

GP2GP Supplementary Specification Attachment References			
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Prog. Director	<i>Kemi Adenubi</i>	Version	V2.0
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Attachment References

Amendment History:

Issue	Version	Date	Amendment History
01	0.1	07/02/2007	First draft for comment
02	0.2	12/02/2007	Amended following internal review
03	0.3	23/04/2007	Amended to update the file reference in the GP2GP payload and also to amend the specification for the manifest eb:id
04	1.0	23/05/2007	Approved
05	1.1	17/02/2011	Added reference to Large Messaging Specification
06	2	16/12/2013	Reformatted and numbered explicit requirements Added requirement to handle URI encoding

Reviewers:

This document must be reviewed by the following. Indicate any delegation for sign off.

Name	Title / Responsibility	Date	Version
Will Nossiter	GP2GP Solution Architect		2
John Williams	GP2GP Clinical Safety Lead		2
Dave Bagnall	GP2GP Testing Lead		2
Pete Turnbull	Interoperability & Clinical Validation Manager		2

Approvals:

This document requires the following approvals:

Name	Signature	Title / Responsibility	Date	Version
Pete Turnbull		Interoperability & Clinical Validation Manager		2

Document Status:

This is a controlled document.

This document version is only valid at the time it is retrieved from controlled filestore, after which a new approved version will replace it.

On receipt of a new issue, please destroy all previous issues (unless a specified earlier issue is baselined for use throughout the programme).

Related Documents:

These documents will provide additional information.

Ref no	Doc Reference Number	Title	Version
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1	NPFIT-SHR-QMS-PRP-0015	Glossary of Terms Consolidated.doc	0.12
2	NPFIT-PC-BLD-0170	Large Messaging Supplementary Specification	
3	NPFIT-PC-BLD-0069	Spine Technical Design	
4	NPFIT-PC-BLD-0099	Guidance on missing attachments	
5	www.ietf.org/rfc/rfc2396.txt	RFC 2396	

Glossary of Terms:

List any new terms created in this document. Mail the NPO Quality Manager to have these included in the master glossary above [1].

Term	Acronym	Definition

1. Purpose

The suppliers currently involved in GP2GP Transfer have previously implemented slightly different mechanisms for referencing documents held externally to the HL7 message. This document defines the required model for all suppliers to use when building Attachment References within a GP2GP Messages.

This specification must be read in conjunction with the Large Messaging Supplementary Specification [2], Spine Technical Design [3] and Guidance on missing attachments [4]

2. Introduction

A GP2GP message has three significant areas that are important to this subject:

- 2.** 1. The Manifest within the SOAP Body.
- 2.** 2. The MIME part containing the HL7 message.
- 2.** 3. The MIME parts containing attachments to the HL7 message.

These are illustrated in figure 1 below.

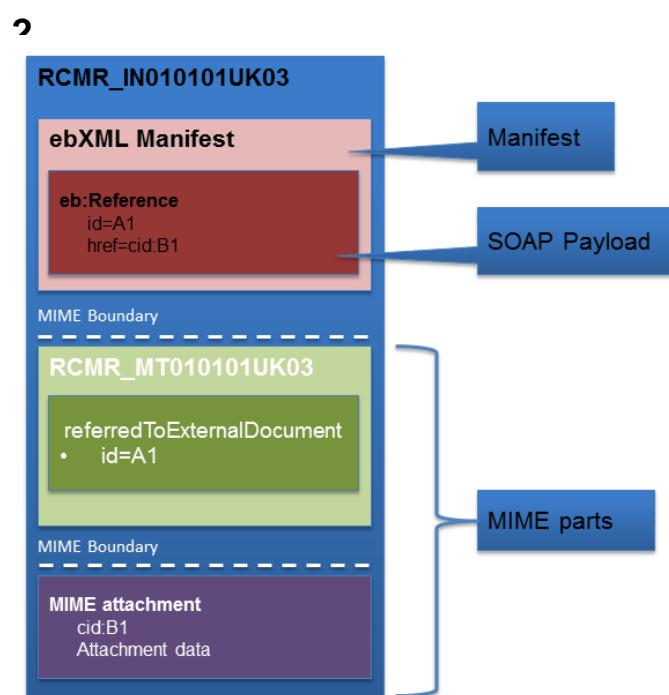


Figure 1: GP2GP message outline

2. 3. Referencing Attachments

Within the Manifest, a list contains two key pieces of information per attachment: a logical unique identifier and a physical location.

2.

2.

2.

2.

2.

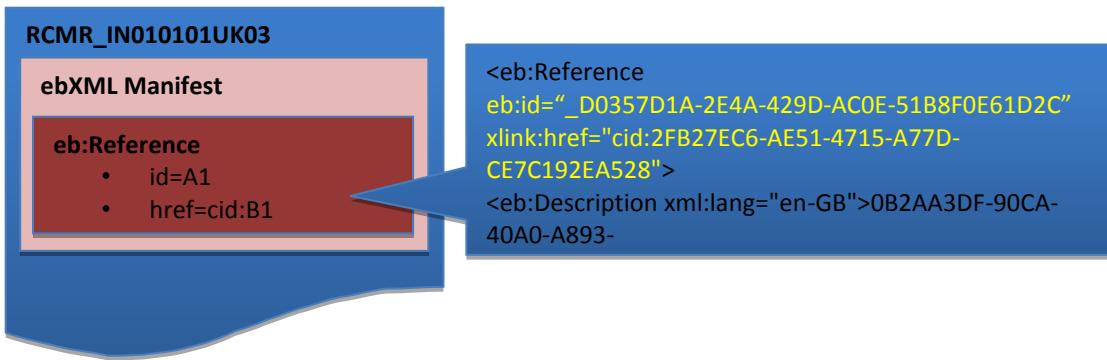


Figure 2: Manifest entry with logical id and physical location highlighted

```
<SOAP:Body>
  <eb:Manifest SOAP:mustUnderstand="1" eb:version="2.0">
    <eb:Reference xlink:href="cid:6e242659-3d8e-11e3-a7dc-172bda00fa67@spine.nhs.uk">
      <eb:Schema
        eb:location="http://www.nhsia.nhs.uk/schemas/HL7-Message.xsd"
        eb:version="1.0"/>
      <eb:Description xml:lang="en">HL7
        payload</eb:Description>
      <hl7ebxml:Payload style="HL7" encoding="XML"
        version="3.0"/>
    </eb:Reference>
    <eb:Reference eb:id=" D0357D1A-2E4A-429D-AC0E-51B8F0E61D2C" xlink:href="cid:2FB27EC6-AE51-4715-A77D-CE7C192EA528">
      <eb:Description xml:lang="en">
        Filename="D0357D1A-2E4A-429D-AC0E-51B8F0E61D2C
        _image.tif"
      </eb:Description>
    </eb:Reference>
  </SOAP:Body>
```

Example 1: SOAP body containing ebXML manifest

The physical location must not be used within the HL7 payload: these are held in the manifest allowing logical identifiers to exist within the HL7 payload. The manifest therefore maintains links between the attachments identified in the HL7 payload and their location in another MIME Part or message

All references to external documents within the HL7 message payload are bounded by a NarrativeStatement element which may include one or more referredToExternalDocument elements. Each NarrativeStatement element has an [id] attribute that acts as a unique identifier of that element within the message. Each referredToExternalDocument element has an [id] attribute that acts as a unique identifier for the external object; note that this is not necessarily unique within the message as a single document can be referenced several times (in which case many referredToExternalDocument instances may share the same [id]).

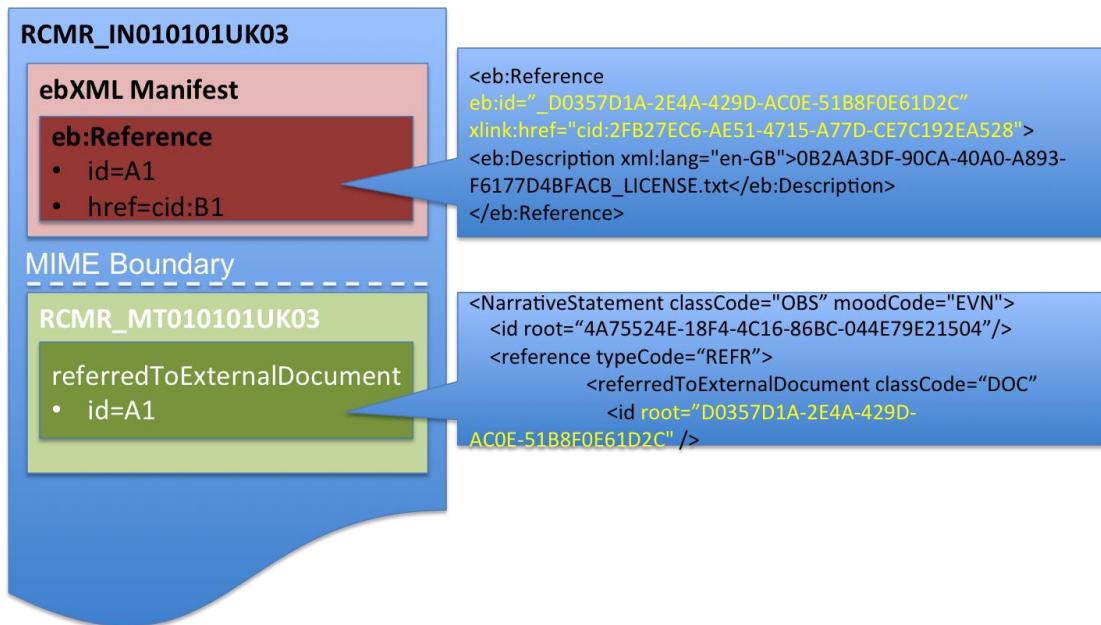


Figure 3: SOAP body and HL7 part

Req ID	Requirement Text
AR01	ebXML manifest for the EHR_Extract interaction must contain an item for each referredToExternalDocument identified in the HL7 content.
AR02	ebXML manifest items relating to referredToExternalDocuments must include eb:id and xref:href attributes.
AR03	All HL7 referredToExternalDocument id's must match a single eb:id attribute in the ebXML manifest.

Using the referredToExternalDocument [id] to link a reference in the HL7 part with the MIME part carrying the referred-to document allows multiple references to be made to the same attachment, while leaving other HL7 attributes free for potential future use.

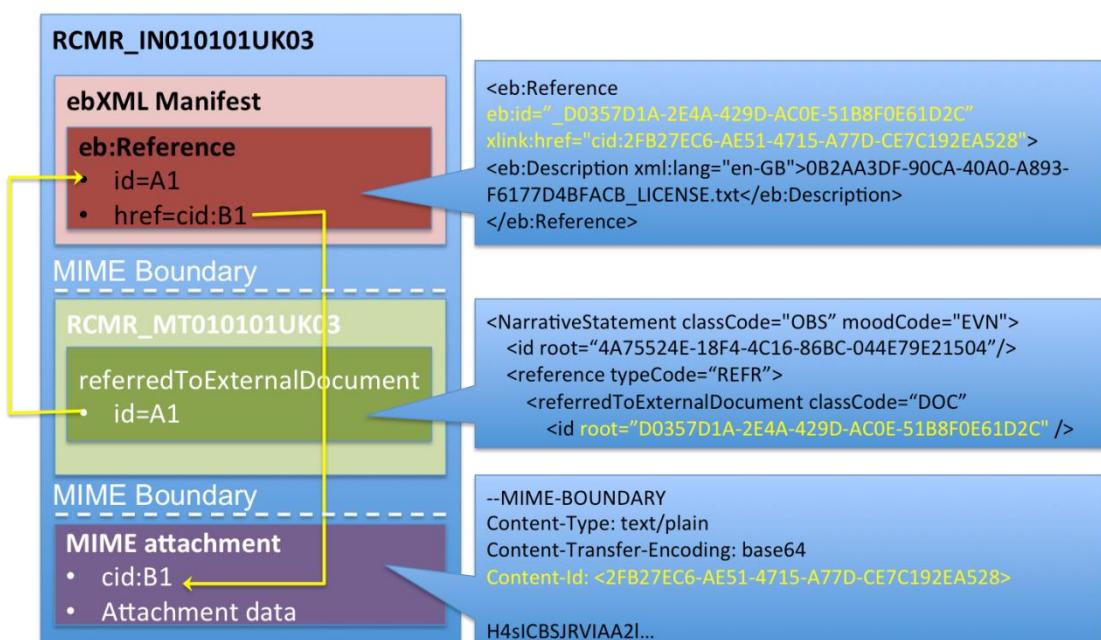


Figure 4: Referencing between MIME parts

```
--MIME-BOUNDARY
Content-Type: text/plain
Content-Transfer-Encoding: base64
Content-Id: <2FB27EC6-AE51-4715-A77D-CE7C192EA528>

H4sICBSJRVIAA2l...
```

Example 2: MIME headers for attachment

The MIME Parts containing the Base64 encoded attachment object must include headers specifying MIME type, encoding scheme and content ID, which is referenced by the manifest.

Outside of the references described in this specification, systems must not assume that id values are the same. The NarrativeStatement id is NOT the same as the referredToExternalDocument[id] because many instances of referredToExternalDocument may exist within a single NarrativeStatement element.

As xlink:href attribute must be a valid URI. As URIs are restricted to a subset of US-ASCII [4] any characters outside of this may be URI-encoded (percent-encoded).

The Large Message specification [2] provides detail of the method to used when referencing attachments carried outside the message using the ‘mid:’ URI scheme.

Req ID	Requirement Text
AR05	The MIME headers Content-Type, Content-Transfer-Encoding and Content-Id must be provided for each MIME part
AR06	Where xlink:href links to a MIME part it must be prefixed by ‘cid:’
AR07	Systems must accept percent-encoded content identifiers in the xlink:href attribute and Content-Id header.
AR08	Systems implementing the Large Message specification [2] shall support referencing attachments held outside the message using ‘mid:’ URI scheme.

3.1. ebXML id Value

The ebXML id element is defined in the schema as type xs:id which may not begin with a number. As a generated guid may begin with a number, the value must be prefixed with underscore. This prefix must be ignored when comparing eb:Reference/eb:id value with referredToExternalDocument/id in order to resolve references.

Req ID	Requirement Text
AR10	eb:id attribute must be prefixed with underscore ‘_’
AR11	Underscore prefix of eb:id value must be disregarded when resolving references between HL7 and manifest item.

3.2. Attachment reference element

The ExternalDocument’s text/reference element is used to persist filenames within the EHR_Extract. This uses the HL7 TEL datatype, which requires that the reference must be in the form of a URI. Accordingly references must be of the form:

file://localhost/<GUID>_<filename>

e.g.

```
<text mediaType="image/tif">
```

```
<referencevalue="file:///localhost/1C135B3C-5AA5-4BF1-A08B-E6002455B806_image.tif" />
</text>
```

or in case of missing attachments [3]:

file:///localhost/AbsentAttachment<GUID>.txt

e.g.

```
<text mediaType="image/tif">
  <referencevalue="file:///localhost/AbsentAttachment1C135B3C-5AA5-4BF1-A08B-E6002455B806.txt" />
</text>
```

As URI references are restricted to a subset of US-ASCII [4] any characters outside of this may be URI-encoded (percent encoded).

Req ID	Requirement Text
AR15	Filename references must use the form file:///localhost/<GUID>_<filename> or for attachments not sent file:///localhost/AbsentAttachment<GUID>.txt
AR16	Systems must accept percent encoded URIs for filename references.

Appendix A: Example

A simple example is provided below with pertinent sections highlighted:

```
POST /reliabilemessaging/forwardreliable HTTP/1.1
Host: rmmid.nis1.national.ncrs.nhs.uk:443
SOAPAction: urn:nhs:names:services:gp2gp/RCMR_IN030000UK06
Content-Length: 14221
Content-Type: multipart/related; boundary="MIME-BOUNDARY"; type="text/xml"; start="ebXMLHeader@spine.nhs.uk""
Connection: close

--MIME-BOUNDARY
Content-Type: text/xml

Content-Id: <ebXMLHeader@spine.nhs.uk>

<?xml version="1.0" encoding="UTF-8"?>
<soap-env:Envelope xmlns:soap-env="http://schemas.xmlsoap.org/soap/envelope/">
  xmlns:h17ebxml="urn:h17-org:transport/ebxml/DSTUv1.0"
  xmlns:eb="http://www.oasis-open.org/committees/ebxml-msg/schema/msg-header-2_0.xsd"
  xmlns:xlink="http://www.w3.org/1999/xlink">
    <soap-env:Header>
      <eb:MessageHeader eb:version="2.0">
        soap-env:mustUnderstand="1">
        <eb:From>
          <eb:PartyId eb:type="urn:nhs:names:partyType:ocs+serviceInstance">{{from_pk}}</eb:PartyId>
        </eb:From>
        <eb:To>
          <eb:PartyId eb:type="urn:nhs:names:partyType:ocs+serviceInstance">{{to_pk}}</eb:PartyId>
        </eb:To>
        <eb:CPAId>S2016103A2072841</eb:CPAId>
        <eb:ConversationId>0AE32F00-94E1-4669-9281-A4C05A5E5463</eb:ConversationId>
    </soap-env:Header>
  </soap-env:Envelope>
</?xml>
```

```
<eb:Service>urn:nhs:names:services:gp2gp</eb:Service>
<eb:Action>RCMR_IN030000UK06</eb:Action>

<eb:MessageData>

    <eb:MessageId>0AE32F00-94E1-4669-9281-A4C05A5E5463</eb:MessageId>
    <eb:Timestamp>2013-12-16T13:27:09+0000</eb:Timestamp>
    <eb:TimeToLive>2013-12-16T14:27:09+0000</eb:TimeToLive>
</eb:MessageData>
<eb:DuplicateElimination>always</eb:DuplicateElimination>
</eb:MessageHeader>
<eb:AckRequested eb:version="2.0"
    soap-env:mustUnderstand="1" eb:signed="false"
    soap-env:actor="urn:oasis:names:tc:ebxml-msg:actor:nextMSH" />
</soap-env:Header>
<soap-env:Body>

<eb:Manifest eb:version="2.0">

    <eb:Reference

        xlink:href="cid:68E2A39F-7A24-449D-83CC-1B7CF1A9DAD7@spine.nhs.uk/Example/1">

        <eb:Description xml:lang="en-GB">

            RCMR_IN030000UK06

        </eb:Description>

        <hl7ebxml:Payload xmlns:hl7ebxml="urn:hl7-org:transport/ebXML/DSTUv1.0"
            style="HL7" encoding="XML" version="3.0" />
    </eb:Reference>
    <eb:Reference
        eb:id="_15CC60BC-2428-4C94-B432-23A4A37CE55A"
        xlink:href="cid:fba5dabf-fd0a-4779-a0e1-5c864afa813e">

        <eb:Description xml:lang="en-GB">_AbsentAttachment098FCE60-077B-4004-8890-8F76E14EEDA4.txt</eb:Description>
    </eb:Reference>
    <eb:Reference>
```

```
eb:id="_E85A649E-814A-4044-8359-09D91B9763B0"
xlink:href="cid:0d733b16-6aaa-42c1-95c3-59d8e0cba215">
<eb:Description xml:lang="en-GB">E85A649E-814A-4044-8359-09D91B9763B0_example.txt</eb:Description>
</eb:Reference>
</eb:Manifest>
</soap-env:Body>
</soap-env:Envelope>
--MIME-BOUNDARY
Content-Type: application/xml
Content-Id: <68E2A39F-7A24-449D-83CC-1B7CF1A9DAD7@spine.nhs.uk/Example/1>

<?xml version="1.0" encoding="UTF-8"?>
<RCMR_IN030000UK06 xmlns="urn:hl7-org:v3"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <id root="BC1571F4-9542-4FBF-AC21-EA34008D7257" />
  <creationTime value="20131216132709" />
  <versionCode code="V3NPFIT3.1.10" />
  <interactionId root="2.16.840.1.113883.2.1.3.2.4.12"
    extension="RCMR_IN030000UK06" />
  <processingCode code="P" />
  <processingModeCode code="T" />
  <acceptAckCode code="NE" />
  <communicationFunctionRcv typeCode="RCV">
    <device classCode="DEV" determinerCode="INSTANCE">
      <id root="1.2.826.0.1285.0.2.0.107" extension="276827251543" />
    </device>
  </communicationFunctionRcv>
```

```
<communicationFunctionSnd typeCode="SND">  
  <device classCode="DEV" determinerCode="INSTANCE">  
    <id root="1.2.826.0.1285.0.2.0.107" extension="715373337545" />  
  </device>  
</communicationFunctionSnd>  
  
<ControlActEvent classCode="CACT" moodCode="EVN">  
  <author1 typeCode="AUT">  
    <AgentSystemSDS classCode="AGNT">  
      <agentSystemSDS classCode="DEV" determinerCode="INSTANCE">  
        <id root="1.2.826.0.1285.0.2.0.107" extension="715373337545" />  
      </agentSystemSDS>  
    </AgentSystemSDS>  
  </author1>  
  <subject typeCode="SUBJ" contextConductionInd="false">  
    <EhrExtract classCode="EXTRACT" moodCode="EVN">  
      <id root="7DFAECD9-A169-4187-B0A0-2613EDD7D835" />  
      <statusCode code="COMPLETE" />  
      <availabilityTime value="20131216132709" />  
      <recordTarget typeCode="RCT">  
        <patient classCode="PAT">  
          <id extension="9446363101" root="2.16.840.1.113883.2.1.4.1" />  
        </patient>  
      </recordTarget>  
      <author typeCode="AUT">  
        <time nullFlavor="20131216132709" />  
        <AgentOrgSDS classCode="AGNT">  
          <agentOrganizationSDS classCode="ORG"  
            determinerCode="INSTANCE">  
            <id extension="B83002" root="1.2.826.0.1285.0.1.10" />  
          </agentOrganizationSDS>  
        </AgentOrgSDS>  
      </author>  
    </EhrExtract>  
  </subject>  
</ControlActEvent>
```

```
</author>
<destination typeCode="DST">
  <AgentOrgSDS classCode="AGNT">
    <agentOrganizationSDS classCode="ORG"
      determinerCode="INSTANCE">
      <id nullFlavor="UNK" />
    </agentOrganizationSDS>
  </AgentOrgSDS>
</destination>
<component typeCode="COMP">
  <ehrFolder classCode="FOLDER" moodCode="EVN">
    <id root="AEB45918-8B0A-4391-B1D4-837AF6E46B7D" />
    <statusCode code="COMPLETE" />
    <effectiveTime>
      <low value="20050314" />
      <high value="20131216132709" />
    </effectiveTime>
    <availabilityTime value="20131216132709" />
    <author typeCode="AUT">
      <time value="20131216132709" />
      <AgentOrgSDS classCode="AGNT">
        <agentOrganizationSDS classCode="ORG"
          determinerCode="INSTANCE">
          <id extension="B83002" root="1.2.826.0.1285.0.1.10" />
        </agentOrganizationSDS>
      </AgentOrgSDS>
    </author>
    <responsibleParty typeCode="RESP">
      <agentDirectory classCode="AGNT">

        <part typeCode="PART">

          <Agent classCode="AGNT">
            <id root="D1575DF5-E445-4521-AF6E-14C2D1E61265" />
            <id root="2.16.840.1.113883.2.1.4.2" extension="G9489493" />
            <code code="309394004" displayName="General Practitioner Principal">
              <originalText>Partner</originalText>
            </code>
          </Agent>
        </part>
      </agentDirectory>
    </responsibleParty>
  </ehrFolder>
</component>
```

```
</code>

<agentPerson classCode="PSN" determinerCode="INSTANCE">
  <name>
    <prefix>Dr</prefix>
    <given>Jon</given>
    <family>Abbot</family>
  </name>
</agentPerson>
<representedOrganization classCode="ORG"
  determinerCode="INSTANCE">
  <id extension="B83002" root="2.16.840.1.113883.2.1.4.3" />
  <name>Ilkley and Wharfedale Medical Practice</name>
  <telecom value="tel:01234567890" use="WP" />
  <addr>
    <streetAddressLine>ILKLEY</streetAddressLine>
    <streetAddressLine>LEEDS</streetAddressLine>
    <streetAddressLine>WEST YORKSHIRE</streetAddressLine>
    <postalCode>LS29 8TH</postalCode>
  </addr>
</representedOrganization>
</Agent>
</part>
</agentDirectory>
</responsibleParty>
<component typeCode="COMP">
  <ehrComposition classCode="COMPOSITION" moodCode="EVN">
    <id root="26EE99BB-00FF-4596-9D8B-1D349C1D70A1" />
    <code code="25741000000100" displayName="Third Party Consultation"
      codeSystem="2.16.840.1.113883.2.1.3.2.4.15" />
    <statusCode code="COMPLETE" />
    <effectiveTime>
      <low value="20050314155200" />
      <high value="20131216132709" />
    </effectiveTime>
    <availabilityTime value="20131216132709" />
    <author typeCode="AUT" contextControlCode="OP">
```

```
<time value="20131216132709" />

<agentRef classCode="AGNT">
    <id root="D1575DF5-E445-4521-AF6E-14C2D1E61265" />
</agentRef>
</author>
<component typeCode="COMP">
    <CompoundStatement classCode="TOPIC"
        moodCode="EVN">
        <id root="DCFDB486-F40A-4266-8B6E-88F9E38FC61A" />

        <code nullFlavor="UNK" />

        <statusCode code="COMPLETE" />
        <effectiveTime>
            <center nullFlavor="NI" />
        </effectiveTime>
        <availabilityTime value="20131216132709" />
        <component typeCode="COMP" contextConductionInd="true">
            <CompoundStatement classCode="CATEGORY"
                moodCode="EVN">
                <id root="8FA84DDE-70DC-462F-8A7F-3C532F9B7D47" />
                <code code="394867009" displayName="Health Administration">
                    <originalText>Administration</originalText>
                </code>
                <statusCode code="COMPLETE" />
                <effectiveTime>
                    <center nullFlavor="NI" />
                </effectiveTime>
                <availabilityTime value="20131216132709" />
                <component typeCode="COMP" contextConductionInd="true">
                    <NarrativeStatement classCode="OBS"
                        moodCode="EVN">
                        <id root="B58CCE49-8320-4A53-9E9B-19B38FB9374C" />
                        <text>text/plain</text>
                        <statusCode code="COMPLETE" />
                        <availabilityTime value="20131216132709" />
                        <reference typeCode="REFR">
```

```
<referredToExternalDocument
    classCode="DOC" moodCode="EVN">
    <id root="15CC60BC-2428-4C94-B432-23A4A37CE55A" />
    <code code="9b36.00" displayName="Other digital signal"
        codeSystem="2.16.840.1.113883.2.1.6.10">
        <originalText>Other Attachment</originalText>
        <qualifier>
            <name code="mediatype" displayName="Media Type" />
            <value code="MMT011" displayName="Other Attachment" />
        </qualifier>
        <qualifier>
            <name code="entity_ty" displayName="Entity Type" />
            <value code="627" displayName="ATTACHMENT" />
        </qualifier>
        <qualifier>
            <name code="thirdparty" displayName="Third Party" />
            <value code="1" displayName="Yes" />
        </qualifier>
        <qualifier>
            <name code="private" displayName="Private" />
            <value code="0" displayName="No" />
        </qualifier>
        <translation code="9b36.00" displayName="Other digital signal"
            codeSystem="2.16.840.1.113883.2.1.6.2" />
        <translation code="37251000000104"
            displayName="Other digital signal" codeSystem="2.16.840.1.113883.2.1.3.2.4.15" />
    </code>
    <text mediaType="text/plain">
        <reference value="file:///localhost/_AbsentAttachment098FCE60-077B-4004-8890-8F76E14EEDA4.txt" />
    </text>
</referredToExternalDocument>
```

```
</reference>
</NarrativeStatement>
</component>
<component typeCode="COMP" contextConductionInd="true">
  <NarrativeStatement classCode="OBS">
    moodCode="EVN">
    <id root="8083A549-3128-48EA-8659-381A7DD5395E" />
    <text>text/plain</text>
    <statusCode code="COMPLETE" />
    <availabilityTime value="20131216132709" />
    <reference typeCode="REFR">
      <referredToExternalDocument
        classCode="DOC" moodCode="EVN">
        <id root="E85A649E-814A-4044-8359-09D91B9763B0" />
        <code code="9b36.00" displayName="Other digital signal"
          codeSystem="2.16.840.1.113883.2.1.6.10">
          <originalText>Other Attachment</originalText>
          <qualifier>
            <name code="mediatype" displayName="Media Type" />
            <value code="MMT011" displayName="Other Attachment" />
          </qualifier>
          <qualifier>
            <name code="entity_ty" displayName="Entity Type" />
            <value code="627" displayName="ATTACHMENT" />
          </qualifier>
          <qualifier>
            <name code="thirdparty" displayName="Third Party" />
            <value code="1" displayName="Yes" />
          </qualifier>
          <qualifier>
            <name code="private" displayName="Private" />
            <value code="0" displayName="No" />
          </qualifier>
```

```
        <translation code="9b36.00" displayName="Other digital signal"  
            codeSystem="2.16.840.1.113883.2.1.6.2" />  
        <translation code="37251000000104"  
            displayName="Other digital signal" codeSystem="2.16.840.1.113883.2.1.3.2.4.15"  
/> [REDACTED]  
        </code>  
        <text mediaType="text/plain">  
            <reference value="file:///localhost/E85A649E-814A-4044-8359-  
09D91B9763B0_example.txt" />  
        </text>  
        </referredToExternalDocument>  
    </reference> [REDACTED]  
    </NarrativeStatement>  
    </component>  
    </CompoundStatement>  
    </component>  
    </CompoundStatement>  
    </component>  
    </ehrComposition>  
    </component>  
    </ehrFolder>  
    </component>  
    <inFulfillmentOf typeCode="FLFS">  
        <priorEhrRequest classCode="EXTRACT" moodCode="RQO">  
            <id nullFlavor="UNK" />  
        </priorEhrRequest>  
    </inFulfillmentOf>  
    <limitation typeCode="LIMIT" inversionInd="true">  
        <limitingEhrExtractSpecification  
            classCode="OBS" moodCode="DEF">  
            <id root="94BA37B9-53F2-475B-A206-0535BD9E336D" />  
            <code code="37241000000102" displayName="Entire record available to originator"  
                codeSystem="2.16.840.1.113883.2.1.3.2.4.15" />  
        </limitingEhrExtractSpecification>  
    </limitation>  
    </EhrExtract>  
    </subject>  
  </ControlActEvent>
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