document specified as the targetObject will have its availabilityStatus changed to urn:oasis:names:tc:ebxml-regrep:StatusType:Deprecated as part of the processing of this ProvideAndRegisterDocumentSet request.

Note that the entryUUID of the referenced document that is specified in the 'targetObject' parameter in the 'Association' object **must** be determined by first issuing a RegistryStoredQuery request to the eHealth Ontario XDS registry. Sources should not rely on maintaining their own entryUUID values as internal administrative update operations can change the entryUUID value associated with a given document.

Also note that when issuing a document replacement or addendum, the CDA header (for reports) should contain the appropriate 'relatedDocument' element (see section 5.4.3).

7.3 RetrieveDocumentSet

The RetrieveDocumentSet (ITI-43) transaction is used to retrieve the document content from the XDS repository.

7.3.1 Request Overview

The RetrieveDocumentSet request is a standard SOAP message consisting of a header and a body. The header should conform to the WS-Addressing standard and includes the action to be performed. The header may also contain additional security information which is detailed in *Diagnostic Imaging Consumer Implementation Guide – Transport Specification*.

The basic structure of the request is illustrated in the following XML fragment:

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:RetrieveDocumentSet</a:Action>
    <a:MessageID>urn:uuid:0fbfdced-6c01-4d09-a110-2201afedaa02</a:MessageID>
    <a:ReplyTo>
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
    <a:To s:mustUnderstand="1">https://gateway.ehealthontario.on.ca:7180/index/services/repository</a:To>
  </s:Header>
  <s:Body>
    <RetrieveDocumentSetRequest xmlns="urn:ihe:iti:xds-b:2007">

      <!-- List of documents to be retrieved, multiple DocumentRequest elements may be specified -->
```

```

    <DocumentRequest>
      <RepositoryUniqueId>RepositoryId</RepositoryUniqueId>
      <DocumentUniqueId>DocumentId</DocumentUniqueId>
    </DocumentRequest>

  </RetrieveDocumentSetRequest>
</s:Body>
</s:Envelope>

```

where **RepositoryId** and **DocumentId** should be obtained from the corresponding repositoryUniqueId and uniqueId XSDDocumentEntry metadata elements respectively. An example of a complete RetrieveDocumentSet request can be seen in the appendix.

7.3.2 Response Overview

The RetrieveDocumentSet response contains the status of the request and any error or warning information that was detected during the processing of the request. The basic structure of the response is illustrated in the following XML fragment:

```

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:RetrieveDocumentSetResponse</a:Action>
    <a:RelatesTo>urn:uuid:0fbfdced-6c01-4d09-a110-2201afedaa02</a:RelatesTo>
  </s:Header>
  <s:Body>
    <RetrieveDocumentSetResponse xmlns="urn:ihe:iti:xds-b:2007"
      xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0">
      <rs:RegistryResponse status="status value"
        xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0" >

        <!-- The following RegistryErrorList element is optional and will be included
          if there were errors or warnings detected during the processing of the request -->
        <RegistryErrorList highestSeverity="error severity">

          <!-- The following RegistryError element will be repeated for each error and warning -->
          <RegistryError errorCode="error code"
            codeContext="free form text describing the error"
            location="optional free form text describing the location of the error"
            severity="error severity" />

        </RegistryErrorList>
      </rs:RegistryResponse>
    <DocumentResponse>
      <RepositoryUniqueId> RepositoryId </RepositoryUniqueId>
      <DocumentUniqueId> DocumentId </DocumentUniqueId>
      <mimeType>MimeType</mimeType>
      <Document>
        <!-- reference to MTOM/XOP attachment containing CDA document -->
      </Document>
    </DocumentResponse>
  </s:Body>
</s:Envelope>

```


- XDSSubmissionSet
- XDSFolder
- Association

There are a number of different types of queries that can be made through the RegistryStoredQuery transaction. Each type of query provides different capabilities for searching and retrieving the desired information. The following sections will examine in greater detail how these queries can be performed.

7.4.1 Request Overview

The following XML fragment shows the basic message structure that all RegistryStoredQuery transactions must follow:

```
<s:Envelope xmlns:s=http://www.w3.org/2003/05/soap-envelope
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:RegistryStoredQuery</a:Action>
    <a:MessageID>urn:uuid:a02ca8cd-86fa-4afc-a27c-616c183b2055</a:MessageID>
    <a:ReplyTo>
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
    <a:To s:mustUnderstand="1"> https://gateway.ehealthontario.on.ca:7180/index/services/registry </a:To>
  </s:Header>
  <s:Body>
    <query:AdhocQueryRequest xmlns:query="urn:oasis:names:tc:ebxml-regrep:xsd:query:3.0"
      xmlns:rim="urn:oasis:names:tc:ebxml-regrep:xsd:rim:3.0"
      xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0">
      <query:ResponseOption returnComposedObjects="true" returnType=ReturnType>/>
      <rim:AdhocQuery id=" QueryId

```

The three bold italicized values represent the key information for each request and are discussed in more detail in the following sections. An example of a complete RetrieveDocumentSet request can be seen in the appendix.

7.4.1.1 ReturnType

The ***ReturnType*** value in the RegistryStoredQuery request specifies whether the data returned in the response should contain the complete metadata object or only a reference identifier for each object. The following two values can be specified:

- LeafClass: The response will contain the complete metadata objects in the response
- ObjectRef: the response will contain only the reference id's to the metadata objects. These identifiers can be used in a subsequent query (i.e. GetDocuments) to obtain the complete metadata for each object. This is useful in cases where there might be a potentially large number of objects returned in a response. By only having the id's returned, the client application can implement its own paging of the results by only requesting the full metadata for a subset of the objects at a time.

7.4.1.2 QueryId

The **QueryId** value specifies the particular type of query that should be performed by the registry. The following is the complete list of queries supported by the RegistryStoredQuery transaction along with the corresponding identifier to be specified in the request.

Query Name	Query Id
FindDocuments	urn:uuid:14d4debf-8f97-4251-9a74-a90016b0af0d
FindSubmissionSets	urn:uuid:f26abbcb-ac74-4422-8a30-edb644bbc1a9
FindFolders	urn:uuid:958f3006-baad-4929-a4de-ff1114824431
GetAll	urn:uuid:10b545ea-725c-446d-9b95-8aeb444eddf3
GetDocuments	urn:uuid:5c4f972b-d56b-40ac-a5fc-c8ca9b40b9d4
GetFolders	urn:uuid:5737b14c-8a1a-4539-b659-e03a34a5e1e4
GetAssociations	urn:uuid:a7ae438b-4bc2-4642-93e9-be891f7bb155
GetDocumentsAndAssociations	urn:uuid:bab9529a-4a10-40b3-a01f-f68a615d247a
GetSubmissionSets	urn:uuid:51224314-5390-4169-9b91-b1980040715a
GetSubmissionSetAndContents	urn:uuid:e8e3cb2c-e39c-46b9-99e4-c12f57260b83
GetFolderAndContents	urn:uuid:b909a503-523d-4517-8acf-8e5834dfc4c7
GetFoldersForDocument	urn:uuid:10cae35a-c7f9-4cf5-b61e-fc3278ffb578
GetRelatedDocuments	urn:uuid:d90e5407-b356-4d91-a89f-873917b4b0e6
FindDocumentsByReferenceId	urn:uuid:12941a89-e02e-4be5-967c-ce4bfc8fe492

Each query has its own unique set of parameters that can be specified and in general return different metadata objects from the registry. Two of the most common queries, FindDocuments and GetDocuments, will be examined in greater detail later in this section. Note that currently XDSFolders are not utilized in the eHealth Ontario registry (the folder related queries are still supported but will always return an empty response).

7.4.1.3 QueryParameter

All query parameters are identified by a parameter name (which typically includes a leading '\$' character) and encoded using an ebXML Slot object as shown in the following XML fragment:

```

<rim:Slot name="$ParameterName">
  <rim:ValueList>
    <rim:Value>ParameterValue</rim:Value>
  </rim:ValueList>
</rim:Slot>

```

The list of available **ParameterName's** is unique for each individual query. For convenience, the FindDocuments and GetDocuments parameters are provided later in this document. The complete list of parameters for all query types can be found in the XDS specification. The **ParameterValue** needs to be encoded according to the type and cardinality of the query parameter being specified. The following sections detail those requirements.

7.4.1.3.1 Date/Time Parameters

Date/Time query parameters allow you to specify a range for when a specific event occurred by using a combination of 'From' and 'To' parameters. The range can be open ended with only one value specified (i.e. all documents created after Jan 1, 2013 or all documents created before Dec 31, 2012) or both values can be specified for a closed range. Note that only the minimum granularity required for the date/time range need be specified and the 'From' and 'To' query parameters are interpreted lexicographically as follows:

TimeFrom <= *matching dates* < **TimeTo**

The following XML fragment shows the encoding of the query parameters to only return documents created in the first six months of 2012:

```

<rim:Slot name="$XDSDocumentEntryCreationTimeFrom">
  <rim:ValueList>
    <rim:Value>'201201'</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="$XDSDocumentEntryCreationTimeTo">
  <rim:ValueList>
    <rim:Value>'201207'</rim:Value>
  </rim:ValueList>
</rim:Slot>

```

7.4.1.3.2 Coded Terminology Parameters

When specifying a coded terminology value as a query parameter, the following format is required:

code^^coding-scheme

Note that only the coded terminology value and coding scheme are specified, the display name is not included. The following XML fragment shows the sample encoding of the \$XDSDocumentEntryClassCode parameter as part of a query:

```

<rim:Slot name="$XDSDocumentEntryClassCode">
  <rim:ValueList>
    <rim:Value>('18748-4^^2.16.840.1.113883.6.1')</rim:Value>
  </rim:ValueList>
</rim:Slot>

```

7.4.1.3.3 Single and Multi-Valued Parameters

Each query parameter is defined to support either single or multiple values. Query parameters defined to only accept a single value are simply enclosed within quotes. Parameters supporting multiple values must be encoded as follows (even if only a single value is specified):

```
<Value>('ParameterValue1', 'ParameterValue2')</Value>
```

OR

```
<Value>('ParameterValue1')</Value>  
<Value>('ParameterValue2')</Value>
```

The following sample XML fragment shows both single and multi-valued query parameters being specified:

```
<rim:Slot name="$XDSDocumentEntryPatientId">  
  <rim:ValueList>  
    <rim:Value>'12345^^^&1.3.6.1.4.1.21367.2005.3.7&ISO'</rim:Value>  
  </rim:ValueList>  
</rim:Slot>  
<rim:Slot name="$XDSDocumentEntryClassCode">  
  <rim:ValueList>  
    <rim:Value>('18748-4^^2.16.840.1.113883.6.1')</rim:Value>  
  </rim:ValueList>  
</rim:Slot>  
<rim:Slot name="$XDSDocumentEntryStatus">  
  <rim:ValueList>  
    <rim:Value>('urn:oasis:names:tc:ebxml-regrep:StatusType:Approved')</rim:Value>  
    <rim:Value>('urn:oasis:names:tc:ebxml-regrep:StatusType:Deprecated')</rim:Value>  
  </rim:ValueList>  
</rim:Slot>
```

7.4.1.3.4 Logical AND/OR Semantics

The RegistryStoredQuery transaction supports both AND and OR semantics for the specified query parameters. Each separate 'slot' is treated as a logical 'AND' operation. This implies that when multiple query parameters are specified, the set of returned elements must match all of the specified criteria. Within a given 'slot', if multiple values are specified, they are treated as a logical 'OR' operation. The following examples demonstrate this capability:

```
<rim:Slot name="$XDSDocumentEntryPatientId">  
  <rim:ValueList>  
    <rim:Value>'12345^^^&2.16.840.1.113883.3.239.18.144&ISO'</rim:Value>  
  </rim:ValueList>  
</rim:Slot>  
<rim:Slot name="$XDSDocumentEntryStatus">  
  <rim:ValueList>  
    <rim:Value>('urn:oasis:names:tc:ebxml-regrep:StatusType:Approved')</rim:Value>  
    <rim:Value>('urn:oasis:names:tc:ebxml-regrep:StatusType:Deprecated')</rim:Value>  
  </rim:ValueList>  
</rim:Slot>
```

In the above example, all XSDDocumentEntry objects whose PatientId is '12345^^^&2.16.840.1.113883.3.239.18.144&ISO' AND whose status is (Approved OR Deprecated) will be returned. For query parameters that support multiple values, it is also possible to specify AND semantics on the same parameter. The following example demonstrates this capability:

```
<rim:Slot name="$XSDDocumentEntryEventCodeList">
  <rim:ValueList>
    <rim:Value>('a', 'b')</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="$XSDDocumentEntryEventCodeList">
  <rim:ValueList>
    <rim:Value>('c') </rim:Value>
  </rim:ValueList>
</rim:Slot>
```

In this example, all XSDDocumentEntry objects having eventCode matching (a OR b) AND c would be returned.

7.4.2 Response Overview

The response to a RegistryStoredQuery request is the list of registry objects that satisfy the query parameters specified in the request. If successful, the response will contain the complete list of registry objects as there is no paging mechanism built into the request. The following XML message shows the details of a RegistryStoredQuery response:

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action>urn:ihe:iti:2007:RegistryStoredQueryResponse</a:Action>
    <a:RelatesTo> urn:uuid:a02ca8cd-86fa-4afc-a27c-616c183b2055</a:RelatesTo>
  </s:Header>
  <s:Body>
    <query:AdhocQueryResponse xmlns:query="urn:oasis:names:tc:ebxml-regrep:xsd:query:3.0"
      status="status value">

      <!-- The following RegistryErrorList element is optional and will be included
        if there were errors or warnings detected during the processing of the request -->
      <RegistryErrorList highestSeverity="error severity">

        <!-- The following RegistryError element will be repeated for each error and warning -->
        <RegistryError errorCode="error code"
          codeContext="free form text describing the error"
          location="optional free form text describing the location of the error "
          severity="error severity"/>

      </RegistryErrorList>

      <!-- The results of the query are contained within the following RegistryObjectList element -->
      <rim:RegistryObjectList xmlns:rim="urn:oasis:names:tc:ebxml-regrep:xsd:rim:3.0">

        <!-- If the returnType parameter was set to 'LeafClass', the response will contain
          a list of metadata objects matching the specified query parameters -->
```

```

|
    <rim:ExtrinsicObject ... >
    <rim:RegistryPackage ... >
    <rim:Association ... >

    <!-- If the returnType parameter was set to 'ObjectRef', the response will contain
         a list of reference id's matching the specified query parameters -->
    <rim:ObjectRef ... >

    </rim:RegistryObjectList>
  </query:AdhocQueryResponse>
</s:Body>
</s:Envelope>

```

where **status value** will be one of the following defined values:

- urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success
- urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:PartialSuccess
- urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Failure

and **error severity** will be one of the following defined values:

- urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Warning
- urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Error

Note that if the **status** is Success, then the RegistryErrorList (if present) may only contain warnings. In the case of both Success and PartialSuccess, the list of registry objects shall be returned. In the case of both PartialSuccess and Failure, a RegistryErrorList element will be present as part of the AdhocQueryResponse. The list of possible **error codes** and their meaning is contained in the following table:

Error Code	Description
XDSRegistryError	Internal Registry/Repository Error
XDSRegistryBusy	Too much activity
XDSRegistryOutOfResources	Resources are low.
XDSTooManyResults	The query response would contain too many results
XDSUnknownStoredQuery	The Query ID provided in the request is not recognized.
XDSStoredQueryMissingParam	A required parameter to a stored query is missing.

Error Code	Description
XDSStoredQueryParamNumber	A parameter which only accepts a single value is coded with multiple values
XDSResultNotSinglePatient	This error signals that the single Stored Query would have returned metadata assigned to multiple Patient IDs
XDSConsentApplied	This custom warning will be returned when potential query results were not included in the response due to an applied consent directive
XDSPatientConsentDirective	This custom warning will be returned whenever a patient level consent directive is present. Note this warning will be returned regardless of whether or not an consent override is present.

7.5 UpdateDocumentSet

The UpdateDocumentSet (ITI-57) transaction is used to update document metadata in the XDS registry. In the context of DI CS, it will be used to support the deprecation of documents and to allow updates to some of the DocumentEntry metadata attributes. Imaging source actors are expected to utilize this transaction to deprecate a manifest from the XDS registry when the associated imaging study has been deleted from their system. Imaging source actors may also optionally utilize this transaction to update the confidentialityCode and/or the patientId metadata attributes. Note that while the standard ITI-57 transaction supports updates to any of the DocumentEntry metadata attributes, only the changes made to the confidentialityCode and/or patientId attributes will be processed. Changes made to any of the other metadata attributes will be ignored during the processing of this transaction. Also note that including both a status change and metadata update change in the same UpdateDocumentSet transaction is not currently supported.

7.5.1 Request Overview

The following XML fragments show the basic message structure for the two distinct variations of the UpdateDocumentSet transaction.

7.5.1.1 Document Deprecation

To deprecate an existing document in the XDS registry, the UpdateDocumentSet transaction must adhere to the following message structure:

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2010:UpdateDocumentSet</a:Action>
    <a:MessageID>urn:uuid:a02ca8cd-86fa-4afc-a27c-616c183b2060</a:MessageID>
    <a:ReplyTo>
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
    <a:To s:mustUnderstand="1">https://gateway.ehealthontario.on.ca:7180/index/services/registry</a:To>
  </s:Header>
```

```

<s:Body>
  <lcm:SubmitObjectsRequest>

    <!-- XDS Metadata Objects to be updated -->
    <rim:RegistryObjectList>

      <!-- XDSSubmissionSet -->
      <rim:RegistryPackage id="SubmissionSet01" ... >
        <!-- submission set details omitted -->
      </rim:RegistryPackage>

      <!-- ebXML Classification to designate the above RegistryPackage as an XDSSubmissionSet.
           This classification can be located here or within the XDSSubmissionSet element itself -->
      <rim:Classification id="cl10" classifiedObject="SubmissionSet01"
        classificationNode="urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd"/>

      <!-- ebXML Association to define the change of status of the specified DocumentEntry -->
      <rim:Association id="as01" associationType="2010:AssociationType:UpdateAvailabilityStatus"
        sourceObject="SubmissionSet01"
        targetObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf">
        <rim:Slot name="NewStatus">
          <rim:ValueList>
            <rim:Value>urn:oasis:names:tc:ebxml-regrep:StatusType:Deprecated</rim:Value>
          </rim:ValueList>
        </rim:Slot>
        <rim:Slot name="OriginalStatus">
          <rim:ValueList>
            <rim:Value>urn:oasis:names:tc:ebxml-regrep:StatusType:Approved</rim:Value>
          </rim:ValueList>
        </rim:Slot>
      </rim:Association>

    </rim:RegistryObjectList>
  </lcm:SubmitObjectsRequest>
</s:Body>
</s:Envelope>

```

Note that the entryUUID of the document to be deprecated is specified in the 'targetObject' parameter in the 'Association' object and **must** be determined by first issuing a RegistryStoredQuery request to the eHealth Ontario XDS registry. Sources should not rely on maintaining their own entryUUID values as internal administrative update operations can change the entryUUID value associated with a given document.

7.5.1.2 Metadata Attribute Changes

To update the confidentialityCode and/or patientId for an existing document in the XDS registry, the UpdateDocumentSet transaction must adhere to the following message structure:

```

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2010:UpdateDocumentSet</a:Action>

```

```

|
<a:MessageID>urn:uuid:a02ca8cd-86fa-4afc-a27c-616c183b2060</a:MessageID>
<a:ReplyTo>
  <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
</a:ReplyTo>
<a:To s:mustUnderstand="1"> https://gateway.ehealthontario.on.ca:7180/index/services/registry </a:To>
</s:Header>
<s:Body>
  <lcm:SubmitObjectsRequest>

    <!-- XDS Metadata Objects to be updated -->
    <rim:RegistryObjectList>

      <!-- XDSSubmissionSet -->
      <rim:RegistryPackage id="SubmissionSet01" ... >
        <!-- submission set details omitted -->
      </rim:RegistryPackage>

      <!-- XDSDocumentEntry with updated confidentialityCode or patientId values -->
      <rim:ExtrinsicObject id="Document01" lid="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abee" ... >
        <!-- DocumentEntry details omitted -->
      </rim:ExtrinsicObject>

      <!-- ebXML Classification to designate the above RegistryPackage as an XDSSubmissionSet.
           This classification can be located here or within the XDSSubmissionSet element itself -->
      <rim:Classification id="cl10" classifiedObject="SubmissionSet01"
        classificationNode="urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd"/>

      <!-- ebXML Association to define the change of status of the specified DocumentEntry -->
      <rim:Association id="as01" associationType="2010:AssociationType:HasMember"
        sourceObject="SubmissionSet01"
        targetObject="Document01">
        <rim:Slot name="SubmissionSetStatus">
          <rim:ValueList>
            <rim:Value>Original</rim:Value>
          </rim:ValueList>
        </rim:Slot>
        <rim:Slot name="PreviousVersion">
          <rim:ValueList>
            <rim:Value>1</rim:Value>
          </rim:ValueList>
        </rim:Slot>
      </rim:Association>

    </rim:RegistryObjectList>
  </lcm:SubmitObjectsRequest>
</s:Body>
</s:Envelope>

```

Note that the value of the 'lid' attribute and the 'PreviousVersion' slot must match the current values of the DocumentEntry being updated by first issuing a RegistryStoredQuery request to the eHealth Ontario XDS registry.

The version number of the DocumentEntry can be found in the VersionInfo element of the returned DocumentEntry objects.

7.5.2 Response Overview

The UpdateDocumentSet response contains the status of the request and potentially any error or warning information that was detected during the processing of the request. The basic structure of the response is illustrated in the following XML fragment:

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
            xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1"> urn:ihe:iti:2010:UpdateDocumentSetResponse</a:Action>
    <a:RelatesTo> urn:uuid:a02ca8cd-86fa-4afc-a27c-616c183b2060</a:RelatesTo>
  </s:Header>
  <s:Body>
    <rs:RegistryResponse status="status value"
                        xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0" >

      <!-- The following RegistryErrorList element is optional and will be included
           if there were errors or warnings detected during the processing of the request -->
      <RegistryErrorList highestSeverity="error severity">

        <!-- The following RegistryError element will be repeated for each error and warning -->
        <RegistryError errorCode="error code"
                      codeContext="free form text describing the error"
                      location="optional free form text describing the location of the error"
                      severity="error severity" />

      </RegistryErrorList>
    </rs:RegistryResponse>
  </s:Body>
</s:Envelope>
```

where **status value** will be one of the following defined values:

- urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success
- urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Failure

and **error severity** will be one of the following defined values:

- urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Warning
- urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Error

Note that if the **status** is Success, then the RegistryErrorList (if present) may only contain warnings. The list of possible **error codes** and their meaning is contained in the following table:

Error Code	Description
------------	-------------

Error Code	Description
XDSRegistryError	Internal Registry Error
XDSMetadataUpdateError	General metadata update error. Used only when more specific error code is not available or appropriate did not match.
XDSPatientIDReconciliationError	Update encountered error where Patient IDs did not match.
XDSMetadataUpdateOperationError	Document Registry/Recipient cannot decode the requested metadata update.
XDSMetadataVersionError	The version number included in the update request did not match the existing object. One cause of this is multiple simultaneous update attempts.

8. Glossary

Term	Definition	Reference
Attributes	Attributes are abstractions of the data captured about classes. Attributes capture separate aspects of the class and take their values independent of one another. Attributes assume data values that are parsed in HL7 messages. Example: 'LocationStatus' is an attribute of the 'Location' class. In an HL7 message the 'LocationStatus' attribute assumes data values such as 'ACTIVE', 'SUSPENDED' and 'TERMINATED'.	http://www.hl7.org/ebr/documents/public/documents/Glossary%20of%20terms.pdf
Cardinality	Property of a data element (the number of times a data element may repeat within an individual occurrence of an object view) or column in the HL7 Hierarchical Message Description (the minimum and maximum number of occurrences of the message element).	http://www.hl7.org/v3ballot/html/help/glossary/glossary.htm
Clinical Document Architecture	See HL7 Clinical Document Architecture.	
Code System	Synonym for a terminology. See Terminology.	
Event	A situation considered as occurring; a record of a change in state of some object of interest at a particular time. The notion of time expressed in this definition may be a single point in time or a time span defined by a start point and an end point.	http://www.infoway-inforoute.ca/ehr/glossary.php?lang=en&section=C
HL7 Clinical Document Architecture (CDA)	Two definitions are appropriate to the iEHR context: General definition: A document architecture that provides an exchange model for clinical documents such as discharge summaries and progress notes. Specific definition: Defines a common document architecture and ontology to support the expression and exchange of any clinical document in a uniform format, between and among incompatible health information systems.	http://www.infoway-inforoute.ca/ehr/glossary.php?lang=en&section=C openEHR - http://www.openEHR.org
Imaging	Performing diagnostic studies such as X-rays, CT scans, MRIs, etc.	http://www.infoway-inforoute.ca/ehr/glossary.php?lang=en&section=C
LOINC	Logical Observation Identifiers Names and Codes are standardized codes assigned to Laboratory Results to facilitate sharing of common information across systems. The pan-Canadian Nomenclature Standard uses LOINC codes to identify batteries (test requests) and observations	Ontario eHealth Program Glossary v1.0

Term	Definition	Reference
	(results).	
Notes	Context: healthcare records A “free text” area at the end of a healthcare record where any provider can add commentary that is supplemental to the information in the record. Each note captures the details of when it was added and by whom. Generally, there are no limitations placed on which providers can add notes or when they can be added beyond restrictions that may be imposed by a provider’s healthcare professional college and their designated scope of practice. In some instances e.g. mental health records, a patient may be able to add notes to this area of their record if legislation permits.	
Query	A user's request for information from a database or search engine.	http://forums.infoway-inforoute.ca/webx?293@855.50LlalMhbuf.27@.eeeca423
Systematized Nomenclature of Human and Veterinary Medicine Clinical Terms (SNOMED-CT®)	The clinical terminology maintained and distributed by the SNOMED International Authority under the editorial guidance of the SNOMED International Editorial Board. The First Release of SNOMED Clinical Terms was the result of the merger of the CTV3 (formerly Read Codes) and SNOMED Reference Terminology (RT).	SNOMED-CT® Glossary http://www.snomed.org/snomedct/documents/snomed_ct_glossary.pdf
Terminology	A general term used to refer to any systematic way of organizing coded concepts (“ideas”) Terminologies may be: - Classifications used for reporting and analysis - Controlled Terminologies specifying detailed coded concepts - Administrative code schemes. Standard Terminologies are those created and maintained by external Standards Development Organizations. Alternative Infoway definition: A standardized way to describe and share information.	http://www.infoway-inforoute.ca/ehr/glossary.php?lang=en&section=C
Value Set	A specific set of codes that are valid in a particular context.	iEHR Terminology Services Document

Term	Definition	Reference
Vocabulary	A synonym for Terminology. See Terminology.	

Table 5: Glossary

Appendix A. CDA Examples

A.1 Canadian Realm Address Data Type

```
<addr use="H">
  Apt A5 123 Some Street<delimiter/>
  <city>Edmonton</city>
  <state>AB</state>
  <postalCode>A1B2C3</postalCode>
  <country>CA</country>
</addr>
```

Alternate format without the use of <delimiter> element:

```
<addr>
  <streetAddressLine>21 North Ave</streetAddressLine>
  <city>Mississauga</city>
  <state>ON</state>
  <postalCode>M2J2H2</postalCode>
  <country>CA</country>
</addr>
```

A.2 Canadian Realm Date Time Data Type

```
<effectiveTime value="201208021340-0500"/>
```

A.3 Personal Name Data Type

```
<name use="L">
  <prefix>Mr</prefix>
  <given>John</given>
  <given qualifier="IN">W</given>
  <family>Smith</family>
</name>
```

A.4 Canadian Realm Telecom Type

```
<telecom use="WP" xsi:type="FAX" value="tel:+1-555-555-4002"/>
```

```
<telecom use="WP" xsi:type="TEL" value="tel:+14169237867;ext=200"/>
```

A.5 Record Target Example

```
<recordTarget typeCode="RCT" contextControlCode="OP">
  <patientRole>
    <id extension="12345" root="2.16.840.1.113883.19"/>
    <addr use="H">
      17 King Street<delimiter/>
    </addr>
  </patientRole>
</recordTarget>
```

```

    <city>Toronto</city>
    <state>ON</state>
    <postalCode>M2K2J1</postalCode>
    <country>CA</country>
  </addr>
  <telecom value="tel:(416)555-1212" use="H"/>
  <patient classCode="PSN" determinerCode="INSTANCE">
    <id root="2.16.840.1.113883.4.20" extension="666112999"/>
    <name use="L">
      <family>Nuclear</family>
      <given>John</given>
      <prefix>Mr.</prefix>
      <suffix>II</suffix>
    </name>
    <administrativeGenderCode code="M" codeSystem="2.16.840.1.113883.5.1"
      displayName="Male"/>
    <birthTime value="19441021"/>
    <maritalStatusCode code="M" displayName="Married"
      codeSystem="2.16.840.1.113883.5.2" codeSystemName="MaritalStatusCode"/>
    <guardian classCode="GUARD">
      <addr use="H">
        Unit 20 301 Main Street<delimiter/>
        <city>Toronto</city>
        <state>ON</state>
        <postalCode>M2K1J2</postalCode>
        <country>CA</country>
      </addr>
      <telecom value="tel:(418)555-1212" use="H"/>
      <guardianPerson classCode="PSN" determinerCode="INSTANCE">
        <name>
          <prefix>Ms.</prefix>
          <given>Susan</given>
          <given qualifier="IN">S</given>
          <family>Script</family>
        </name>
      </guardianPerson>
    </guardian>
  </patient>
  <providerOrganization classCode="ORG" determinerCode="INSTANCE">
    <id root="2.16.840.1.113883.4.284" extension="2121"/>
    <name>Good Health Clinic</name>
    <telecom use="WP" value="tel:(418)555-1212"/>
    <addr>
      21 North Ave<delimiter/>
      <city>Mississauga</city>
      <state>ON</state>
      <postalCode>M2J2H2</postalCode>
      <country>CA</country>
    </addr>
  </providerOrganization>
</patientRole>
</recordTarget>

```

A.6 DocumentationOf Example

```

<documentationOf typeCode="DOC">
  <serviceEvent classCode="ACT">
    <id root="1.2.840.113619.2.62.994044785528.114289542805"/>

```

```

<id extension="123453" root="1.2.840.113619.2.62.994044785528.26"/>
<code code="93041" displayName="Rhythm ECG, one to three leads; tracing only without
interpretation and report" codeSystem="2.16.840.1.113883.6.12" codeSystemName="CPT4"/>
<effectiveTime value="20080813222400"/>
<performer typeCode="PRF">
  <templateId root="2.16.840.1.113883.10.20.6.2.1"/>
  <assignedEntity>
    <id extension="121008" root="2.16.840.1.113883.19.5"/>
    <code code="208D00000X" codeSystem="2.16.840.1.113883.6.101"
codeSystemName="NUCC" displayName="General Practice"/>
    <addr nullFlavor="NI"/>
    <telecom nullFlavor="NI"/>
    <assignedPerson>
      <name>
        <given>Matthew</given>
        <family>Care</family>
        <suffix>MD</suffix>
      </name>
    </assignedPerson>
  </assignedEntity>
</performer>
</serviceEvent>
</documentationOf>

```

A.7 Order Fulfillment Entry Example

```

<inFulfillmentOf typeCode="FLFS">
  <order classCode="ENC" moodCode="RQO">
    <id extension="Request1" root="2.16.840.1.113883.19.4.27 "
assigningAuthorityName="HealthCentre"/>
    <!-- {root}.27= accession number list *Note this is an example OID. -->
    <priorityCode code="A" codeSystem="2.16.840.1.113883.1.11.16866" codeSystemName="HL7 Act
Priority" displayName="ASAP"/>
  </order>
</inFulfillmentOf>

```

A.8 Authenticator Example

```

<authenticator typeCode="AUTHEN">
  <time value="20120329100543+0500"/>
  <signatureCode code="S"/>
  <assignedEntity classCode="ASSIGNED">
    <id root="2.16.840.1.113883.19.5" extension="43252"/>
    <addr use="H">
      17 Guenette Street<delimiter/>
      <city>Montreal</city>
      <state>QC</state>
      <postalCode>H7T3L1</postalCode>
      <country>CA</country>
    </addr>
    <telecom use="H" value="tel:(514)555-1003"/>
    <assignedPerson classCode="PSN" determinerCode="INSTANCE">
      <name use="L">
        <given>Henry</given>
        <family>Seven</family>
      </name>
    </assignedPerson>
  </assignedEntity>
</authenticator>

```

```

|
    </assignedPerson>
  </assignedEntity>
</authenticator>

```

A.9 Informant Example with Assigned Person

```

<informant typeCode="INF" contextControlCode="OP">
  <assignedEntity>
    <id extension="KP00017" root="2.16.840.1.113883.19.5"/>
    <addr use="H">
      17 St-Germain Street<delimiter/>
      <city>Montreal</city>
      <state>QC</state>
      <postalCode>H7T1G2</postalCode>
      <country>CA</country>
    </addr>
    <telecom use="H" value="tel:(514)111-7873"/>
    <assignedPerson classCode="PSN" determinerCode="INSTANCE">
      <name use="L">
        <given>Henry</given>
        <family>Seven</family>
      </name>
    </assignedPerson>
  </assignedEntity>
</informant>

```

A.10 Informant Example with Related Person

```

<informant typeCode="INF" contextControlCode="OP">
  <assignedEntity>
    <id extension="KP00017" root="2.16.840.1.113883.19.5"/>
    <addr use="H">
      17 St-Germain Street<delimiter/>
      <city>Montreal</city>
      <state>QC</state>
      <postalCode>H7T1G2</postalCode>
      <country>CA</country>
    </addr>
    <telecom use="H" value="tel:(514)111-7873"/>
    <relatedPerson classCode="PSN" determinerCode="INSTANCE">
      <name use="L">
        <given>Jean</given>
        <family>First</family>
      </name>
    </relatedPerson>
  </assignedEntity>
</informant>

```

A.11 Author Example with Assigned Person

```

<author typeCode="AUT" contextControlCode="OP">
  <time value="20120329224411+0500"/>
  <assignedAuthor classCode="ASSIGNED">
    <id extension="42423432" root="2.16.840.1.113883.4.390"/>
    <addr>

```

```

Unit 20 301 Main Street N <delimiter/>
<city>Vancouver</city>
<state>BC</state>
<postalCode>V5K2A1</postalCode>
<country>CA</country>
</addr>
<telecom use="WP" value="tel:(604)555-1003"/>
<assignedPerson classCode="PSN" determinerCode="INSTANCE">
  <name>
    <given>Henry</given>
    <family>Seven</family>
  </name>
</assignedPerson>
</assignedAuthor>
</author>

```

A.12 Author Example with Assigned Authoring Device

```

<author typeCode="AUT" contextControlCode="OP">
  <time value="20120329224411+0500"/>
  <assignedAuthor classCode="ASSIGNED">
    <id extension="42423432" root="2.16.840.1.113883.4.390"/>
    <addr>
      Unit 20 301 Main Street N <delimiter/>
      <city>Vancouver</city>
      <state>BC</state>
      <postalCode>V5K2A1</postalCode>
      <country>CA</country>
    </addr>
    <telecom use="WP" value="tel:(604)555-1003"/>
    <assignedAuthoringDevice classCode="DEV" determinerCode="INSTANCE">
      <manufacturerModelName>New Medical Device</manufacturerModelName >
      <softwareName>Medical Device Report Generator</softwareName >
    </ assignedAuthoringDevice >
  </assignedAuthor>
</author>

```

Appendix B. ORU to CDA Mapping Guidance

B.1 Guiding Principles

It is recommended that the transformation process be carried out in two steps – syntax conversion and XSL transformation, as shown below:

1. Syntax conversion - HL7 V2 message is converted from its EDIFACT syntax into an XML format.
2. XSL transformation – XML message is transformed via XSLT to a CDA document.

Once the transformation is completed, the next step is replacing the code tables with HL7 V3 vocabularies.

The final step involves assigning Object Identifiers (OIDs) to identifiers where necessary.

(Refer to *HL7 Version 2: XML Encoding Syntax, Release 1* and *The CDA Book* for more detail.)

B.2 Mapping Guidelines

The table shown below lists data elements in HL7 v2 ORU messages and the corresponding data elements in the CDA document side-by-side.

Note that the list in the table is not exhaustive. It includes the most common elements and elements that can be mapped to the CDA header.

Another assumption is, for DI CS release 1, the OBR and OBX segments will be considered as part of ONE unstructured body in a given ORU, not as a collection of multiple sections each representing a unique record.

ORU Data element	CDA Data element
MSH-4	author/assignedAuthor/representedOrganization
MSH-10	clinicalDocument/id
PID-2	recordTarget/patientRole/id
PID-3	recordTarget/patientRole/id
PID-4	recordTarget/patientRole/id
PID-5.1	recordTarget/patientRole/patient/name
PID-5.2	recordTarget/patientRole/patient/name
PID-5.3	recordTarget/patientRole/patient/name
PID-5.5	recordTarget/patientRole/patient/name
PID-7	recordTarget/patientRole/patient/birthTime
PID-8	recordTarget/patientRole/patient/administrativeGenderCode

ORU Data element	CDA Data element
PID-9	recordTarget/patientRole/patient/name (use qualifying attribute “use=P” to indicate pseudonym)
PID-10	recordTarget/patientRole/patient/raceCode
PID-11.1	recordTarget/patientRole/addr
PID-11.3	recordTarget/patientRole/addr
PID-11.5	recordTarget/patientRole/addr
PID-12	recordTarget/patientRole/addr/country
PID-13	recordTarget/patientRole/telecom/@use
PID-14	recordTarget/patientRole/telecom/@use
PID-15	recordTarget/patientRole/patient/languagecommunication/languageCode
PID-16	recordTarget/patientRole/patient/maritalStatusCode
PID-17	recordTarget/patientRole/patient/religiousAffiliationCode
PID-18	recordTarget/patientRole/id
PID-19	recordTarget/patientRole/id
PID-20	recordTarget/patientRole/id
PID-22	recordTarget/patientRole/patient/ethnicGroupCode
PID-23	recordTarget/patientRole/patient/birthPlace/place
PV1-2	componentOf/encompassingEncounter/code
PV1-3.4	componentOf/encompassingEncounter/location/healthCareFacility/location/name
PV1-5	documentationOf/serviceEvent/id
PV1-19	documentationOf/serviceEvent/id
PV1-50	documentationOf/serviceEvent/id
PV1-7.1	componentOf/encompassingEncounter/encounterParticipant/assignedEntity/id (Note, encounterParticipant/@typeCode=ATND)
PV1-7.2	componentOf/encompassingEncounter/encounterParticipant/assignedEntity/assignedPerson/name/family
PV1-7.3	componentOf/encompassingEncounter/encounterParticipant/assignedEntity/assignedPerson/name/given
PV1-8.1	componentOf/encompassingEncounter/encounterParticipant/assignedEntity/id (Note, encounterParticipant/@typeCode=REF)

ORU Data element	CDA Data element
PV1-8.2	componentOf/encompassingEncounter/encounterParticipant/assignedEntity/assignedPerson/name/family
PV1-8.3	componentOf/encompassingEncounter/encounterParticipant/assignedEntity/assignedPerson/name/given
PV1-9.1	componentOf/encompassingEncounter/encounterParticipant/assignedEntity/id (Note, encounterParticipant/@typeCode=CON)
PV1-9.2	componentOf/encompassingEncounter/encounterParticipant/assignedEntity/assignedPerson/name/family
PV1-9.3	componentOf/encompassingEncounter/encounterParticipant/assignedEntity/assignedPerson/name/given
PV1-17.1	componentOf/encompassingEncounter/encounterParticipant/assignedEntity/id (Note, encounterParticipant/@typeCode=ADM)
PV1-17.2	componentOf/encompassingEncounter/encounterParticipant/assignedEntity/assignedPerson/name/family
PV1-17.3	componentOf/encompassingEncounter/encounterParticipant/assignedEntity/assignedPerson/name/given
PV1-39	componentOf/encompassingEncounter/location/healthCareFacility/id
ORC-2	infulfillmentOf/order/id (use ORC-2 by preference but if it doesn't exist use OBR-2)
ORC-3	infulfillmentOf/order/id (use ORC-3 by preference but if it doesn't exist use OBR-3)
ORC-4	infulfillmentOf/order/id
ORC-8	infulfillmentOf/order/id
ORC-12.1	componentOf/encompassingEncounter/encounterParticipant/assignedEntity/id (Note, encounterParticipant/@typeCode=REF)
ORC-12.2	componentOf/encompassingEncounter/encounterParticipant/assignedEntity/assignedPerson/name/family
ORC-12.3	componentOf/encompassingEncounter/encounterParticipant/assignedEntity/assignedPerson/name/given
ORC-14	componentOf/encompassingEncounter/encounterParticipant /assignedEntity/telecom/@value
ORC-21	componentOf/encompassingEncounter/encounterParticipant /assignedEntity/representedOrganization/name
ORC-22	componentOf/encompassingEncounter/encounterParticipant /assignedEntity/representedOrganization/addr
ORC-23	componentOf/encompassingEncounter/encounterParticipant /assignedEntity/representedOrganization/telecom/@value

ORU Data element	CDA Data element
ORC-24	componentOf/encompassingEncounter/encounterParticipant /assignedEntity/addr
OBR-2	infulfillmentOf/order/id (use ORC-2 by preference but if it doesn't exist use OBR-2)
OBR-3	infulfillmentOf/order/id (use ORC-3 by preference but if it doesn't exist use OBR-3)
OBR-4	documentationOf/serviceEvent/code
OBR-7	documentationOf/serviceEvent/effectiveTime/low/@value
OBR-25	ClinicalDocument/title (Append the status to the display name string. See 7.1.1 title and Appendix B for an example of display name)
OBR-16	informationRecipient/intendedRecipient/informationRecipient/name
OBR-32	author/assignedAuthor/assignedPerson/name
OBX-5	nonXMLBody
OBX-14	clinicalDocument/effectiveTime

Appendix C. XDS Examples

C.1 ProvideAndRegisterDocumentSet Transaction

C.1.1 Document Attachments

The following sections provide examples of the document types supported as attachments to the ProvideAndRegisterDocumentSet transaction.

C.1.1.1 CDA Wrapped Text Report

To better illustrate how the request content should be constructed for a report, the following sample ORU message will be used as the basis for the report being submitted to the XDS repository:

```
MSH | ^\& | PO RIS NAME | 4205 | BROKER | GTAWESTDIR | 20120101120000 | | ORU^R01 | 2043249 | P^T | 2.3.1 |
PID | | | 12341234^^^4205^PI | | SMITH^JOHN^Q | | 19491208 | M |
PV1 | | O | | | | | ^Wilson^James |
OBR | 1 | 1111 | 12345678 | 22211^Chest 1 View | | | 20120101113000 | | | | | | | | | | | F | | | | |
| &House&Gregory |
OBX | 1 | TX | SR Text | | MRI Report~Person Observer Name HOUSE GREGORY~History~Rule out internal derangement.~Findings
~Within the posterior horn of the medial meniscus there is minimal increase in signal intensity. ~Conclusions ~Joint diffusion
with superior joint plicate. | | | | | F | | 20120101120000 |
```

Prior to submitting the radiology report to the XDS repository, it needs to be encapsulated within a CDA document. Using the specifications contained within this document, the resulting CDA structure for the sample ORU message would look like the following:

```
<ClinicalDocument xmlns="urn:hl7-org:v3" classCode="DOCCLIN" moodCode="EVN">
  <realmCode code="CA"/>
  <typeId extension="POCD_HD000040" root="2.16.840.1.113883.1.3"/>
  <templateId root="2.16.840.1.113883.2.20.4.1.1"/>
  <templateId root="1.3.6.1.4.1.19376.1.2.21"/>
  <!-- The 'id' is created in this example by concatenating the site id OID together with the
        unique message identifier MSH-10 (note any unique OID would be acceptable) -->
  <id root="2.16.840.1.113883.3.239.23.7.2043249"/>
  <code code="18748-4" codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC"
        displayName="Diagnostic Imaging Report"/>
  <title>Diagnostic Imaging Report - Final</title>
  <!-- The local time specified in the HL7 ORU message is converted into the required UTC format
        by including the time zone offset -->
  <effectiveTime value="20120101120000-0500"/>
  <confidentialityCode code="N" codeSystem="2.16.840.1.113883.5.25"/>
  <languageCode code="eng-CA"/>
  <recordTarget typeCode="RCT" contextControlCode="OP">
    <patientRole classCode="PAT">
      <!-- The assigning authority for the patient identifier can be determined by looking up the
            site identifier (4265) in a list of known OID to site mappings (available from eHealth Ontario) -->
      <id extension="12341234" root="2.16.840.1.113883.3.239.18.144"/>
      <addr nullFlavor="UNK" />
      <telecom nullFlavor="UNK" />
    </patientRole>
  </recordTarget>
</ClinicalDocument>
```

```

|
<patient classCode="PSN" determinerCode="INSTANCE">
  <name use="L">
    <family>Smith</family>
    <given>John</given>
    <given>Q</given>
  </name>
  <id extension="12341234" root="2.16.840.1.113883.3.239.18.144"/>
  <administrativeGenderCode code="M" codeSystem="2.16.840.1.113883.1.11.1" />
  <birthTime value="19491208"/>
</patient>
</patientRole>
</recordTarget>
<author typeCode="AUT" contextControlCode="OP">
  <time value="20120101120000-0500"/>
  <assignedAuthor classCode="ASSIGNED">
    <id nullFlavor="UNK" />
    <telecom nullFlavor="UNK" />
    <assignedPerson classCode="PSN" determinerCode="INSTANCE">
      <name>
        <given>Gregory</given>
        <family>House</family>
      </name>
    </assignedPerson>
    <representedOrganization classCode="ORG" determinerCode="INSTANCE">
      <id root="2.16.840.1.113883.3.239.23.7"/>
    </representedOrganization>
  </assignedAuthor>
</author>
<custodian typeCode="CST">
  <assignedCustodian classCode="ASSIGNED">
    <representedCustodianOrganization classCode="ORG" determinerCode="INSTANCE">
      <id root="2.16.840.1.113883.3.239.23.7"/>
      <name>Sunnybrook Health Sciences Centre</name>
      <addr/>
    </representedCustodianOrganization>
  </assignedCustodian>
</custodian>
<componentOf>
  <encompassingEncounter>
    <effectiveTime value="20120101120000-0500" />
    <encounterParticipant typeCode="REF">
      <assignedEntity>
        <id nullFlavor="UNK" />
        <assignedPerson>
          <name>
            <given>James</given>
            <family>Wilson</family>
          </name>
        </assignedPerson>
      </assignedEntity>
    </encounterParticipant>
  </encompassingEncounter>
</componentOf>

```

```

    </ encompassingEncounter>
  </ componentOf>
  <inFulfillmentOf typeCode="FLFS">
    <order classCode="ENC" moodCode="RQO">
      <id extension="12345678" root="2.16.840.1.113883.3.239.32.139" />
    </order>
  </inFulfillmentOf>
  <documentationOf typeCode="DOC">
    <serviceEvent classCode="ACT">
      <code code="22211" displayName=" Chest 1 View " codeSystem="2.16.840.1.113883.3.239.33.139" />
      <effectiveTime value="20120101113000-0500"/>
    </serviceEvent>
  </documentationOf>
  <component>
    <nonXMLBody>
      <!-- The report text must be base64 encoded. Note that prior to the base64 encoding, all the HL7 repeat
           separators '~' were replaced with newline characters '\n' to ensure that the report text gets properly
           displayed by the consumer -->
      <text mediaType="text/plain" representation="B64">
TVJJIFJlcG9ydA0KUgVyc29uIE9ic2VydMvYlE5hbWUgSE9VU0UgR1JFR09SWQ0KSGlzdG9yeQ0KUnVsZSBvdXQgaW50
ZXJuYWwgZGVyYW5nZW1lbnQuDQpGaW5kaW5ncyANCldpdGhpbiB0aGUgcG9zdGVyaW9yIGhvcm4gb2YgdGhIIIG1I
ZGhCBtZW5pc2N1cyB0aGVyZSBpcyBtaW5pbWFsIGluY3JlYXNlIGluIHNPZ25hbCBpbmRlbnNpdHkuIA0KQ29uY2x1c2
lvbnMgDQpKb2ludCBkaWZmdXNpb24gd2l0aCBzdXBclmlvciBqb2ludCBwbGljYXRlLiA=
      </text>
    </nonXMLBody>
  </component>
</ClinicalDocument>

```

C.1.1.2 Manifest

DICOM KOS objects (manifests) are binary encoded files. The following example manifest is the output of the 'dcmddump.exe' utility from the dcmtoolkit (see <http://dicom.offis.de/dcmtoolkit.php.en> for more details) run on an example KOS object (study containing a single series with one image)

```
# Dicom-File-Format
```

```
# Dicom-Meta-Information-Header
```

```
# Used TransferSyntax: Little Endian Explicit
```

```

(0002,0000) UL 206 # 4, 1 FileMetaInformationGroupLength
(0002,0001) OB 00\01 # 2, 1 FileMetaInformationVersion
(0002,0002) UI =KeyObjectSelectionDocumentStorage # 30, 1 MediaStorageSOPClassUID
(0002,0003) UI [1.2.826.0.1.3680043.2.1611.1.1.22827.2] # 58, 1 MediaStorageSOPInstanceUID
(0002,0010) UI =LittleEndianExplicit # 20, 1 TransferSyntaxUID
(0002,0012) UI [1.2.345.678.9012345] # 28, 1 ImplementationClassUID

```

```
# Dicom-Data-Set
```

```
# Used TransferSyntax: Little Endian Explicit
```

```

(0008,0005) CS [ISO_IR 100] # 10, 1 SpecificCharacterSet
(0008,0016) UI =KeyObjectSelectionDocumentStorage # 30, 1 SOPClassUID
(0008,0018) UI [1.2.826.0.1.3680043.2.1611.1.1.22827.2] # 58, 1 SOPInstanceUID
(0008,0020) DA [20000101] # 8, 1 StudyDate
(0008,0023) DA [20000101] # 8, 1 ContentDate
(0008,0030) TM [082130.000] # 10, 1 StudyTime
(0008,0033) TM [082656.000] # 10, 1 ContentTime

```

(0008,0050) SH [ACC1234] # 12, 1 AccessionNumber
 (0008,0060) CS [KO] # 2, 1 Modality
 (0008,0070) LO [GE MEDICAL SYSTEMS] # 18, 1 Manufacturer
 (0008,0090) PN [Unspecified] # 12, 1 ReferringPhysicianName
 (0008,1111) SQ (Sequence with explicit length #=0) # 0, 1 ReferencedPerformedProcedureStepSequence
 (fffe,e0dd) na (SequenceDelimitationItem for re-encod.) # 0, 0 SequenceDelimitationItem
 (0010,0010) PN [Doe^John] # 14, 1 PatientName
 (0010,0020) LO [61a8e93b5152445] # 16, 1 PatientID
 (0010,0030) DA [20070410] # 8, 1 PatientBirthDate
 (0010,0040) CS [F] # 2, 1 PatientSex
 (0020,000d) UI [1.2.3.4.5.6.7.917515.2953] # 26, 1 StudyInstanceUID
 (0020,000e) UI [1.2.3.4.5.6.7.917515.2957] # 26, 1 SeriesInstanceUID
 (0020,0010) SH [29878] # 6, 1 StudyID
 (0020,0011) IS [4] # 2, 1 SeriesNumber
 (0020,0013) IS [445] # 4, 1 InstanceNumber
 (0040,a040) CS [CONTAINER] # 10, 1 ValueType
 (0040,a043) SQ (Sequence with explicit length #=1) # 50, 1 ConceptNameCodeSequence
 (fffe,e000) na (Item with explicit length #=3) # 42, 1 Item
 (0008,0100) SH [113030] # 6, 1 CodeValue
 (0008,0102) SH [DCM] # 4, 1 CodingSchemeDesignator
 (0008,0104) LO [Manifest] # 8, 1 CodeMeaning
 (fffe,e00d) na (ItemDelimitationItem for re-encoding) # 0, 0 ItemDelimitationItem
 (fffe,e0dd) na (SequenceDelimitationItem for re-encod.) # 0, 0 SequenceDelimitationItem
 (0040,a050) CS [SEPARATE] # 8, 1 ContinuityOfContent
 (0040,a375) SQ (Sequence with explicit length #=1) # 322, 1 CurrentRequestedProcedureEvidenceSequence
 (fffe,e000) na (Item with explicit length #=2) # 314, 1 Item
 (0008,1115) SQ (Sequence with explicit length #=1) # 268, 1 ReferencedSeriesSequence
 (fffe,e000) na (Item with explicit length #=6) # 260, 1 Item
 (0008,0054) AE [MY_AE_TITLE] # 4, 1 RetrieveAETitle
 (0008,1199) SQ (Sequence with explicit length #=1) # 76, 1 ReferencedSOPSequence
 (fffe,e000) na (Item with explicit length #=2) # 68, 1 Item
 (0008,1150) UI =CTImageStorage # 26, 1 ReferencedSOPClassUID
 (0008,1155) UI [1.2.3.4.5.6.7.917515.2958] # 26, 1 ReferencedSOPInstanceUID
 (fffe,e00d) na (ItemDelimitationItem for re-encoding) # 0, 0 ItemDelimitationItem
 (fffe,e0dd) na (SequenceDelimitationItem for re-encod.) # 0, 0 SequenceDelimitationItem
 (0020,000e) UI [1.2.3.4.5.6.7.917515.2957] # 26, 1 SeriesInstanceUID
 (0040,e011) UI [1.2.826.0.1.3680043.2.1611.1.17] # 58, 1 RetrieveLocationUID
 (fffe,e00d) na (ItemDelimitationItem for re-encoding) # 0, 0 ItemDelimitationItem
 (fffe,e0dd) na (SequenceDelimitationItem for re-encod.) # 0, 0 SequenceDelimitationItem
 (0020,000d) UI [1.2.3.4.5.6.7.917515.2953] # 26, 1 StudyInstanceUID
 (fffe,e00d) na (ItemDelimitationItem for re-encoding) # 0, 0 ItemDelimitationItem
 (fffe,e0dd) na (SequenceDelimitationItem for re-encod.) # 0, 0 SequenceDelimitationItem
 (0040,a504) SQ (Sequence with explicit length #=1) # 32, 1 ContentTemplateSequence
 (fffe,e000) na (Item with explicit length #=2) # 24, 1 Item
 (0008,0105) CS [DCMR] # 4, 1 MappingResource
 (0040,db00) CS [2010] # 4, 1 TemplateIdentifier
 (fffe,e00d) na (ItemDelimitationItem for re-encoding) # 0, 0 ItemDelimitationItem
 (fffe,e0dd) na (SequenceDelimitationItem for re-encod.) # 0, 0 SequenceDelimitationItem
 (0040,a730) SQ (Sequence with explicit length #=2) # 264, 1 ContentSequence
 (fffe,e000) na (Item with explicit length #=4) # 130, 1 Item
 (0040,a010) CS [CONTAINS] # 8, 1 RelationshipType
 (0040,a040) CS [TEXT] # 4, 1 ValueType
 (0040,a043) SQ (Sequence with explicit length #=1) # 64, 1 ConceptNameCodeSequence
 (fffe,e000) na (Item with explicit length #=3) # 56, 1 Item
 (0008,0100) SH [113012] # 6, 1 CodeValue
 (0008,0102) SH [DCM] # 4, 1 CodingSchemeDesignator

(0008,0104) LO [Key Object Description] # 22, 1 CodeMeaning
 (fffe,e00d) na (ItemDelimitationItem for re-encoding) # 0, 0 ItemDelimitationItem
 (fffe,e0dd) na (SequenceDelimitationItem for re-encod.) # 0, 0 SequenceDelimitationItem
 (0040,a160) UT [CT ANGIO CHEST] # 14, 1 TextValue
 (fffe,e00d) na (ItemDelimitationItem for re-encoding) # 0, 0 ItemDelimitationItem
 (fffe,e000) na (Item with explicit length #=3) # 118, 1 Item
 (0008,1199) SQ (Sequence with explicit length #=1) # 76, 1 ReferencedSOPSequence
 (fffe,e000) na (Item with explicit length #=2) # 68, 1 Item
 (0008,1150) UI =CTImageStorage # 26, 1 ReferencedSOPClassUID
 (0008,1155) UI [1.2.3.4.5.6.7.917515.2958] # 26, 1 ReferencedSOPInstanceUID
 (fffe,e00d) na (ItemDelimitationItem for re-encoding) # 0, 0 ItemDelimitationItem
 (fffe,e0dd) na (SequenceDelimitationItem for re-encod.) # 0, 0 SequenceDelimitationItem
 (0040,a010) CS [CONTAINS] # 8, 1 RelationshipType
 (0040,a040) CS [IMAGE] # 6, 1 ValueType
 (fffe,e00d) na (ItemDelimitationItem for re-encoding) # 0, 0 ItemDelimitationItem
 (fffe,e0dd) na (SequenceDelimitationItem for re-encod.) # 0, 0 SequenceDelimitationItem

C.1.2 Request Message

The following XML represents the complete ProvideAndRegisterDocumentSet request to submit the example CDA wrapped text report shown above:

```

<s:Envelope xmlns:s=http://www.w3.org/2003/05/soap-envelope
  xmlns:a=http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:ProvideAndRegisterDocumentSet-b</a:Action>
    <a:MessageID>urn:uuid:6d296e90-e5dc-43d0-b455-7c1f3eb35d83</a:MessageID>
    <a:ReplyTo>
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
    <a:To s:mustUnderstand="1">https://gateway.ehealthontario.on.ca:7180/index/services/repository</a:To>
  </s:Header>
  <s:Body>
    <ProvideAndRegisterDocumentSetRequest xmlns="urn:ihe:iti:xds-b:2007"
      xmlns:lcm="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:3.0"
      xmlns:rim="urn:oasis:names:tc:ebxml-regrep:xsd:rim:3.0"
      xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0">
      <lcm:SubmitObjectsRequest>
        <rim:RegistryObjectList>
          <rim:ExtrinsicObject id="Document01" mimeType="text/xml"
            objectType="urn:uuid:7edca82f-054d-47f2-a032-9b2a5b5186c1">
            <rim:Slot name="creationTime">
              <rim:ValueList>
                <!-- Date/Time values must be specified in UTC format with no time zone. In this example,
                  the original value (which is in EST) is converted to UTC by adding 5 hours -->
                <rim:Value>20120101170000</rim:Value>
              </rim:ValueList>
            </rim:Slot>
            <rim:Slot name="languageCode">
              <rim:ValueList>
                <rim:Value>eng-CA</rim:Value>
              </rim:ValueList>
          </rim:ExtrinsicObject>
        </rim:RegistryObjectList>
      </lcm:SubmitObjectsRequest>
    </ProvideAndRegisterDocumentSetRequest>
  </s:Body>
</s:Envelope>
  
```

```

</rim:Slot>
<rim:Slot name="serviceStartTime">
  <rim:ValueList>
    <rim:Value>20120101163000</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="sourcePatientId">
  <rim:ValueList>
    <rim:Value>12341234^^^&2.16.840.1.113883.3.239.18.144&ISO</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="sourcePatientInfo">
  <rim:ValueList>
    <rim:Value>PID-3 | 12341234^^^&2.16.840.1.113883.3.239.18.144&ISO</rim:Value>
    <rim:Value>PID-5 | SMITH^JOHN^Q </rim:Value>
    <rim:Value>PID-7 | 19491208</rim:Value>
    <rim:Value>PID-8 | M</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="urn:ihe:iti:xds:2013:referenceIdList">
  <rim:ValueList>
    <rim:Value>
      12345678^^^&2.16.840.1.113883.3.239.32.139&ISO^urn:ihe:iti:xds:2013:accession
    </rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="urn:eho:reportStatus">
  <rim:ValueList>
    <rim:Value>Final</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="urn:eho:intendedRecipientList">
  <rim:ValueList>
    <rim:Value>|^Wilson^James| | REF^^2.16.840.1.113883.5.90</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="urn:eho:sourceProcedureCode">
  <rim:ValueList>
    <rim:Value>22211^Chest 1 View^2.16.840.1.113883.3.239.33.139</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="urn:eho:iguideVersion">
  <rim:ValueList>
    <rim:Value>1</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Name>
  <rim:LocalizedString value="Diagnostic Imaging Report - Final"/>
</rim:Name>
<rim:Description>
  <rim:LocalizedString value="Chest 1 View"/>

```

```

</rim:Description>
<rim:Classification id="cl01"
    classificationScheme="urn:uuid:93606bcf-9494-43ec-9b4e-a7748d1a838d"
    classifiedObject="Document01">
    <rim:Slot name="authorPerson">
        <rim:ValueList>
            <rim:Value>^House^Gregory</rim:Value>
        </rim:ValueList>
    </rim:Slot>
    <rim:Slot name="authorInstitution">
        <rim:ValueList>
            <!-- The institution name is derived by looking up the site identifier (4205) in the list of
                known site mappings -->
            <rim:Value> Sunnybrook Health Sciences
Centre^^^^^^^^^2.16.840.1.113883.3.239.23.7</rim:Value>
        </rim:ValueList>
    </rim:Slot>
</rim:Classification>
<rim:Classification id="cl02"
    classificationScheme="urn:uuid:41a5887f-8865-4c09-adf7-e362475b143a"
    classifiedObject="Document01" nodeRepresentation="18748-4">
    <rim:Slot name="codingScheme">
        <rim:ValueList>
            <rim:Value>2.16.840.1.113883.6.1</rim:Value>
        </rim:ValueList>
    </rim:Slot>
    <rim:Name>
        <rim:LocalizedString value="Diagnostic ImagingReport"/>
    </rim:Name>
</rim:Classification>
<rim:Classification id="cl03"
    classificationScheme="urn:uuid:f4f85eac-e6cb-4883-b524-f2705394840f"
    classifiedObject="Document01" nodeRepresentation="N">
    <rim:Slot name="codingScheme">
        <rim:ValueList>
            <rim:Value> 2.16.840.1.113883.5.25</rim:Value>
        </rim:ValueList>
    </rim:Slot>
    <rim:Name>
        <rim:LocalizedString value="Normal"/>
    </rim:Name>
</rim:Classification>
<rim:Classification id="cl04"
    classificationScheme="urn:uuid:a09d5840-386c-46f2-b5ad-9c3699a4309d"
    classifiedObject="Document01" nodeRepresentation="urn:ihe:rad:TEXT">
    <rim:Slot name="codingScheme">
        <rim:ValueList>
            <rim:Value>1.3.6.1.4.1.19376.1.2.3</rim:Value>
        </rim:ValueList>
    </rim:Slot>
    <rim:Name>

```

```

        <rim:LocalizedString value="Text Report"/>
    </rim:Name>
</rim:Classification>
<rim:Classification id="cl05"
    classificationScheme="urn:uuid:f33fb8ac-18af-42cc-ae0e-ed0b0bdb91e1"
    classifiedObject="Document01" nodeRepresentation="HOSP">
    <rim:Slot name="codingScheme">
        <rim:ValueList>
            <rim:Value> 2.16.840.1.113883.5.111</rim:Value>
        </rim:ValueList>
    </rim:Slot>
    <rim:Name>
        <rim:LocalizedString value="Hospital"/>
    </rim:Name>
</rim:Classification>
<rim:Classification id="cl06"
    classificationScheme="urn:uuid:ccc5598-8b07-4b77-a05e-ae952c785ead"
    classifiedObject="Document01" nodeRepresentation="RADDX">
    <rim:Slot name="codingScheme">
        <rim:ValueList>
            <rim:Value> 2.16.840.1.113883.5.111</rim:Value>
        </rim:ValueList>
    </rim:Slot>
    <rim:Name>
        <rim:LocalizedString value="Radiology Diagnostics"/>
    </rim:Name>
</rim:Classification>
<rim:Classification id="cl07"
    classificationScheme="urn:uuid:f0306f51-975f-434e-a61c-c59651d33983"
    classifiedObject="Document01" nodeRepresentation="22211">
    <rim:Slot name="codingScheme">
        <rim:ValueList>
            <rim:Value>2.16.840.1.113883.3.239.33.139</rim:Value>
        </rim:ValueList>
    </rim:Slot>
    <rim:Name>
        <rim:LocalizedString value="Chest 1 View"/>
    </rim:Name>
</rim:Classification>
<!--The XDS specification calls for this patient identifier to be an enterprise wide identifier (EID),
    however, the eHealth Ontario XDS repository service will accept either a local MRN, HCN, or an EID
    value. In the case where a local MRN or HCN is specified, the repository service will convert it to
    the required EID value. -->
<rim:ExternalIdentifier id="ei01" registryObject="Document01"
    identificationScheme="urn:uuid:58a6f841-87b3-4a3e-92fd-a8ffeff98427"
    value="12341234^^^&2.16.840.1.113883.3.239.18.144&ISO">
    <rim:Name>
        <rim:LocalizedString value="XDSDocumentEntry.patientId"/>
    </rim:Name>
</rim:ExternalIdentifier>
<!-- The unique identifier for the document must match the id specified in the CDA document -->

```

```

<rim:ExternalIdentifier id="ei02" registryObject="Document01"
    identificationScheme="urn:uuid:2e82c1f6-a085-4c72-9da3-8640a32e42ab"
    value="2.16.840.1.113883.3.239.23.7.2043249">
    <rim:Name>
        <rim:LocalizedString value="XSDDocumentEntry.uniqueId"/>
    </rim:Name>
</rim:ExternalIdentifier>
</rim:ExtrinsicObject>
<rim:RegistryPackage id="SubmissionSet01">
    <rim:Slot name="submissionTime">
        <rim:ValueList>
            <rim:Value>20120101170530</rim:Value>
        </rim:ValueList>
    </rim:Slot>
    <rim:Name />
    <rim:Description />
    <rim:Classification id="c108"
        classificationScheme="urn:uuid:a7058bb9-b4e4-4307-ba5b-e3f0ab85e12d"
        classifiedObject="SubmissionSet01">
        <rim:Slot name="authorPerson">
            <rim:ValueList>
                <!-- Use the authorPerson slot to identify the software generating the submission.
                    If the source actor is a commercial product, specify the company name, product
                    Name and current version of the software being used -->
                <rim:Value>^CompanyName^ProductName^VersionNumber</rim:Value>
            </rim:ValueList>
        </rim:Slot>
        <rim:Slot name="authorInstitution">
            <rim:ValueList>
                <!-- Identify the location of the software generating the submission (DI-r location where the
                    document is being submitted from) -->
                <rim:Value>HDIRS</rim:Value>
            </rim:ValueList>
        </rim:Slot>
    </rim:Classification>
    <rim:Classification id="c109"
        classificationScheme="urn:uuid:aa543740-bdda-424e-8c96-df4873be8500"
        classifiedObject="SubmissionSet01" nodeRepresentation="19005-8">
        <rim:Slot name="codingScheme">
            <rim:ValueList>
                <rim:Value>2.16.840.1.113883.6.1</rim:Value>
            </rim:ValueList>
        </rim:Slot>
        <rim:Name>
            <rim:LocalizedString value="Imaging Study"/>
        </rim:Name>
    </rim:Classification>
    <rim:ExternalIdentifier id="ei03" registryObject="SubmissionSet01"
        identificationScheme="urn:uuid:96fdda7c-d067-4183-912e-bf5ee74998a8"
        value="2.16.840.1.113883.3.239.23.7.20120101170530">
        <rim:Name>

```

```

        <rim:LocalizedString value="XDSSubmissionSet.uniqueId"/>
      </rim:Name>
    </rim:ExternalIdentifier>
    <rim:ExternalIdentifier id="ei04" registryObject="SubmissionSet01"
      identificationScheme="urn:uuid:554ac39e-e3fe-47fe-b233-965d2a147832"
      value="2.16.840.1.113883.3.239.23.7">
      <rim:Name>
        <rim:LocalizedString value="XDSSubmissionSet.sourceId"/>
      </rim:Name>
    </rim:ExternalIdentifier>
    <rim:ExternalIdentifier id="ei05" registryObject="SubmissionSet01"
      identificationScheme="urn:uuid:6b5aea1a-874d-4603-a4bc-96a0a7b38446"
      value="12341234^^^&2.16.840.1.113883.3.239.18.144&ISO ">
      <rim:Name>
        <rim:LocalizedString value="XDSSubmissionSet.patientId"/>
      </rim:Name>
    </rim:ExternalIdentifier>
  </rim:RegistryPackage>
  <rim:Classification id="cl10" classifiedObject="SubmissionSet01"
    classificationNode="urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd"/>
  <rim:Association id="as01" associationType="HasMember" sourceObject="SubmissionSet01"
    targetObject="Document01">
    <rim:Slot name="SubmissionSetStatus">
      <rim:ValueList>
        <rim:Value>Original</rim:Value>
      </rim:ValueList>
    </rim:Slot>
  </rim:Association>
</rim:RegistryObjectList>
</lcm:SubmitObjectsRequest>
<Document id="Document01">
  <!-- reference to MTOM/XOP attachment containing CDA document -->
  <xop:Include href="cid:1.urn:uuid:AFBE87CB65FD88AC4B1220879854390@apache.org"
    xmlns:xop="http://www.w3.org/2004/08/xop/include"/>
</Document>
</ProvideAndRegisterDocumentSetRequest>
</s:Body>
</s:Envelope>

```

```

--MIMEBoundaryurn_uuid_AFB87CB65FD88AC4B1220879854348
Content-Type: text/plain
Content-Transfer-Encoding: binary
Content-ID: <1.urn:uuid:AFBE87CB65FD88AC4B1220879854390@apache.org>

```

<< CDA Wrapped Text Report would be contained here >>

```
--MIMEBoundaryurn_uuid_AFB87CB65FD88AC4B1220879854348--
```

C.1.3 Successful Response

The following sample message shows the successful response:

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:ProvideAndRegisterDocumentSetbResponse</a:Action>
    <a:RelatesTo>urn:uuid:6d296e90-e5dc-43d0-b455-7c1f3eb35d83</a:RelatesTo>
  </s:Header>
  <s:Body>
    <rs:RegistryResponse status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success"
      xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0" />
  </s:Body>
</s:Envelope>
```

C.1.4 Failure Response

In the event that one or more errors were detected during the processing of the request, the response will contain a failure status along with additional information about the error(s). In this case, the submitted document and metadata will not have been stored and will need to be re-submitted once the error has been resolved. The following XML sample illustrates a sample response containing an error:

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:ProvideAndRegisterDocumentSetbResponse</a:Action>
    <a:RelatesTo>urn:uuid:6d296e90-e5dc-43d0-b455-7c1f3eb35d83</a:RelatesTo>
  </s:Header>
  <s:Body>
    <rs:RegistryResponse status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Failure"
      xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0">
      <rs:RegistryErrorList highestSeverity="urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Error">
        <rs:RegistryError errorCode="XDSPatientIdDoesNotMatch"
          codeContext="Patient ID in Document (Document1) does not match Submission Set"
          location=""
          severity="urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Error"/>
      </rs:RegistryErrorList>
    </rs:RegistryResponse>
  </s:Body>
</s:Envelope>
```

C.2 RetrieveDocumentSet Transaction

C.2.1 Request Message

To retrieve the radiology report submitted in the previous ProvideAndRegisterDocumentSet example, the following RetrieveDocumentSet transaction would be used:

```

<s:Envelope xmlns:s=http://www.w3.org/2003/05/soap-envelope
  xmlns:a=http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:RetrieveDocumentSet</a:Action>
    <a:MessageID>urn:uuid:0fbfdced-6c01-4d09-a110-2201afedaa02</a:MessageID>
    <a:ReplyTo>
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
    <a:To s:mustUnderstand="1">https://gateway.ehealthontario.on.ca:7180/index/services/repository </a:To>
  </s:Header>
  <s:Body>
    <RetrieveDocumentSetRequest xmlns="urn:ihe:iti:xds-b:2007">
      <DocumentRequest>
        <RepositoryUniqueid>2.16.840.1.113883.3.239.30.1</RepositoryUniqueid>
        <DocumentUniqueid>2.16.840.1.113883.3.239.18.151.2043249</DocumentUniqueid>
      </DocumentRequest>
    </RetrieveDocumentSetRequest>
  </s:Body>
</s:Envelope>

```

C.2.2 Response Message

The following XML message shows the successful response to the RetrieveDocumentSet request:

```

<s:Envelope xmlns:s=http://www.w3.org/2003/05/soap-envelope
  xmlns:a=http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:RetrieveDocumentSetResponse</a:Action>
    <a:RelatesTo>urn:uuid:0fbfdced-6c01-4d09-a110-2201afedaa02</a:RelatesTo>
  </s:Header>
  <s:Body>
    <RetrieveDocumentSetResponse xmlns="urn:ihe:iti:xds-b:2007"
      xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0">
      <rs:RegistryResponse status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success"
        xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0">
      </rs:RegistryResponse>
      <DocumentResponse>
        <RepositoryUniqueid>2.16.840.1.113883.3.239.30.1</RepositoryUniqueid>
        <DocumentUniqueid>2.16.840.1.113883.3.239.18.151.2043249</DocumentUniqueid>
        <mimeType>text/xml</mimeType>
        <Document>
          <!-- reference to MTOM/XOP attachment containing CDA document -->
          <xop:Include href="cid:1.urn:uuid:AFBE87CB65FD88AC4B1220879854123@apache.org"
            xmlns:xop="http://www.w3.org/2004/08/xop/include"/>
        </Document>
      </DocumentResponse>
    </RetrieveDocumentSetResponse>
  </s:Body>
</s:Envelope>

```

|
--MIMEBoundaryurn_uuid_AFBEB7CB65FD88AC4B1220879854123
Content-Type: text/plain
Content-Transfer-Encoding: binary
Content-ID: <1.urn:uuid:AFBE87CB65FD88AC4B1220879854390@apache.org>

<< CDA Wrapped Text Report would be contained here >>

--MIMEBoundaryurn_uuid_AFBEB7CB65FD88AC4B1220879854348—

C.3 RegistryStoredQuery Transaction

C.3.1 Sample Transaction - FindDocuments Query

FindDocuments is the query defined by the RegistryStoredQuery transaction to search the XDS registry for a list of XDSDocumentEntry objects for a given patient. At a minimum, \$XDSDocumentEntryPatientId and \$XDSDocumentEntryStatus must be specified as parameters. The following table (copied from the XDS specification) gives a complete list of the possible parameters available for this query:

Parameter Name	Metadata Attribute	Option	Mult
\$XDSDocumentEntryPatientId	XDSDocumentEntry.patientId	R	
\$XDSDocumentEntryStatus	XDSDocumentEntry.status	R	M
\$XDSDocumentEntryClassCode	XDSDocumentEntry.classCode	O	M
\$XDSDocumentEntryTypeCode	XDSDocumentEntry.typeCode	O	M
\$XDSDocumentEntryPracticeSettingCode	XDSDocumentEntry. practiceSettingCode	O	M
\$XDSDocumentEntryCreationTimeFrom	Lower value of XdsDocumentEntry.creationTime	O	
\$XDSDocumentEntryCreationTimeTo	Upper value of XdsDocumentEntry.creationTime	O	
\$XDSDocumentEntryServiceStartTimeFrom	Lower value of XdsDocumentEntry. serviceStartTime	O	
\$XDSDocumentEntryServiceStartTimeTo	Upper value of XdsDocumentEntry. serviceStartTime	O	
\$XDSDocumentEntryServiceStopTimeFrom	Lower value of XdsDocumentEntry. serviceStopTime	O	
\$XDSDocumentEntryServiceStopTimeTo	Upper value of XdsDocumentEntry. serviceStopTime	O	

\$XDSDocumentEntryHealthcareFacilityTypeCode	XDSDocumentEntry.healthcareFacilityTypeCode	O	M
\$XDSDocumentEntryEventCodeList	XDSDocumentEntry.eventCodeList	O	M
\$XDSDocumentEntryConfidentialityCode	XDSDocumentEntry.confidentialityCode	O	M
\$XDSDocumentEntryAuthorPerson	XDSDocumentEntry.author	O	M
\$XDSDocumentEntryFormatCode	XDSDocumentEntry.formatCode	O	M
\$XDSDocumentEntryMetadataLevel	Possible values are 1 (backwards compatibility) or 2 (no restrictions).	O	

C.3.1.1 Request Message

The following sample RegistryStoredQuery request illustrates a FindDocument query to return all XDSDocumentEntry objects (including deprecated) for the patient with the specified EID. Additionally the returned list should only contain XDSDocumentEntry objects for radiology reports submitted since the beginning of 2013.

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:RegistryStoredQuery</a:Action>
    <a:MessageID>urn:uuid:a02ca8cd-86fa-4afc-a27c-616c183b2055</a:MessageID>
    <a:ReplyTo>
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
    <a:To s:mustUnderstand="1">https://gateway.ehealthontario.on.ca:7180/index/services/registry</a:To>
  </s:Header>
  <s:Body>
    <query:AdhocQueryRequest xmlns:query="urn:oasis:names:tc:ebxml-regrep:xsd:query:3.0"
      xmlns:rim="urn:oasis:names:tc:ebxml-regrep:xsd:rim:3.0"
      xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0">
      <query:ResponseOption returnComposedObjects="true" returnType="LeafClass"/>
      <rim:AdhocQuery id=" urn:uuid:14d4debf-8f97-4251-9a74-a90016b0af0d ">
        <rim:Slot name="$XDSDocumentEntryPatientId">
          <rim:ValueList>
            <rim:Value>'43214321^^^&2.16.840.1.113883.3.239.20&ISO'</rim:Value>
          </rim:ValueList>
        </rim:Slot>
        <rim:Slot name="$XDSDocumentEntryStatus">
          <rim:ValueList>
            <rim:Value>('urn:oasis:names:tc:ebxml-regrep:StatusType:Approved')</rim:Value>
            <rim:Value>('urn:oasis:names:tc:ebxml-regrep:StatusType:Deprecated')</rim:Value>
          </rim:ValueList>
        </rim:Slot>
        <rim:Slot name="$XDSDocumentEntryCreationTimeFrom">
          <rim:ValueList>
```

```

        <rim:Value>'20130101'</rim:Value>
      </rim:ValueList>
    </rim:Slot>
    <rim:Slot name="$XDSDocumentEntryClassCode">
      <rim:ValueList>
        <rim:Value>('18748-4^^2.16.840.1.113883.6.1')</rim:Value>
      </rim:ValueList>
    </rim:Slot>
  </rim:AdhocQuery>
</query:AdhocQueryRequest>
</s:Body>
</s:Envelope>

```

C.3.1.2 Response Message

The following XML message illustrates a sample RegistryStoredQuery response to the above FindDocuments query

```

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action>urn:ihe:iti:2007:RegistryStoredQueryResponse</a:Action>
    <a:RelatesTo> urn:uuid:a02ca8cd-86fa-4afc-a27c-616c183b2055</a:RelatesTo>
  </s:Header>
  <s:Body>
    <query:AdhocQueryResponse xmlns:query="urn:oasis:names:tc:ebxml-regrep:xsd:query:3.0"
      status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success">
      <rim:RegistryObjectList xmlns:rim="urn:oasis:names:tc:ebxml-regrep:xsd:rim:3.0">
        <rim:ExtrinsicObject id="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf" mimeType="text/xml"
          lid="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
          status="urn:oasis:names:tc:ebxml-regrep:StatusType:Approved"
          objectType="urn:uuid:7edca82f-054d-47f2-a032-9b2a5b5186c1">
          <rim:Slot name="creationTime">
            <rim:ValueList>
              <rim:Value>20120101170000</rim:Value>
            </rim:ValueList>
          </rim:Slot>
          <rim:Slot name="hash">
            <rim:ValueList>
              <rim:Value>4cf4f82d78b5e2aac35c31bca8cb79fe6bd6a41e</rim:Value>
            </rim:ValueList>
          </rim:Slot>
          <rim:Slot name="languageCode">
            <rim:ValueList>
              <rim:Value>eng-CA</rim:Value>
            </rim:ValueList>
          </rim:Slot>
          <rim:Slot name="repositoryUniqueId">
            <rim:ValueList>
              <rim:Value>2.16.840.1.113883.3.239.30.1</rim:Value>
            </rim:ValueList>
          </rim:Slot>

```

```

<rim:Slot name="serviceStartTime">
  <rim:ValueList>
    <rim:Value>20120101163000</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="size">
  <rim:ValueList>
    <rim:Value>4095</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="sourcePatientId">
  <rim:ValueList>
    <rim:Value>12341234^^^&2.16.840.1.113883.3.239.18.144&ISO</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="sourcePatientInfo">
  <rim:ValueList>
    <rim:Value>PID-3 | 12341234^^^&2.16.840.1.113883.3.239.18.144&ISO </rim:Value>
    <rim:Value>PID-5 | SMITH^JOHN^Q </rim:Value>
    <rim:Value>PID-7 | 19491208</rim:Value>
    <rim:Value>PID-8 | M</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="urn:ihe:iti:xds:2013:referenceIdList">
  <rim:ValueList>
    <rim:Value>
      12345678^^^& 2.16.840.1.113883.3.239.32.139&ISO^urn:ihe:iti:xds:2013:accession
    </rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="urn:eho:reportStatus">
  <rim:ValueList>
    <rim:Value>Final </rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="urn:eho:intendedRecipientList">
  <rim:ValueList>
    <rim:Value>|^Wilson^James | | REF^2.16.840.1.113883.5.90</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="urn:eho:sourceProcedureCode">
  <rim:ValueList>
    <rim:Value>22211^Chest 1 View^2.16.840.1.113883.3.239.33.139</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="urn:eho:iguideVersion">
  <rim:ValueList>
    <rim:Value>1</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Name>

```

```

    <rim:LocalizedString value="Diagnostic Imaging Report - Final"/>
  </rim:Name>
  <rim:Description>
    <rim:LocalizedString value="Chest 1 View"/>
  </rim:Description>
  <rim:Classification id=" urn:uuid:ac872fc0-1c6e-439f-84d1-f76770a0c123"
    classificationScheme="urn:uuid:93606bcf-9494-43ec-9b4e-a7748d1a838d"
    classifiedObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf">
    <rim:Slot name="authorPerson">
      <rim:ValueList>
        <rim:Value>^House^Gregory </rim:Value>
      </rim:ValueList>
    </rim:Slot>
    <rim:Slot name="authorInstitution">
      <rim:ValueList>
        <rim:Value>Sunnybrook Health Sciences
Centre^^^^^^^^2.16.840.1.113883.3.239.23.7</rim:Value>
      </rim:ValueList>
    </rim:Slot>
  </rim:Classification>
  <rim:Classification id=" urn:uuid:ac872fc0-1c6e-439f-84d1-f76770a0ccdf"
    classificationScheme="urn:uuid:41a5887f-8865-4c09-adf7-e362475b143a"
    classifiedObject=" urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf "
    nodeRepresentation="18748-4">
    <rim:Slot name="codingScheme">
      <rim:ValueList>
        <rim:Value>2.16.840.1.113883.6.1</rim:Value>
      </rim:ValueList>
    </rim:Slot>
    <rim:Name>
      <rim:LocalizedString value="Diagnostic Imaging Report"/>
    </rim:Name>
  </rim:Classification>
  <rim:Classification id="urn:uuid:f1a8c8e4-3593-4777-b7e0-8b0773378705"
    classificationScheme="urn:uuid:f4f85eac-e6cb-4883-b524-f2705394840f"
    classifiedObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
    nodeRepresentation="N">
    <rim:Slot name="codingScheme">
      <rim:ValueList>
        <rim:Value>2.16.840.1.113883.5.25</rim:Value>
      </rim:ValueList>
    </rim:Slot>
    <rim:Name>
      <rim:LocalizedString value="Normal"/>
    </rim:Name>
  </rim:Classification>
  <rim:Classification id="urn:uuid:b6e49c73-96c8-4058-8c95-914d83bd262a"
    classificationScheme="urn:uuid:a09d5840-386c-46f2-b5ad-9c3699a4309d"
    classifiedObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
    nodeRepresentation="urn:ihe:rad:TEXT">
    <rim:Slot name="codingScheme">

```

```

    <rim:ValueList>
      <rim:Value>1.3.6.1.4.1.19376.1.2.3</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name>
    <rim:LocalizedString value="Text Report"/>
  </rim:Name>
</rim:Classification>
<rim:Classification id="urn:uuid:61e2b376-d74a-4984-ac21-dcd0b8890f9d"
  classificationScheme="urn:uuid:f33fb8ac-18af-42cc-ae0e-ed0b0bdb91e1"
  classifiedObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
  nodeRepresentation="HOSP">
  <rim:Slot name="codingScheme">
    <rim:ValueList>
      <rim:Value>2.16.840.1.113883.5.111</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name>
    <rim:LocalizedString value="Hospital"/>
  </rim:Name>
</rim:Classification>
<rim:Classification id="urn:uuid:fb7677c5-c42f-485d-9010-dce0f3cd4ad5"
  classificationScheme="urn:uuid:cccf5598-8b07-4b77-a05e-ae952c785ead"
  classifiedObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
  nodeRepresentation="RADDX">
  <rim:Slot name="codingScheme">
    <rim:ValueList>
      <rim:Value>2.16.840.1.113883.5.111</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name>
    <rim:LocalizedString value="Radiology Diagnostics"/>
  </rim:Name>
</rim:Classification>
<rim:Classification id="urn:uuid:0a8a8ed9-8be5-4a63-9b68-a511adee8ed5"
  classificationScheme="urn:uuid:f0306f51-975f-434e-a61c-c59651d33983"
  classifiedObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
  nodeRepresentation="22211">
  <rim:Slot name="codingScheme">
    <rim:ValueList>
      <rim:Value>2.16.840.1.113883.3.239.18.151.3</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name>
    <rim:LocalizedString value="Chest 1 View"/>
  </rim:Name>
</rim:Classification>
<rim:ExternalIdentifier id="urn:uuid:db9f4438-ffff-435f-9d34-d76190728637"
  registryObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
  identificationScheme="urn:uuid:58a6f841-87b3-4a3e-92fd-a8ffeff98427"
  value="12341234^^^&2.16.840.1.113883.3.239.33.139&ISO ">

```

```

    <rim:Name>
      <rim:LocalizedString value="XSDDocumentEntry.patientId"/>
    </rim:Name>
  </rim:ExternalIdentifier>
  <rim:ExternalIdentifier id="urn:uuid:c3fcbf0e-9765-4f5b-abaa-b37ac8ff05a5"
    registryObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
    identificationScheme="urn:uuid:2e82c1f6-a085-4c72-9da3-8640a32e42ab"
    value="2.16.840.1.113883.3.239.23.7.2043249">

    <rim:Name>
      <rim:LocalizedString value="XSDDocumentEntry.uniqueld"/>
    </rim:Name>
  </rim:ExternalIdentifier>
</rim:ExtrinsicObject>
<rim:ExtrinsicObject id=" urn:uuid: a87b184e-e12b-4cf5-90ca-d6f7053eadcc" ... >
  <!-- Contents of second ExtrinsicObject omitted -->
</rim:ExtrinsicObject>
</rim:RegistryObjectList>
</query:AdhocQueryResponse>
</soapenv:Body>
</soapenv:Envelope>

```

Alternatively, if the request had specified ‘ObjectRef’ for the **returnType**, then the corresponding response would have looked like the following:

```

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action>urn:ihe:iti:2007:RegistryStoredQueryResponse</a:Action>
    <a:RelatesTo> urn:uuid:a02ca8cd-86fa-4afc-a27c-616c183b2055</a:RelatesTo>
  </s:Header>
  <s:Body>
    <query:AdhocQueryResponse xmlns:query="urn:oasis:names:tc:ebxml-regrep:xsd:query:3.0"
      status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success">
      <rim:RegistryObjectList xmlns:rim="urn:oasis:names:tc:ebxml-regrep:xsd:rim:3.0">
        <rim:ObjectRef id="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf" >
        <rim:ObjectRef id="urn:uuid: a87b184e-e12b-4cf5-90ca-d6f7053eadcc" >
      </rim:RegistryObjectList>
    </query:AdhocQueryResponse>
  </s:Body>
</s:Envelope>

```

C.3.2 Sample Transaction - GetDocuments Query

The GetDocuments query can be utilized to obtain the full metadata for an XSDDocumentEntry object from the registry once the identifier for that object is known (i.e. from a previous FindDocuments query or stored on the client). The following table (copied from the XDS specification) gives a complete list of the parameters available for this query:

Parameter Name	Metadata Attribute	Option	Mult
----------------	--------------------	--------	------

\$XDSDocumentEntryEntryUUID	XDSDocumentEntry.entryUUID	R ¹	M
\$XDSDocumentEntryUniqueId	XDSDocumentEntry.uniqueId	R ¹	M
\$homeCommunityId	none	O	
\$MetadataLevel	Possible values are 1 (backwards compatibility) or 2 (no restrictions).	O	

Notes:

1. Either the EntryUUID or the UniqueId must be specified in the query (but not both).

C.3.2.1 Request Message

The following sample RegistryStoredQuery request illustrates a GetDocuments query to return the full XDSDocumentEntry metadata objects for the two EntryUUID's obtained from a previous FindDocuments query (with returnType="ObjectRef"):

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:RegistryStoredQuery</a:Action>
    <a:MessageID>urn:uuid:a02ca8cd-86fa-4afc-a27c-616c183b2055</a:MessageID>
    <a:ReplyTo>
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
    <a:To s:mustUnderstand="1">https://gateway.ehealthontario.on.ca:7180/index/services/registry</a:To>
  </s:Header>
  <s:Body>
    <query:AdhocQueryRequest xmlns:query="urn:oasis:names:tc:ebxml-regrep:xsd:query:3.0"
      xmlns:rim="urn:oasis:names:tc:ebxml-regrep:xsd:rim:3.0"
      xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0">
      <query:ResponseOption returnComposedObjects="true" returnType="LeafClass"/>
      <rim:AdhocQuery id=" urn:uuid:5c4f972b-d56b-40ac-a5fc-c8ca9b40b9d4">
        <rim:Slot name="$XDSDocumentEntryEntryUUID">
          <rim:ValueList>
            <rim:Value>('urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf')</rim:Value>
            <rim:Value>('urn:uuid:a87b184e-e12b-4cf5-90ca-d6f7053eadcc')</rim:Value>
          </rim:ValueList>
        </rim:Slot>
      </rim:AdhocQuery>
    </query:AdhocQueryRequest>
  </s:Body>
</s:Envelope>
```

C.3.2.2 Response Message

The sample response would be identical to the one shown for the FindDocuments query above.

C.4 UpdateDocumentSet Transaction

C.4.1 Deprecating a Document

Given the sample query response shown above in section B.3.1.2, the following sections will provide an example request necessary to deprecate that document along with the corresponding response.

C.4.1.1 Request Message

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2010:UpdateDocumentSet</a:Action>
    <a:MessageID>urn:uuid:a02ca8cd-86fa-4afc-a27c-616c183b2060</a:MessageID>
    <a:ReplyTo>
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
    <a:To s:mustUnderstand="1"> https://gateway.ehealthontario.on.ca:7180/index/services/registry </a:To>
  </s:Header>
  <s:Body>
    <lcm:SubmitObjectsRequest>
      <rim:RegistryObjectList>
        <!-- XDSSubmissionSet -->
        <rim:RegistryPackage id="SubmissionSet01" ... >
          <rim:Slot name="submissionTime">
            <rim:ValueList>
              <rim:Value>20140101170530</rim:Value>
            </rim:ValueList>
          </rim:Slot>
          <rim:Name />
          <rim:Description />
          <rim:Classification id="cl08"
            classificationScheme="urn:uuid:a7058bb9-b4e4-4307-ba5b-e3f0ab85e12d"
            classifiedObject="SubmissionSet01">
            <rim:Slot name="authorPerson">
              <rim:ValueList>
                <rim:Value>^CompanyName^ProductName^VersionNumber</rim:Value>
              </rim:ValueList>
            </rim:Slot>
            <rim:Slot name="authorInstitution">
              <rim:ValueList>
                <rim:Value>GTAWest</rim:Value>
              </rim:ValueList>
            </rim:Slot>
          </rim:Classification>
          <rim:Classification id="cl09"
            classificationScheme="urn:uuid:aa543740-bdda-424e-8c96-df4873be8500"
            classifiedObject="SubmissionSet01" nodeRepresentation="19005-8">
            <rim:Slot name="codingScheme">
              <rim:ValueList>
```

```

        <rim:Value>2.16.840.1.113883.6.1</rim:Value>
      </rim:ValueList>
    </rim:Slot>
    <rim:Name>
      <rim:LocalizedString value="Imaging Study"/>
    </rim:Name>
  </rim:Classification>
  <rim:ExternalIdentifier id="ei03" registryObject="SubmissionSet01"
    identificationScheme="urn:uuid:96fdda7c-d067-4183-912e-bf5ee74998a8"
    value="2.16.840.1.113883.3.239.23.7.20120101170530.1">

    <rim:Name>
      <rim:LocalizedString value="XDSSubmissionSet.uniquelid"/>
    </rim:Name>
  </rim:ExternalIdentifier>
  <rim:ExternalIdentifier id="ei04" registryObject="SubmissionSet01"
    identificationScheme="urn:uuid:554ac39e-e3fe-47fe-b233-965d2a147832"
    value="2.16.840.1.113883.3.239.23.7">

    <rim:Name>
      <rim:LocalizedString value="XDSSubmissionSet.sourceid"/>
    </rim:Name>
  </rim:ExternalIdentifier>
  <rim:ExternalIdentifier id="ei05" registryObject="SubmissionSet01"
    identificationScheme="urn:uuid:6b5aea1a-874d-4603-a4bc-96a0a7b38446"
    value="12341234^^^&2.16.840.1.113883.3.239.33.139&ISO ">

    <rim:Name>
      <rim:LocalizedString value="XDSSubmissionSet.patientId"/>
    </rim:Name>
  </rim:ExternalIdentifier>
</rim:RegistryPackage>

<!--ebXML Classification to designate the above RegistryPackage as an XDSSubmissionSet.
  This classification can be located here or within the XDSSubmissionSet element itself -->
<rim:Classification id="cl10" classifiedObject="SubmissionSet01"
  classificationNode="urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd"/>

<!--ebXML Association to define the change of status of the specified DocumentEntry -->
<rim:Association id="as01" associationType="2010:AssociationType:UpdateAvailabilityStatus"
  sourceObject="SubmissionSet01"
  targetObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf">
  <rim:Slot name="NewStatus">
    <rim:ValueList>
      <rim:Value>urn:oasis:names:tc:ebxml-regrep:StatusType:Deprecated</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="OriginalStatus">
    <rim:ValueList>
      <rim:Value>urn:oasis:names:tc:ebxml-regrep:StatusType:Approved</rim:Value>
    </rim:ValueList>
  </rim:Slot>
</rim:Association>

```

```

    </rim:RegistryObjectList>
  </lcm:SubmitObjectsRequest>
</s:Body>
</s:Envelope>

```

C.4.1.2 Response Message

The following sample message shows the successful response:

```

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2010:UpdateDocumentSetResponse</a:Action>
    <a:RelatesTo> urn:uuid:a02ca8cd-86fa-4afc-a27c-616c183b2060</a:RelatesTo>
  </s:Header>
  <s:Body>
    <rs:RegistryResponse status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success"
      xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0" />
  </s:Body>
</s:Envelope>

```

C.4.2 Updating Metadata

Given the sample query response shown above in section B.3.1.2, the following sections will provide an example request message update the confidentialityCode.

C.4.2.1 Request Message

```

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1"> urn:ihe:iti:2010:UpdateDocumentSet</a:Action>
    <a:MessageID>urn:uuid:a02ca8cd-86fa-4afc-a27c-616c183b2060</a:MessageID>
    <a:ReplyTo>
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
    <a:To s:mustUnderstand="1"> https://gateway.ehealthontario.on.ca:7180/index/services/registry </a:To>
  </s:Header>
  <s:Body>
    <lcm:SubmitObjectsRequest>
      <rim:RegistryObjectList>

        <!--XSDDocumentEntry with updated confidentialityCode -->
        <rim:ExtrinsicObject id="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf" mimeType="text/xml"
          lid="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
          status="urn:oasis:names:tc:ebxml-regrep:StatusType:Approved"
          objectType="urn:uuid:7edca82f-054d-47f2-a032-9b2a5b5186c1">
          <rim:Slot name="creationTime">
            <rim:ValueList>
              <rim:Value>20120101170000</rim:Value>
            </rim:ValueList>
          </rim:Slot>
        </rim:ExtrinsicObject>
      </rim:RegistryObjectList>
    </lcm:SubmitObjectsRequest>
  </s:Body>
</s:Envelope>

```

```

    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="hash">
    <rim:ValueList>
      <rim:Value>4cf4f82d78b5e2aac35c31bca8cb79fe6bd6a41e</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="languageCode">
    <rim:ValueList>
      <rim:Value>eng-CA</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="repositoryUniqueId">
    <rim:ValueList>
      <rim:Value>2.16.840.1.113883.3.239.30.1</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="serviceStartTime">
    <rim:ValueList>
      <rim:Value>20120101163000 </rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="size">
    <rim:ValueList>
      <rim:Value>4095</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="sourcePatientId">
    <rim:ValueList>
      <rim:Value>12341234^^^&2.16.840.1.113883.3.239.18.144&ISO</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="sourcePatientInfo">
    <rim:ValueList>
      <rim:Value>PID-3|12341234^^^&2.16.840.1.113883.3.239.18.144&ISO </rim:Value>
      <rim:Value>PID-5| SMITH^JOHN^Q </rim:Value>
      <rim:Value>PID-7|19491208</rim:Value>
      <rim:Value>PID-8|M</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="urn:ihe:iti:xds:2013:referenceIdList ">
    <rim:ValueList>
      <rim:Value>
        12345678^^^& 2.16.840.1.113883.3.239.32.139&ISO^urn:ihe:iti:xds:2013:accession
      </rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="urn:eho:reportStatus">
    <rim:ValueList>
      <rim:Value>Final </rim:Value>
    </rim:ValueList>
  </rim:Slot>

```

```

|
</rim:Slot>
<rim:Slot name="urn:eho:intendedRecipientList">
  <rim:ValueList>
    <rim:Value>|^Wilson^James||REF</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="urn:eho:sourceProcedureCode">
  <rim:ValueList>
    <rim:Value>22211^Chest 1 View^2.16.840.1.113883.3.239.33.139</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Slot name="urn:eho:iguideVersion">
  <rim:ValueList>
    <rim:Value>1</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Name>
  <rim:LocalizedString value="Diagnostic Imaging Report - Final"/>
</rim:Name>
<rim:Description>
  <rim:LocalizedString value="Chest 1 View"/>
</rim:Description>
<rim:Classification id=" urn:uuid:ac872fc0-1c6e-439f-84d1-f76770a0c123"
  classificationScheme="urn:uuid:93606bcf-9494-43ec-9b4e-a7748d1a838d"
  classifiedObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf">
  <rim:Slot name="authorPerson">
    <rim:ValueList>
      <rim:Value>^House^Gregory</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="authorInstitution">
    <rim:ValueList>
      <rim:Value>Sunnybrook Health Sciences
Centre^^^^^^^^^2.16.840.1.113883.3.239.23.7</rim:Value>
    </rim:ValueList>
  </rim:Slot>
</rim:Classification>
<rim:Classification id=" urn:uuid:ac872fc0-1c6e-439f-84d1-f76770a0ccdf"
  classificationScheme="urn:uuid:41a5887f-8865-4c09-adf7-e362475b143a"
  classifiedObject=" urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf "
  nodeRepresentation="18748-4">
  <rim:Slot name="codingScheme">
    <rim:ValueList>
      <rim:Value>2.16.840.1.113883.6.1</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name>
    <rim:LocalizedString value="Diagnostic Imaging Report"/>
  </rim:Name>
</rim:Classification>
<rim:Classification id="urn:uuid:f1a8c8e4-3593-4777-b7e0-8b0773378705"

```

```

        classificationScheme="urn:uuid:f4f85eac-e6cb-4883-b524-f2705394840f"
        classifiedObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
        nodeRepresentation="R">
    <rim:Slot name="codingScheme">
        <rim:ValueList>
            <rim:Value>2.16.840.1.113883.5.25</rim:Value>
        </rim:ValueList>
    </rim:Slot>
    <rim:Name>
        <rim:LocalizedString value="Restricted"/>
    </rim:Name>
</rim:Classification>
<rim:Classification id="urn:uuid:b6e49c73-96c8-4058-8c95-914d83bd262a"
    classificationScheme="urn:uuid:a09d5840-386c-46f2-b5ad-9c3699a4309d"
    classifiedObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
    nodeRepresentation="urn:ihe:rad:TEXT">
    <rim:Slot name="codingScheme">
        <rim:ValueList>
            <rim:Value>1.3.6.1.4.1.19376.1.2.3</rim:Value>
        </rim:ValueList>
    </rim:Slot>
    <rim:Name>
        <rim:LocalizedString value="Text Report"/>
    </rim:Name>
</rim:Classification>
<rim:Classification id="urn:uuid:61e2b376-d74a-4984-ac21-dcd0b8890f9d"
    classificationScheme="urn:uuid:f33fb8ac-18af-42cc-ae0e-ed0b0bdb91e1"
    classifiedObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
    nodeRepresentation="HOSP">
    <rim:Slot name="codingScheme">
        <rim:ValueList>
            <rim:Value>2.16.840.1.113883.5.111</rim:Value>
        </rim:ValueList>
    </rim:Slot>
    <rim:Name>
        <rim:LocalizedString value="Hospital"/>
    </rim:Name>
</rim:Classification>
<rim:Classification id="urn:uuid:fb7677c5-c42f-485d-9010-dce0f3cd4ad5"
    classificationScheme="urn:uuid:cccf5598-8b07-4b77-a05e-ae952c785ead"
    classifiedObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
    nodeRepresentation="RADDX">
    <rim:Slot name="codingScheme">
        <rim:ValueList>
            <rim:Value>2.16.840.1.113883.5.111</rim:Value>
        </rim:ValueList>
    </rim:Slot>
    <rim:Name>
        <rim:LocalizedString value="Radiology Diagnostics"/>
    </rim:Name>
</rim:Classification>

```

```

<rim:Classification id="urn:uuid:0a8a8ed9-8be5-4a63-9b68-a511adee8ed5"
    classificationScheme="urn:uuid:f0306f51-975f-434e-a61c-c59651d33983"
    classifiedObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
    nodeRepresentation="22211">
  <rim:Slot name="codingScheme">
    <rim:ValueList>
      <rim:Value>2.16.840.1.113883.3.239.18.151.3</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name>
    <rim:LocalizedString value="Chest 1 View"/>
  </rim:Name>
</rim:Classification>
<rim:ExternalIdentifier id="urn:uuid:db9f4438-ffff-435f-9d34-d76190728637"
    registryObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
    identificationScheme="urn:uuid:58a6f841-87b3-4a3e-92fd-a8ffeff98427"
    value="12341234^^^&2.16.840.1.113883.3.239.33.139&ISO ">
  <rim:Name>
    <rim:LocalizedString value="XDSDocumentEntry.patientId"/>
  </rim:Name>
</rim:ExternalIdentifier>
<rim:ExternalIdentifier id="urn:uuid:c3fcbf0e-9765-4f5b-abaa-b37ac8ff05a5"
    registryObject="urn:uuid:08a15a6f-5b4a-42de-8f95-89474f83abdf"
    identificationScheme="urn:uuid:2e82c1f6-a085-4c72-9da3-8640a32e42ab"
    value="2.16.840.1.113883.3.239.23.7.2043249">
  <rim:Name>
    <rim:LocalizedString value="XDSDocumentEntry.uniqueId"/>
  </rim:Name>
</rim:ExternalIdentifier>
</rim:ExtrinsicObject>

<!-- XDSSubmissionSet -->
<rim:RegistryPackage id="SubmissionSet01" ... >
  <rim:Slot name="submissionTime">
    <rim:ValueList>
      <rim:Value>20140101170530</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name />
  <rim:Description />
  <rim:Classification id="c108"
    classificationScheme="urn:uuid:a7058bb9-b4e4-4307-ba5b-e3f0ab85e12d"
    classifiedObject="SubmissionSet01">
    <rim:Slot name="authorPerson">
      <rim:ValueList>
        <rim:Value>^CompanyName^ProductName^VersionNumber</rim:Value>
      </rim:ValueList>
    </rim:Slot>
    <rim:Slot name="authorInstitution">
      <rim:ValueList>
        <rim:Value>GTAWest</rim:Value>
      </rim:ValueList>
    </rim:Slot>
  </rim:Classification>
</rim:RegistryPackage>

```

```

        </rim:ValueList>
      </rim:Slot>
    </rim:Classification>
    <rim:Classification id="cl09"
      classificationScheme="urn:uuid:aa543740-bdda-424e-8c96-df4873be8500"
      classifiedObject="SubmissionSet01" nodeRepresentation="19005-8">
      <rim:Slot name="codingScheme">
        <rim:ValueList>
          <rim:Value>2.16.840.1.113883.6.1</rim:Value>
        </rim:ValueList>
      </rim:Slot>
      <rim:Name>
        <rim:LocalizedString value="Imaging Study"/>
      </rim:Name>
    </rim:Classification>
    <rim:ExternalIdentifier id="ei03" registryObject="SubmissionSet01"
      identificationScheme="urn:uuid:96fdda7c-d067-4183-912e-bf5ee74998a8"
      value="2.16.840.1.113883.3.239.23.7.20120101170530.1">
      <rim:Name>
        <rim:LocalizedString value="XDSSubmissionSet.uniqueId"/>
      </rim:Name>
    </rim:ExternalIdentifier>
    <rim:ExternalIdentifier id="ei04" registryObject="SubmissionSet01"
      identificationScheme="urn:uuid:554ac39e-e3fe-47fe-b233-965d2a147832"
      value="2.16.840.1.113883.3.239.23.7">
      <rim:Name>
        <rim:LocalizedString value="XDSSubmissionSet.sourceId"/>
      </rim:Name>
    </rim:ExternalIdentifier>
    <rim:ExternalIdentifier id="ei05" registryObject="SubmissionSet01"
      identificationScheme="urn:uuid:6b5aea1a-874d-4603-a4bc-96a0a7b38446"
      value="12341234^^^&2.16.840.1.113883.3.239.33.139&ISO ">
      <rim:Name>
        <rim:LocalizedString value="XDSSubmissionSet.patientId"/>
      </rim:Name>
    </rim:ExternalIdentifier>
  </rim:RegistryPackage>

  <!--ebXML Classification to designate the above RegistryPackage as an XDSSubmissionSet.
    This classification can be located here or within the XDSSubmissionSet element itself -->
  <rim:Classification id="cl10" classifiedObject="SubmissionSet01"
    classificationNode="urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd"/>

  <!--ebXML Association to define the change of status of the specified DocumentEntry -->
  <rim:Association id="as01" associationType="2010:AssociationType:HasMember"
    sourceObject="SubmissionSet01"
    targetObject="Document01">
    <rim:Slot name="SubmissionSetStatus">
      <rim:ValueList>
        <rim:Value>Original</rim:Value>
      </rim:ValueList>
    </rim:Slot>
  </rim:Association>

```

```
|  
    </rim:Slot>  
    <rim:Slot name="PreviousVersion">  
      <rim:ValueList>  
        <rim:Value>1</rim:Value>  
      </rim:ValueList>  
    </rim:Slot>  
  </rim:Association>  
  
  </rim:RegistryObjectList>  
</lcm:SubmitObjectsRequest>  
</s:Body>  
</s:Envelope>
```

C.4.2.2 Response Message

The successful response message would be identical to the one shown in section B.4.1.2.