



Nationwide Health Information Network (NHIN)

Document Submission

Production
Web Service Interface Specification

V 2.0

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1 Preface

1.1 Introduction

The NHIN Trial Implementations Service Interface Specifications constitute the core services of an operational Nationwide Health Information Network (NHIN). They are intended to provide a standard set of service interfaces that enable the exchange of interoperable health information amongst a group of peer nodes referred to Nationwide Health Information Exchanges (NHIEs). The services provide such functional capabilities as patient look-up, document query and retrieve, notification of consumer preferences, and access to logs for determining who has accessed what records and for what purpose for use. The functional services of this profile rest on a foundational set of defined core services that includes the following:

1. NHIN Trial Implementations Message Platform Service Interface Specification,
2. NHIN Trial Implementations Authorization Framework Service Interface Specification,
3. NHIN Trial Implementations NHIE Service Registry Interface Specification

In addition, there is another set of services whose invocation can affect the results of a Document Submission transaction, or vice versa.

1. NHIN Trial Implementations Patient Discovery Service Interface Specification,
2. NHIN Trial Implementations Audit Log Query Service Interface Specification,
3. NHIN Trial Implementations Authorized Case Follow-Up Service Interface Specification

1.2 Intended Audience

The primary audience for the NHIN Trial Implementations Service Interface Specifications is the individuals responsible for implementing software solutions that realize these interfaces for a NHIE. After reading this specification, one should have an understanding of the context in which the service interface is meant to be used, the behavior of the interface, the underlying reference standards and specifications, the Web Services Description Language (WSDLs) used to define the service, any Extensible Markup Language (XML) schemas used to define the content, and what “compliance” means from an implementation testing perspective.

1.3 Focus of this Specification

This document defines the NHIN Trial Implementations Document Submission Service Interface Specification. The purpose of this specification is to provide the ability to “push” data for a given patient from one NHIE to another via configuration on the submission side. This is a different model of exchange than subscription (see the NHIN Trial Implementations Health Information Event Messaging Service Specification for details on this approach) because the sender decides who the data should go to and the receiver receives data on an appropriate available endpoint from the sources it authorizes (refer to the Authorization Framework Service Interface Specification).

1.4 Related Documents

This interface specification references the following standards:

- HITSP/T31 Document Reliable Interchange Transaction Version 1.3 July 8, 2009
http://www.hitsp.org/ConstructSet_Details.aspx?&PrefixAlpha=3&PrefixNumeric=31
- IHE ITI TF Supplement XDR TI 2009-8-10
http://www.ihe.net/Technical_Framework/upload/IHE_ITI_TF_Supplement_Cross_Enterprise_Document_Reliable_Interchange_XDR_TI_2009-08-10.pdf
- IHE ITI TF Revision 6.0 Vol. 2b, 2x, 3 2009-8-10
http://www.ihe.net/Technical_Framework/upload/IHE_ITI_TF_6-0_Vol2b_FT_2009-08-10.pdf



http://www.ihe.net/Technical_Framework/upload/IHE_ITI_TF_6-0_Vol2x_FT_2009-08-10.pdf
http://www.ihe.net/Technical_Framework/upload/IHE_ITI_TF_6-0_Vol3_FT_2009-08-10-2.pdf

- ebRIM: OASIS/ebXML Registry Information Model v3.0
- ebRS: OASIS/ebXML Registry Services Specifications v3.0
- MTOM SOAP Message Transmission Optimization Mechanism.
<http://www.w3.org/TR/soap12-mtom/>
- HITSP C80, Clinical Document and Message Terminology Component, v1.2
http://www.hitsp.org/ConstructSet_Details.aspx?&PrefixAlpha=4&PrefixNumeric=80

1.5 Deviations from Standards

No specific deviations from or constraints from the above-mentioned standards are identified.

1.6 Relationship to other NHIN Cooperative Specifications

In some cases, the data exchanged between NHIEs will involve the communication of individually identifiable health information (defined in 45 CFR Parts 160, 162, and 164). When individually identifiable information is exchanged, then each NHIE must have a common understanding of the patient's identity. To facilitate a common understanding and prepare two NHIEs for spontaneous exchange of data that identifies a patient, the NHIEs may utilize the NHIN Patient Discovery Interface specification to share the identity of patient between the exchanging NHIEs (see Section 2.6 of this document for further details on the use of a patient identifier).

This specification utilizes the transmission and security standards identified in the NHIN Messaging Platform Interface Specification and NHIN Authorization Framework. Specifically, each transaction identified in this specification must contain assertions about the identity and role of the user or system initiating the exchange of data, purpose for use and authentication of the user. The receiving NHIE can use the assertions provided in the message for authorization and authentication purposes to ensure that it receives data only from its trusted source.

2 Interface Description

2.1 Definitions

In this interface specification, a "document" refers to the format of clinical data as it is transferred between NHIEs, and not as it is stored within an NHIE or electronic health record (EHR) system. A NHIE and its participating organizations may store clinical data in whatever format or repository it chooses. Specifically, a "document" transferred between NHIEs need not meet the criteria for persistence, stewardship, etc as identified by the HL7 Structured Documents committee.

"Initiating NHIE" refers to a document source NHIE that initiates document submission transaction for one or more available documents on a particular patient.

"Receiving NHIE" refers to document recipient NHIE that receives document submission transaction.

2.2 Assumptions

a) The primary expected use in the context of the NHIN is that documents are formatted as XML data following the HL7 Clinical Document Architecture standard, but nothing precludes this interface from being used to submit other kinds of documents, such as Adobe Portable Document Format (PDF) files or images.



b) The patient to whom the document belongs:

- is registered at one or more facilities in the initiating NHIE
- has provided consent to share his or her clinical data, or such consent is not required by the business case under which the document submission is occurring; the exact mechanism for providing this consent is the subject of Consumer Preferences Service Interface specification document
- has had his/her identity from the receiving NHIE determined by the initiating NHIE through some verifiable means, primarily through the use of the Patient Discovery Interface Specification; this interface requires the use of a patient identifier assigned by the Receiving NHIE. However, if the transaction is used to send de-identified data, this assumption/constraint becomes void.

c) There is no central or federated service that performs these transactions across multiple NHIEs for the same document (e.g., broadcast delivery). How an NHIE determines to which other NHIE to direct the transaction is not specified.

2.3 Triggers

This specification does not define a finite set of trigger conditions that may prompt one NHIE to initiate a document submission transaction. The conditions under which a document should be exchanged between two NHIEs using this service specification will likely be determined by the two NHIEs using business rules, operational policies, and statutory limitations imposed by the NHIEs, provider organizations, and government regulations.

2.4 Transaction Standard

This specification recognizes and utilizes the Health Information Technology Standards Panel (HITSP) Document Reliable Interchange Transaction or HITSP/T31, Version 1.3, specification to enable Document Submission transactions over the NHIN.

2.5 NHIE Core Services

The following NHIE Core Services are addressed by the Gartner report on Summary of the NHIN Prototype Architecture for Office of National Coordinator, May 31, 2007

http://healthit.hhs.gov/portal/server.pt/gateway/PTARGS_0_10731_848093_0_0_18/summary_report_on_nhin_Prototype_architectures.pdf:

- *Data Services*: Secure data delivery, and confirmation of delivery, to EHRs, PHRs, other systems and networks.
- *Interchange Capabilities*: 5.3.4 Data Integrity Checking; 5.3.5 Error Handling; 5.3.8 Non-repudiation; 5.3.9 Patient Summary Record Support.
- *Data Services*: 1.5 Summary patient record exchange
- *Data Services*: 1.7 Audit logging and error handling for data access and exchange.

2.6 Technical Pre-conditions

The following technical pre-conditions exist for this interface specification:

- The network location of the receiving NHIE has been obtained by initiating NHIE, usually through the use of the Service Discovery Interface Specification.
- The identity of the patient at the receiving NHIE has been determined by initiating NHIE either through some verifiable means as agreed upon between the exchanging NHIEs or through use of the Patient Discovery Specification.



- The document being transmitted pertains to a specific patient.

2.7 Technical Post-conditions

The following technical post-conditions will result after the execution of this interface specification:

- Receiving NHIE shall validate the hashcode and size on the received documents.
- Audit logs as defined in Section 5 are recorded.
- Errors encountered as defined in Section 4 are handled.

3 Interface Definition

3.1 Cross Enterprise Document Reliable Interchange (XDR):

Described in IHE ITI TF Supplement XDR TI 2009-8-10 Section 15, the figure below illustrates the actors and transactions involved in the ITI-41 Cross Enterprise Document Reliable Interchange transaction. Note that the diagram represents the Initiating NHIE as the Document Source and the Receiving NHIE as the Document Recipient.

It is important to note that this transaction does NOT require the XDS architecture within either initiating or receiving NHIE. In other words, the Document Recipient is not required to register the document with XDS Registry and store it in XDS Repository upon receipt of document from Document Source.

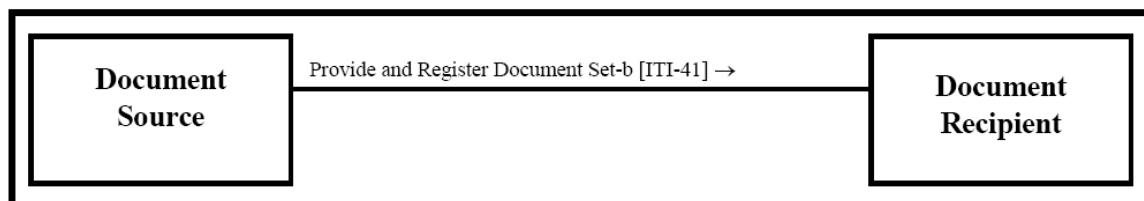


Figure 15.1-1 XDR Actor Diagram

The XDR transaction supports the reuse of the Provide and Register Set transaction-b with Web-Services as transport.

The protocol for this transaction is based on SOAP12 and MTOM.

3.2 ITI-41 Provide and Register Transaction

This transaction is described in detailed in IHE TF-2b Version6.0 section 3.41.

3.3 Multiple Documents Submission

This interface supports the ability to include multiple documents for a single patient in a single Submission Transaction.

3.4 Synchronous/Deferred Messaging

Receiving NHIEs must support synchronous (immediate) document submission transactions; however deferred document submission transactions may also optionally be supported., or may restrict submissions to use either messaging mode based on agreements with its trading partners.

When not restricted by the Receiving NHIE, the Initiating NHIE may choose whether to use synchronous or deferred interactions. A Receiving NHIE that supports both synchronous and deferred messaging modes would set up two services. One for synchronous and other one for deferred. Additionally, the Initiating NHIE would provide a response service entry point by which the deferred response is delivered from Receiving NHIE in a separate HTTP Session to the Initiating NHIE. The Synchronous and Deferred Messaging Workflow are defined in the NHIN Messaging Platform Specification document.

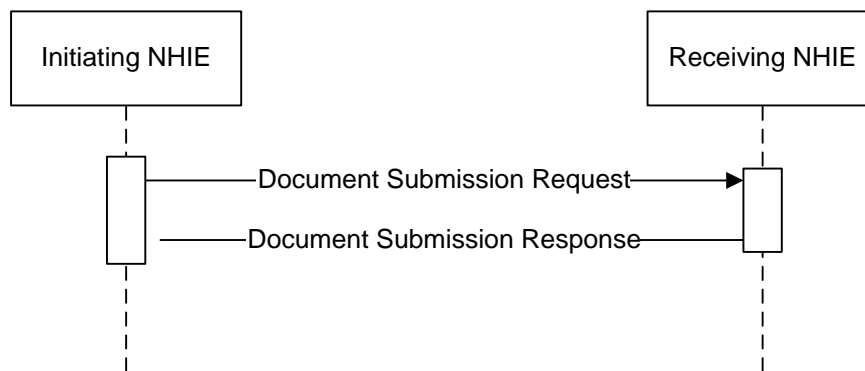


3.4.1 Synchronous Messaging Workflow

The Initiating NHIE and Receiving NHIE handle the Document Submission transaction in a single in-out message exchange pattern as defined in the NHIN Messaging Platform Specification document. In other words, Initiating NHIE sends a Document submission request to the Receiving NHIE and waits for a response to come back on the same HTTP connection. The receiving NHIE receives the Document submission request and processes it in real-time and sends back the response to the Initiating NHIE on that same HTTP connection. It should be noted that the Action names and namespaces in the synchronous and the deferred versions of the WSDLs would need to be different so that code generation of the web service code in a gateway supporting both do not have conflicts.

SOAP action for Document Submission Request in synchronous mode is:
urn:ihe:iti:2007:ProvideAndRegisterDocumentSet-b

SOAP action for Document Submission Response in synchronous mode is:
urn:ihe:iti:2007:ProvideAndRegisterDocumentSet-bResponse



3.4.2 Deferred Messaging Workflow

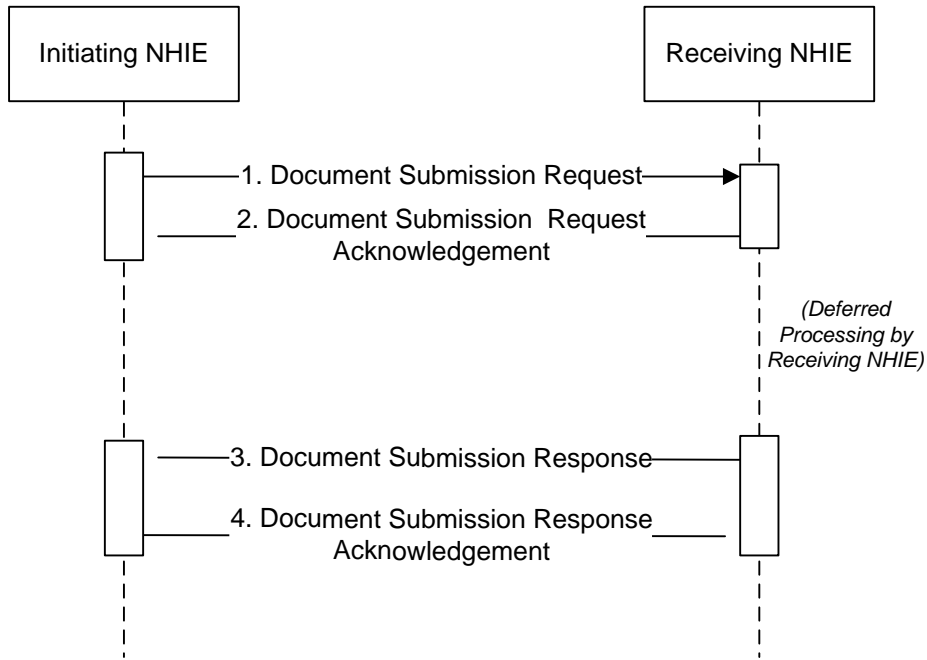
Deferred Messaging workflow is supported by this specification to solve the issues of extreme latency involved in processing of Document Submission request and the attached payload(s) associated with the request.

In a deferred mode, the Document Submission is a two-way message as shown in the diagram below:

- 1) The Document Submission request is same as that of the synchronous mode, The SOAP action for the deferred document submission request is **urn:nhin:Deferred:ProvideAndRegisterDocumentSet-b**
- 2) The response is a Document Submission Request Acknowledgement message. It leverages the ebxml RegistryResponse element with a status code of **urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:RequestAccepted**, The request acknowledgement shall not contain any registryErrorList element as any errors of those kind will be communicated in Document Submission Response. Any errors that occur prior to the processing of the document(s) and metadata provided in message number 1 shall be communicated via a soap fault. The SOAP action for the deferred document submission request acknowledgement is **urn:nhin:Deferred:ProvideAndRegisterDocumentSet-bAcknowledgement**.
- 3) The Document Submission Response message content is same as that of the response in synchronous mode, but this message is sent on a new HTTP connection. The SOAP action for this message is **urn:nhin:Deferred:ProvideAndRegisterDocumentSet-bResponse**
- 4) The response is a Document Submission Response Acknowledgment message. It leverages the ebxml RegistryResponse element with a status of **urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:ResponseAccepted**, Any errors that occur during the processing of the registry response message (message 3) shall be communicated via a soap fault. The



SOAP action for the deferred Document Submission response acknowledgement is
urn:nhin:Deferred:ProvideAndRegisterDocumentSet-bResponseAcknowledgement.





3.5 Metadata Elements

The Metadata elements for the Provide and Register transaction are defined by Integrating the Healthcare Enterprise (IHE). The metadata elements for Document are described in detailed in IHE ITI TF-3 Version 6.0 section 4.1.7. The metadata elements for Submission Set are described in detailed in IHE ITI TF-3 Version 6.0 section 4.1.8. HITSP provides requirements for coded metadata elements in HITSP C80, "Clinical Document and Message Terminology."

Some of the key meta-data elements are further described here:

3.5.1 XDSDocumentEntry.sourcePatientId

The Source Patient ID represents the community identifier of the subject of care (i.e. patient) of the document from the Initiating NHIE's Assigning Authority domain. For de-identified documents, this element contains the patient's pseudonymous or anonymous identifier assigned by the Initiating NHIE.

The Source Patient ID shall contain two parts:

- Patient Identity Assigning Authority in the form of an OID
- An identifier in the above Assigning Authority domain

3.5.2 XDSDocumentEntry.sourcePatientInfo

This is an optional element. If included, it should specify a minimum of demographics for the patient, including first name, last name, date of birth and gender. For the de-identified documents, this element will either be omitted or values are scrambled as per the HIPAA Privacy Rule.

3.5.3 XDSDocumentEntry.patientId

The Patient ID represents the subject of care of the document (i.e. patient) from the Receiving NHIE's Assigning Authority domain. This value is obtained by Initiating NHIE through some verifiable means, primarily through use of the Patient Discovery Specification.

For the de-identified documents, this element includes patient's pseudonymous or anonymous identifier assigned by the Initiating NHIE's Assigning Authority domain. In this case, this element will have the same value as that of the XDSDocumentEntry.sourcePatientId.

The Patient ID shall contain two parts:

- Patient Identity Assigning Authority in the form of an OID
- An identifier in the above Assigning Authority domain.

3.5.4 XDSDocumentEntry.Hash

The hash contains the hash of the target document, computed following the SHA-1 algorithm. The hash value must be included.

3.5.5 XDSDocumentEntry.Size

The actual size (in bytes) of the document must be included.

3.5.6 XDSSubmissionSet.patientId

The Patient ID represents the subject of care of the submission set from the Receiving NHIE's Assigning Authority domain. This element will follow the same rules as defined for XDSDocumentEntry.patientId in section 3.5.3 of this document.



3.5.7 XDSSubmissionSet.sourceId

The Source ID represents the homeCommunityId of the Initiating NHIE. The homeCommunityId is a globally unique identifier for a community used to assist in subsequent transactions for locating the data held by that community. homeCommunityId is structured as an OID limited to 64 characters and specified in URI syntax, for example the homeCommunityId of 2.16.840.1.113883.3.166 would be formatted as urn:oid: 2.16.840.1.113883.3.166.

3.6 Request

The Provide and Register ITI-41 Request is a collection of metadata and documents transferred between a Document Source and a Document Recipient using a single ebXML SubmitObjectsRequest.

This request contains:

- a) One XDS Document Entry Metadata object per document
- b) One XDS Submission Set Metadata object
- c) Zero or more documents; each document is represented by an XDSDocumentEntry object in the metadata.

3.7 Response

The response is identical to the RegistryResponse message specified in ebRS. It shall be conveyed in the same protocol as the request.

Sample Document Submission Request from the Initiating NHIE

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <!--The following header applies for a Synchronous Web Services Exchange Request
    Please note that a soap message can only have one header section. -->
  <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">http://localhost:2647/XdsService/IHEXDSRepository.svc</a:To>
  </s:Header>
  <!--The following DISABLED header applies for a Deferred Web Services Exchange Request
    Please note that a soap message can only have one header section.
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:nhin:Deferred:ProvideAndRegisterDocumentSet-
b</a:Action>
    <a:MessageID>urn:uuid:6d296e90-e5dc-43d0-b455-7c1f3eb35d83</a:MessageID>
    <a:ReplyTo>
      <a:Address>http://192.168.2.4:9080/XdsService/DocumentSourceReceiver.svc</a:Address>
    </a:ReplyTo>
    <a:To s:mustUnderstand="1">http://localhost:2647/XdsService/IHEXDSRepository.svc</a:To>
```



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```
</s:Header> -->
<s:Body>
  <ProvideAndRegisterDocumentSetRequest
    xsi:schemaLocation="urn:ihe:iti:xds-b:2007
    ../../schema/IHE/XDS.b_DocumentRepository.xsd"
    xmlns="urn:ihe:iti:xds-b:2007" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
    instance"
    xmlns:lcm="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:3.0"
    xmlns:rims="urn:oasis:names:tc:ebxml-regrep:xsd:rims:3.0"
    xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0">
    <lcm:SubmitObjectsRequest>
    <rims:RegistryObjectList>
      <rims:ExtrinsicObject id="Document01" mimeType="text/xml"
        objectType="urn:uuid:7edca82f-054d-47f2-a032-9b2a5b5186c1">
        <rims:Slot name="creationTime">
          <rims:ValueList>
            <rims:Value>20051224</rims:Value>
          </rims:ValueList>
        </rims:Slot>
        <rims:Slot name="languageCode">
          <rims:ValueList>
            <rims:Value>en-us</rims:Value>
          </rims:ValueList>
        </rims:Slot>
        <rims:Slot name="serviceStartTime">
          <rims:ValueList>
            <rims:Value>200412230800</rims:Value>
          </rims:ValueList>
        </rims:Slot>
        <rims:Slot name="serviceStopTime">
          <rims:ValueList>
            <rims:Value>200412230801</rims:Value>
          </rims:ValueList>
        </rims:Slot>
        <rims:Slot name="sourcePatientId">
          <rims:ValueList>
            <rims:Value>ST-
            1000^^^&amp;1.3.6.1.4.1.21367.2003.3.9&amp;ISO</rims:Value>
          </rims:ValueList>
        </rims:Slot>
        <rims:Slot name="sourcePatientInfo">
          <rims:ValueList>
            <rims:Value>PID-3|ST-
            1000^^^&amp;1.3.6.1.4.1.21367.2003.3.9&amp;ISO</rims:Value>
          </rims:ValueList>
        </rims:Slot>
      </rims:ExtrinsicObject>
    </rims:RegistryObjectList>
  </lcm:SubmitObjectsRequest>
</ProvideAndRegisterDocumentSetRequest>
</s:Body>
</s:Header>
```



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```
<rim:Value>PID-5|Doe^John^^^</rim:Value>
<rim:Value>PID-7|19560527</rim:Value>
<rim:Value>PID-8|M</rim:Value>
<rim:Value>PID-11|100 Main
St^^Metropolis^Il^44130^USA</rim:Value>
  </rim:ValueList>
</rim:Slot>
<rim:Name>
  <rim:LocalizedString value="Physical"/>
</rim:Name>
<rim:Description/>
<rim:Classification id="c101"
a7748d1a838d"
  classificationScheme="urn:uuid:93606bcf-9494-43ec-9b4e-
  classifiedObject="Document01">
  <rim:Slot name="authorPerson">
    <rim:ValueList>
      <rim:Value>Gerald Smitty</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="authorInstitution">
    <rim:ValueList>
      <rim:Value>Cleveland Clinic</rim:Value>
      <rim:Value>Parma Community</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="authorRole">
    <rim:ValueList>
      <rim:Value>Attending</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Slot name="authorSpecialty">
    <rim:ValueList>
      <rim:Value>Orthopedic</rim:Value>
    </rim:ValueList>
  </rim:Slot>
</rim:Classification>
<rim:Classification id="c102"
e362475b143a"
  classificationScheme="urn:uuid:41a5887f-8865-4c09-adf7-
  classifiedObject="Document01" nodeRepresentation="History
and Physical">
  <rim:Slot name="codingScheme">
    <rim:ValueList>
```



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```
classCodes</rim:Value>
    <rim:Value>Connect-a-thon
    </rim:ValueList>
    </rim:Slot>
    <rim:Name>
    <rim:LocalizedString value="History and Physical"/>
    </rim:Name>
</rim:Classification>
<rim:Classification id="c103"
f2705394840f"
    classificationScheme="urn:uuid:f4f85eac-e6cb-4883-b524-
    classifiedObject="Document01"
    nodeRepresentation="1.3.6.1.4.1.21367.2006.7.101">
    <rim:Slot name="codingScheme">
    <rim:ValueList>
    <rim:Value>Connect-a-thon
confidentialityCodes</rim:Value>
    </rim:ValueList>
    </rim:Slot>
    <rim:Name>
    <rim:LocalizedString value="Clinical-Staff"/>
    </rim:Name>
</rim:Classification>
<rim:Classification id="c104"
9c3699a4309d"
    classificationScheme="urn:uuid:a09d5840-386c-46f2-b5ad-
    classifiedObject="Document01" nodeRepresentation="CDAR2/IHE
1.0">
    <rim:Slot name="codingScheme">
    <rim:ValueList>
    <rim:Value>Connect-a-thon
formatCodes</rim:Value>
    </rim:ValueList>
    </rim:Slot>
    <rim:Name>
    <rim:LocalizedString value="CDAR2/IHE 1.0"/>
    </rim:Name>
</rim:Classification>
<rim:Classification id="c105"
ed0b0bdb91e1"
    classificationScheme="urn:uuid:f33fb8ac-18af-42cc-ae0e-
    classifiedObject="Document01"
nodeRepresentation="Outpatient">
    <rim:Slot name="codingScheme">
    <rim:ValueList>
```



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```
<rim:Value>Connect-a-thon
healthcareFacilityTypeCodes</rim:Value>
</rim:ValueList>
</rim:Slot>
<rim:Name>
<rim:LocalizedString value="Outpatient" />
</rim:Name>
</rim:Classification>
<rim:Classification id="c106"
classificationScheme="urn:uuid:ccc5598-8b07-4b77-a05e-
ae952c785ead"
classifiedObject="Document01" nodeRepresentation="General
Medicine">
<rim:Slot name="codingScheme">
<rim:ValueList>
<rim:Value>Connect-a-thon
practiceSettingCodes</rim:Value>
</rim:ValueList>
</rim:Slot>
<rim:Name>
<rim:LocalizedString value="General Medicine" />
</rim:Name>
</rim:Classification>
<rim:Classification id="c107"
classificationScheme="urn:uuid:f0306f51-975f-434e-a61c-
c59651d33983"
classifiedObject="Document01" nodeRepresentation="34108-1">
<rim:Slot name="codingScheme">
<rim:ValueList>
<rim:Value>LOINC</rim:Value>
</rim:ValueList>
</rim:Slot>
<rim:Name>
<rim:LocalizedString value="Outpatient Evaluation
And Management" />
</rim:Name>
</rim:Classification>
<rim:ExternalIdentifier id="ei01" registryObject="Document01"
identificationScheme="urn:uuid:58a6f841-87b3-4a3e-92fd-
a8ffeff98427"
value="SELF-5^^^&1.3.6.1.4.1.21367.2005.3.7&ISO">
<rim:Name>
<rim:LocalizedString
value="XSDDocumentEntry.patientId" />
</rim:Name>
```



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```
</rim:ExternalIdentifier>
<rim:ExternalIdentifier id="ei02" registryObject="Document01"
  identificationScheme="urn:uuid:2e82c1f6-a085-4c72-9da3-
8640a32e42ab"
  value="1.3.6.1.4.1.21367.2005.3.9999.32">
  <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>20041225235050</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name>
    <rim:LocalizedString value="Physical"/>
  </rim:Name>
  <rim:Description>
    <rim:LocalizedString value="Annual physical"/>
  </rim:Description>
  <rim:Classification id="cl08"
e3f0ab85e12d"
    classificationScheme="urn:uuid:a7058bb9-b4e4-4307-ba5b-
    classifiedObject="SubmissionSet01">
    <rim:Slot name="authorPerson">
      <rim:ValueList>
        <rim:Value>Sherry Dopplemeyer</rim:Value>
      </rim:ValueList>
    </rim:Slot>
    <rim:Slot name="authorInstitution">
      <rim:ValueList>
        <rim:Value>Cleveland Clinic</rim:Value>
        <rim:Value>Berea Community</rim:Value>
      </rim:ValueList>
    </rim:Slot>
    <rim:Slot name="authorRole">
      <rim:ValueList>
        <rim:Value>Primary Surgon</rim:Value>
      </rim:ValueList>
    </rim:Slot>
```




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```
<rim:Slot name="authorSpecialty">
  <rim:ValueList>
    <rim:Value>Orthopedic</rim:Value>
  </rim:ValueList>
</rim:Slot>
</rim:Classification>
<rim:Classification id="c109"
df4873be8500"
  classificationScheme="urn:uuid:aa543740-bdda-424e-8c96-
  classifiedObject="SubmissionSet01"
  nodeRepresentation="History and Physical">
  <rim:Slot name="codingScheme">
    <rim:ValueList>
      <rim:Value>Connect-a-thon
contentTypeCodes</rim:Value>
    </rim:ValueList>
  </rim:Slot>
  <rim:Name>
    <rim:LocalizedString value="History and Physical"/>
  </rim:Name>
</rim:Classification>
<rim:ExternalIdentifier id="ei03" registryObject="SubmissionSet01"
bf5ee74998a8"
  identificationScheme="urn:uuid:96fdda7c-d067-4183-912e-
  value="1.3.6.1.4.1.21367.2005.3.9999.33">
  <rim:Name>
    <rim:LocalizedString
value="XDSSubmissionSet.uniqueId"/>
  </rim:Name>
</rim:ExternalIdentifier>
<rim:ExternalIdentifier id="ei04" registryObject="SubmissionSet01"
965d2a147832"
  identificationScheme="urn:uuid:554ac39e-e3fe-47fe-b233-
  value="3670984664">
  <rim:Name>
    <rim:LocalizedString
value="XDSSubmissionSet.sourceId"/>
  </rim:Name>
</rim:ExternalIdentifier>
<rim:ExternalIdentifier id="ei05" registryObject="SubmissionSet01"
96a0a7b38446"
  identificationScheme="urn:uuid:6b5aea1a-874d-4603-a4bc-
  value="SELF-5^^^&1.3.6.1.4.1.21367.2005.3.7&ISO">
  <rim:Name>
```



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```
<rim:LocalizedString
value="XDSSubmissionSet.patientId"/>
  </rim:Name>
  </rim:ExternalIdentifier>
</rim:RegistryPackage>
<rim:Classification id="c110" 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">UjBsR09EbGhjz0dTQUxNQUBUNBRU1tQ1p0dU1GUXhEUzhi</Document>
  </ProvideAndRegisterDocumentSetRequest>
</s:Body>
</s:Envelope>
```

Sample Document Submission Response from the Receiving NHIE

Success Response:

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <!--The following header applies for a Synchronous Web Services Exchange Response
  Please note that a soap message can only have one header section. -->
  <s:Header>
    <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:ProvideAndRegisterDocumentSet-
bResponse</a:Action>
    <a:RelatesTo>urn:uuid:6d296e90-e5dc-43d0-b455-7c1f3eb35d83</a:RelatesTo>
  </s:Header>
  <!--The following DISABLED header applies for a Deferred Web Services Exchange 'Reply'
  Please note that:
  1. A Deferred Web Services Exchange 'Reply' is in reality a new Request sent by the
Receiver.
  2. A soap message can only have one header section
  <s:Header>
```



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```
<a:Action s:mustUnderstand="1"> urn:nhin:Deferred:ProvideAndRegisterDocumentSet-
bResponse</a:Action>

<a:MessageID>urn:uuid:D6C21225-8E7B-454E-9750-821622C099DB</a:MessageID>

  <a:RelatesTo>urn:uuid:6d296e90-e5dc-43d0-b455-7c1f3eb35d83</a:RelatesTo>

  <a:To
s:mustUnderstand="1">http://localhost:2647/XdsService/DocumentSourceReceiver.svc</a:To>

</s:Header>  -->

<s:Body>

  <rs:RegistryResponse xsi:schemaLocation="urn:oasis:names:tc:ebxml-
regrep:xsd:rs:3.0 ../schema/ebRS/rs.xsd" status="urn:oasis:names:tc:ebxml-
regrep:ResponseType:Success" xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"/>

  </s:Body>

</s:Envelope>
```

Failure Response:

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

  <!--The following header applies for a Synchronous Web Services Exchange Response

  Please note that a soap message can only have one header section. -->

  <s:Header>

    <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:ProvideAndRegisterDocumentSet-
bResponse</a:Action>

    <a:RelatesTo>urn:uuid:6d296e90-e5dc-43d0-b455-7c1f3eb35d83</a:RelatesTo>

  </s:Header>

  <!--The following DISABLED header applies for a Deferred Web Services Exchange 'Reply'

  Please note that:

  1. A Deferred Web Services Exchange 'Reply' is in reality a new Request sent by the
Receiver.

  .

  2. A soap message can only have one header section

  <s:Header>

    <a:Action s:mustUnderstand="1">urn:nhin:Deferred:ProvideAndRegisterDocumentSet-
bResponse</a:Action>

    <a:MessageID>urn:uuid:D6C21225-8E7B-454E-9750-821622C099DB</a:MessageID>

    <a:RelatesTo>urn:uuid:6d296e90-e5dc-43d0-b455-7c1f3eb35d83</a:RelatesTo>

    <a:To
s:mustUnderstand="1">http://localhost:2647/XdsService/DocumentSourceReceiver.svc</a:To>

  </s:Header>  -->

  <s:Body>

    <rs:RegistryResponse xsi:schemaLocation="urn:oasis:names:tc:ebxml-
regrep:xsd:rs:3.0 ../schema/ebRS/rs.xsd" status="urn:oasis:names:tc:ebxml-
regrep:ResponseType:Failure" xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">

      <rs:RegistryErrorList highestSeverity="urn:oasis:names:tc:ebxml-
regrep:ErrorSeverityType:Error">
```



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```
<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:RegistryError errorCode="XDSRegistryMetadataError" codeContext="RegistryPackage
(SubmissionSet) is not labeled as SubmissionSet or Folder" location=""
severity="urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Error" />

</rs:RegistryErrorList>

</ rs:RegistryResponse>

</s:Body>

</s:Envelope>
```

Sample Document Submission Acknowledgments

Deferred Document Submission Request Accepted

```
<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:nhin:Deferred:ProvideAndRegisterDocumentSet-
bAcknowledgement</a:Action>

    <a:MessageID>urn:uuid:D6C21225-8E7B-454E-9750-821622C099DB</a:MessageID>

    <a:RelatesTo>urn:uuid:6d296e90-e5dc-43d0-b455-7c1f3eb35d83</a:RelatesTo>

    <a:To
s:mustUnderstand="1">http://localhost:2647/XdsService/DocumentSourceReceiver.svc</a:To>

  </s:Header>  -->

  <s:Body>

    <rs:RegistryResponse xsi:schemaLocation="urn:oasis:names:tc:ebxml-
regrep:xsd:rs:3.0 ../schema/ebRS/rs.xsd" status="urn:oasis:names:tc:ebxml-
regrep:ResponseStatusType:RequestAccepted" xmlns:rs="urn:oasis:names:tc:ebxml-
regrep:xsd:rs:3.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">

  </ rs:RegistryResponse>

  </s:Body>

</s:Envelope>
```

Deferred Document Submission Response Accepted

```
<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:nhin:Deferred:ProvideAndRegisterDocumentSet-
bResponseAcknowledgement</a:Action>

    <a:MessageID>urn:uuid:D6C21225-8E7B-454E-9750-821622C099DB</a:MessageID>

    <a:RelatesTo>urn:uuid:6d296e90-e5dc-43d0-b455-7c1f3eb35d83</a:RelatesTo>

    <a:To
s:mustUnderstand="1">http://localhost:2647/XdsService/DocumentSourceReceiver.svc</a:To>

  </s:Header>  -->

  <s:Body>

    <rs:RegistryResponse xsi:schemaLocation="urn:oasis:names:tc:ebxml-
regrep:xsd:rs:3.0 ../schema/ebRS/rs.xsd" status="urn:oasis:names:tc:ebxml-
regrep:ResponseStatusType:ResponseAccepted" xmlns:rs="urn:oasis:names:tc:ebxml-
regrep:xsd:rs:3.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
```



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

4 Error Handling

The conditions of failure and possible error messages are given in the ebRS standard and detailed in ITI TF-3: 4.1.13 Error Reporting. Error responses are represented with the ebxml RegistryResponse element. This element consists of a status value, as well as a repeatable set of four fields: code, codeContext, location, and severity. EBXML and IHE constrain the status and severity fields, however the other fields are expected to be constrained for further defined in profiles built on this specification.

Status values:

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

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

Severity values:

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

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

5 Auditing

The transaction shall be audited by NHIE Gateways as described in Section 3.41.7.1 in the IHE ITI TF-2b Version 6.0.



6 Appendix A: WSDL

6.1 Synchronous

IHE provides example WSDL definitions for the Receiving Gateway actors supporting the XDR Transaction at ftp://ftp.ihe.net/TF_Implementation_Material/ITI/packages/XDSb.Support.Materials.v9.zip

6.2 Deferred

Deferred messaging requires a different WSDL compared to synchronous as well as a new WSDL to define the deferred response. These WSDL can be viewed on the NHIN Specification Factory wiki at the following URLs:

<http://standards-and-interoperability-specifications.wikispaces.com/file/view/NhinXDRDeferredRequest-v1.1.0.8.wsdl>

<http://standards-and-interoperability-specifications.wikispaces.com/file/view/NhinXDRDeferredResponse-v1.1.0.8.wsdl>