Nationwide Health Information Network (NHIN)

Trial Implementations

Service Interface Specifications

Authorized Case Follow Up

V 1.0

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Contributors

Name	Organization	NHIE represented
Richard Franck	IBM	NCHICA

Document Change History

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Document Approval

Version	Date	Approved By	Role

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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. They are intended to provide a standard set of service interfaces that enable Nationwide Health Information Exchange (NHIE) to NHIE exchange of interoperable health information. These 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. These functional services rest on a foundational set of messaging and security services. The current set of defined core services 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 Subject Discovery Service Interface Specification,
4.   NHIN Trial Implementations Query for Documents Service Interface Specification,
5.   NHIN Trial Implementations Document Retrieve Service Interface Specification,
6.   NHIN Trial Implementations Audit Log Query Service Interface Specification,
7.   NHIN Trial Implementations Consumer Preferences Service Interface Specification
8.   NHIN Trial Implementations Health Information Event Messaging Service Interface Specification
9.   NHIN Trial Implementations NHIE Service Registry Interface Specification
10. NHIN Trial Implementations Authorized Case Follow-Up Service Interface Specification

It is expected that these core services will be implemented together as a suite since the functional level services are dependent on the foundational services. Specifications #1 through #7 were the focus of the August 2008 testing event and September AHIC demonstrations. Specifications #1 through #9 were included in the November testing and demonstrations during the December 2008 NHIN Trial Implementations Forum.

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 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 presents the NHIN Trial Implementations Specification for Pseudonymization.

Pseudonymization is defined as the process of removing the association between a data set and the subject of that data, and adding an association between the data set and one or more alternative identifiers, or *pseudonymns*. **Reidentification** is defined as the process of obtaining the association between a pseudonym and the original subject of the data set.

This specification describes three areas related to the Pseudonymization and Reidentification processes:

1.   A transaction to support the Reidentification process for the NHIN,
2.   Functional requirements for NHIEs in creating pseudonyms during the Pseudonymization process, and
3.   Security requirements to be applied to the Reidentification request.

This specification **does not** address:

- The data elements that must be removed from a data set for that data set to be considered "anonymized".

The topic of what data elements can be present in data for it to be considered "anonymized" is not addressed because it is highly dependent on the regulatory environment. Even within the context of the Health Insurance Portability and Accountability Act (HIPAA), two levels of anonymized data are defined: De-identified, and Limited Data Set. State regulations may also apply. Further, the desired level of anonymization is likely to be dependent on the intended use of the data set and thus will vary from situation to situation. The NHIN may eventually create policies that describe the anonymization requirements for particular uses of data, but in the meantime, anonymization requirements must be agreed to on an ad-hoc basis by producers and consumers of anonymized data sets in the context of applicable regulations.

- An algorithm for generating pseudonymns.

According to the HIPAA Privacy Rule, a cryptographic hash algorithm does not meet the criteria for de-identified data defined in the Rule, since the hash would be derived from individually identified information. This specification does not address the question of how pseudonyms are created. This specification does state that within the scope of an NHIE, all information about a single individual that is de-identified for a single consumer and purpose should be assigned the same pseudonym, irrespective of how that pseudonym is generated.

- How pseudonymized data is transmitted from source to recipient.

NHIEs may transmit pseudonymized data to recipients through a variety of means, including private interfaces among parties, existing transport mechanisms such as the Public Health Information Network – Messaging System (PHIN-MS), or through a NHIN standard mechanism such as that described by the NHIN Health Information Event Messaging specification.

1.3.1 Business Needs Supported by this Specification

This specification addressed the NHIN core service requirement for "Data anonymization and re-identification as well as HIPAA de-identification."

This specification may be used to support the AHIC Use Cases of biosurveillance, quality reporting, and public health case reporting. These use cases do not make any assumptions about the relationship of a recipient of pseudonymized data (for example, a public health agency) to the NHIN. Two broad alternatives can be envisioned:

- A local or state public health agency is a member of an NHIE, and thus its access to NHIE services for Reidentification of pseudonymized data is an internal NHIE function.
- Alternatively, a public health agency can itself be an NHIE and connect to the NHIN as a peer to other NHIEs that are sources of pseudonymized data. In this case, the Reidentification transaction is an "inter-NHIE" function, and it is this scenario that creates the requirement for this specification.

A typical scenario demonstrating the requirement for a Reidentification transaction into the context of the NHIN is shown in Figure 1. In this example, a state public health agency receives pseudonymized data from an NHIE, determines a need to conduct an investigation for a particular individual known to them only by a pseudonym, and issues the Reidentification transaction to learn the subject's patient identifier for the NHIE. Subsequently, the public health agency issues Query for Documents and Retrieve Documents transactions to obtain a Patient Summary Record and/or other clinical documents. Not shown in the figure, the public health agency could also use the Subject Discovery transaction to learn of other NHIEs that are also aware of the patient.

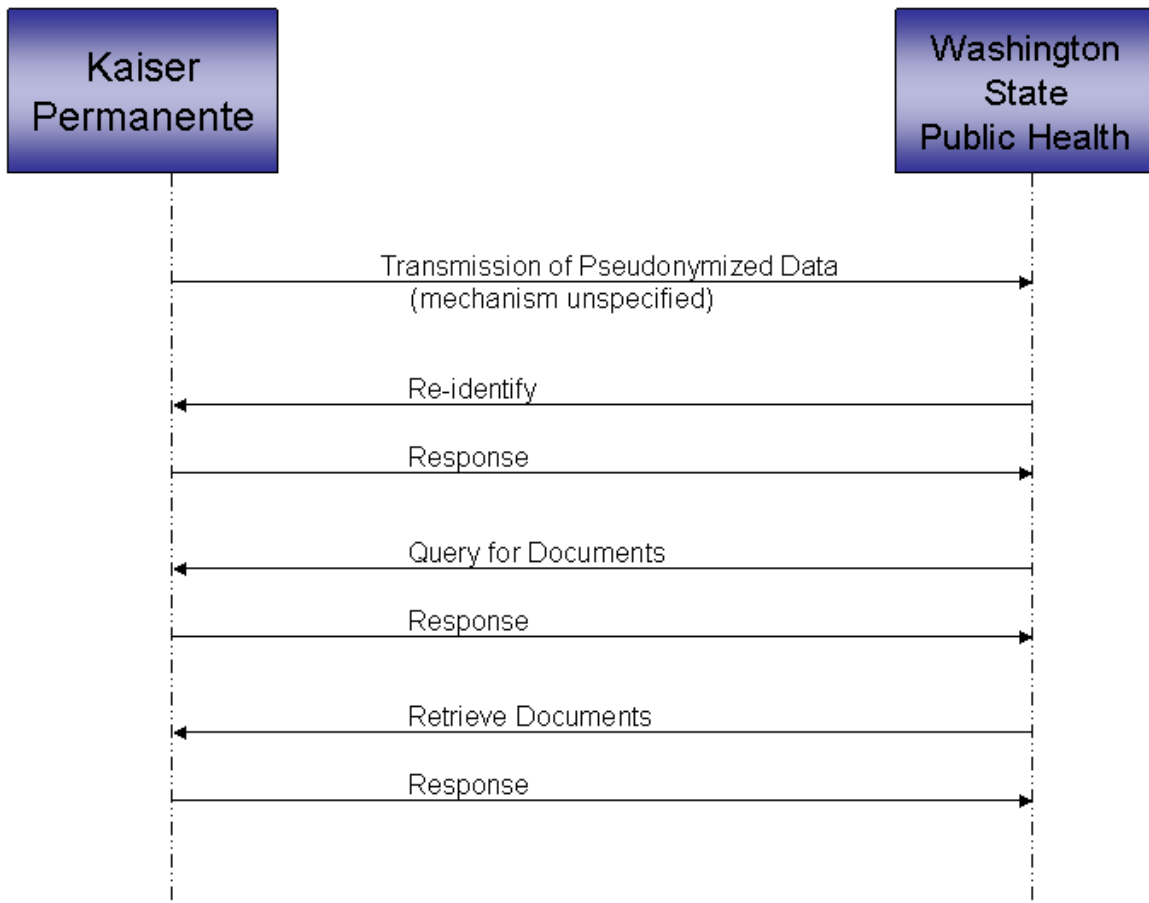### 1.3.2   NHIN Interface Specifications Referenced by this Specification

None.

Figure 1 -- NHIN scenario for Reidentification

1.3.3   Key Attributes of the Specification

This specification defines, in sections 2 and 3, a message transaction to support the Reidentification process.

A key attribute of the Reidentification request is that it is a privileged operation. The purpose of Pseudonymization would be defeated if everyone with access to anonymized data were allowed to learn the true identity of the subject of the data. Enforcement of this requirement spans the technical and the policy realms. As such, this specification also defines functional requirements that NHIEs must meet in order to allow policies for Pseudonymization and Reidentification to be applied uniformly across the NHIN. These functional requirements address the creation of pseudonyms, and the authorization requirements for Reidentification.

1.3.3.1   Creation of Pseudonyms

Pseudonymized data is created by removing person-identifying information from the data set, and inserting a pseudonym. A pseudonym is simply a patient ID in the same format as other patient IDs used in NHIN specifications, consisting of two parts: an identifier (extension) and an assigning authority OID (root). This patient ID is represented in one of two ways, depending on the message:

1. in HL7 v3 "Instance Identifier" format:

```
<id root="1.2.840.114350.1.13.99998.8734" extension="34827G234"/>
```

2. in HL7 v2 "CX" format:

```
<value> 34827G234^^^&amp;1.2.840.114350.1.13.99998.8734&amp;ISO</value>
```

A "**Pseudonymization cohort**" is defined to be the set of subjects and their associated pseudonyms for whom pseudonymized data is to be sent to a specific organization or set of organizations, for a specific purpose. Examples of a specific purpose for a Pseudonymization cohort could be a biosurveillance program, a specific research study, or a longitudinal study of infectious disease patterns.

A pseudonym **must** follow these rules:

1. A pseudonym must use an Assigning Authority OID that is only used for pseudonyms, not for other kinds of identifiers.
2. A unique Assigning Authority OID must be used for each Pseudonymization cohort.
3. An NHIE must assign all data for an individual subject the same pseudonym for the same Pseudonymization cohort.

1.3.3.2   Authorization Requirements for Reidentification

The purpose for rules #1 and #2 in the preceding section is to allow an identifier to be recognized (by the entity that created it) as a pseudonym, and thus apply a specific set of authorization requirements to the Reidentification transaction.

Similar to the anonymization level, the authorization requirements for Reidentification must be agreed to on a case-by-case basis by producers and consumers of anonymized data sets. The NHIN may at some point define particular authorization requirements for particular uses, such as biosurveillance, but such requirements would come from the policy side of the NHIN governance, not in the form of a technical specification. These requirements should take the form of restrictions on the attributes that are carried in the SAML header of the Reidentification transaction as defined in the NHIN Authorization Framework specification.

As an example, the following guidelines are offered as a "prototype" set of authorization requirements for data to be re-identified for a Biosurveillance Pseudonymization cohort that would be created by providers of pseudonymized data for the AHIC Biosurveillance Use Case.

> Requesters of Reidentification for the Biosurveillance Pseudonymization cohort must:
> 1. Assert a user role of "Public Health Officer" (SNOMED CT code 307969004)
> 2. Assert a Purpose for Use of "Public Health" (NHIN Purpose for use code PUBLICHEALTH).
>
> Further, NHIEs may restrict access to Reidentification to particular users or requesters from particular organizations.

It is noted that the current NHIN Authorization Framework carries information about the requesting organization in a free text format intended for auditing, which would not be suitable for imposing restrictions that must be enforced at runtime. This is an area that future NHIN technical specifications may address. In the meantime, participants in a particular use case requiring Pseudonymization may agree to a format for "organization" if it is desired to use this as a restriction on the Reidentification request.

1.4   Related Documents

The following documents and standards were referenced during the development of this specification:

- IHE IT Infrastructure Technical Framework Supplement 2007-2008 for Patient Identifier Cross-Reference HL7 V3 (PIXV3) and Patient Demographic Query HL7 V3 (PDQV3). The 2007-2008 version of the supplement is used as it uses the same version of the HL7 V3 messages as the NHIN Subject Discovery transactions.

- HITSP T24 Pseudonymize Transaction

1.5   Relationship to HITSP Constructs

This specification presents a more precise definition of the Reidentification transaction than is found in HITSP T24.

1.6   Relationship to other NHIN Cooperative Specifications

This specification provides a different transaction with different capabilities than that found in the NHIN Subject Discovery specification. However, both specifications rely on the same underlying HL7 v3 message definitions and supporting schemas. Therefore, the WSDL that defines the Reidentification transaction is created as an update to the NHIN Subject Discovery WSDL.

2   Interface Description

2.1   Definition

The Reidentification interface is used by an entity in one NHIE to receive the corresponding "true" patient identifier for a given pseudonym. The transaction used for this interface is the HL7 v3 Patient Registry Get Identifiers Query (PRPA_IN201309UV), as profiled by the IHE Patient Identity Cross-Reference (PIX) Query for HL7 v3.

Figure 2, from the IHE PIX PDQ v3 supplement, shows the interaction diagram for this transaction.
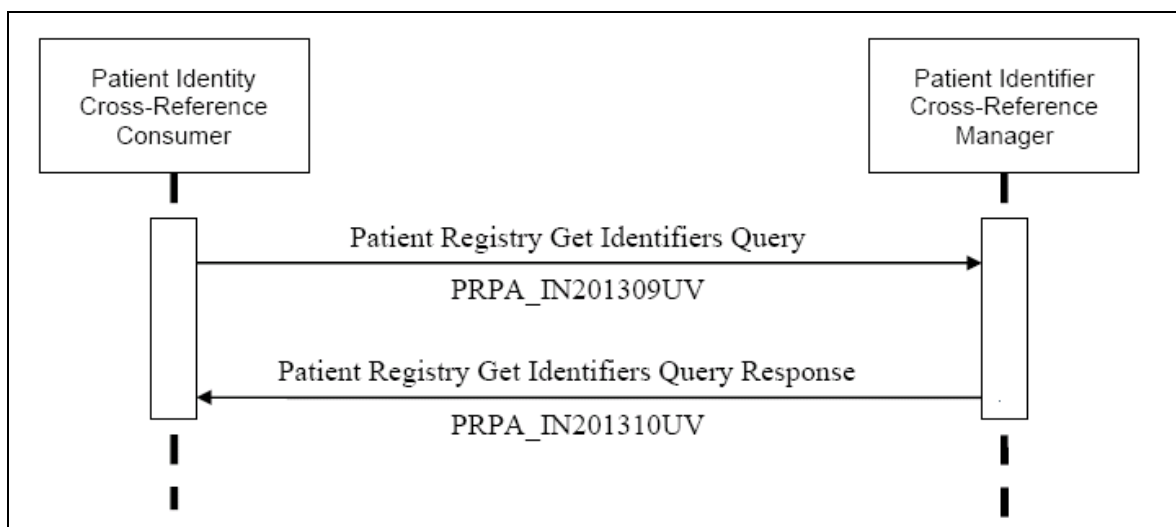

Figure 2 -- Interaction Diagram for PIX Query

The IHE role of the "Patient Identifier Cross-Reference Manager" (PIX Manager) is played by the NHIE that produced the data set and created the pseudonym. The role of "Patient Identity Cross-Reference Consumer" (PIX Consumer) is played by the NHIE that consumes the anonymized data set, and is seeking to re-identify the individual.

2.2   Transaction Standard

The transaction used for this interface is the HL7 v3 Patient Registry Get Identifiers Query (PRPA_IN201309UV) from the HL7 Version 3 Edition 2007 Patient Administration DSTU (http://hl7.org/v3ballot2007may/html).

2.3   Technical Pre-conditions

The following technical pre-conditions exist for this interface specification:
- The PIX Manager actor NHIE has sent data to the PIX Consumer actor NHIE containing a pseudonym. The mechanism by which this pseudonymized data was sent it not specified.

2.4   Technical Post-conditions
NONE

3   Interface Definition

3.1   Message Syntax

The message syntax is as described by the IHE ITI Technical Framework supplement for PIX and PDQ v3.

[Note that on a few occasions, the IHE supplement misidentifies the PIX Query transaction as HL7 transaction PRPA_IN201307UV, and the response as PRPA_IN201304UV.]

3.2   Content Semantics

There are no special content semantics beyond what is described in the IHE ITI Technical Framework supplement for PIX and PDQ v3.

3.3   Constraints and Extensions
None

3.4   Sample Messages

These sample messages are exactly as provided by IHE.

3.4.1   PIX Query

```xml
<PRPA_IN201309UV xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
 xsi:schemaLocation="urn:hl7-org:v3 ../../schemas/HL7V3/multicacheschemas/PRPA_IN201309UV.xsd"
 xmlns="urn:hl7-org:v3"
 ITSVersion="XML_1.0">
    <id root="2220c1c4-87ef-11dc-b865-3603d6866807"/>
    <creationTime value="20070810140900"/>
    <interactionId root="2.16.840.1.113883.1.6" extension="PRPA_IN201309UV"/>
    <processingCode code="P"/>
    <processingModeCode code="T"/>
    <acceptAckCode code="AL"/>
    <receiver typeCode="RCV">
        <device determinerCode="INSTANCE">
            <id root="1.2.840.114350.1.13.99999.4567"/>
            <telecom value="https://example.org/PIXQuery"></telecom>
        </device>
    </receiver>
    <sender typeCode="SND">
        <device determinerCode="INSTANCE">
            <id root="1.2.840.114350.1.13.99997.2.7788"/>
        </device>
    </sender>
    <controlActProcess moodCode="RQO">
        <code code="PRPA_TE201309UV" codeSystem="2.16.840.1.113883.1.6"/>
        <authorOrPerformer typeCode="AUT">
            <assignedPerson>
                <id root="1.2.840.114350.1.13.99997.2.7766" extension="USR5568"/>
            </assignedPerson>
        </authorOrPerformer>
        <queryByParameter>
            <queryId root="1.2.840.114350.1.13.99999.4567.34" extension="33452"/>
            <statusCode code="new"/>
            <responsePriorityCode code="I"/>
            <parameterList>
                <patientIdentifier>
                    <value root="1.2.840.114350.1.13.99997.2.3412" extension="38273N237"/>
                    <semanticsText>Patient.Id</semanticsText>
                </patientIdentifier>
            </parameterList>
        </queryByParameter>
    </controlActProcess>
</PRPA_IN201309UV>
```

3.4.2 PIX Query Response

```
<PRPA_IN201310UV xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
 xsi:schemaLocation="urn:hl7-org:v3 ../../schemas/HL7V3/multicacheschemas/PRPA_IN201310UV.xsd"
 xmlns="urn:hl7-org:v3"
 ITSVersion="XML_1.0">
    <id root="d474eb7c-898c-11dc-bf74-3603d6866807"/>
    <creationTime value="20070810140901"/>
    <interactionId root="2.16.840.1.113883.1.6" extension="PRPA_IN201310UV "/>
    <processingCode code="P"/>
    <processingModeCode code="T"/>
    <acceptAckCode code="NE"/>
    <receiver typeCode="RCV">
        <device determinerCode="INSTANCE">
        <id root="1.2.840.114350.1.13.99997.2.7788"/>
        </device>
    </receiver>
    <sender typeCode="SND">
        <device determinerCode="INSTANCE">
            <id root="1.2.840.114350.1.13.99999.4567"/>
            <telecom value="https://example.org/PIXQuery"></telecom>
        </device>
    </sender>
    <acknowledgement>
        <typeCode code="CA"/>
        <targetMessage>
            <id root="2220c1c4-87ef-11dc-b865-3603d6866807"/>
        </targetMessage>
    </acknowledgement>
    <controlActProcess moodCode="EVN">
        <code code="PRPA_TE201310UV"/>
        <subject typeCode="SUBJ">
            <registrationEvent>
                <id nullFlavor="NA"/>
                <statusCode code="active"/>
                <subject1>
                    <patient classCode="PAT">
                        <id root="1.2.840.114350.1.13.99998.8734" extension="34827G409"/>
                        <statusCode code="active"/>
                        <patientPerson classCode="PSN" determinerCode="INSTANCE">
                            <name nullFlavor="NA">
                            </name>
                        </patientPerson>
                        <providerOrganization>
                            <id root="1.2.840.114350.1.13.99998.8734"/>
                            <name>Good Health Clinic</name>
                            <contactParty>
                                <telecom value="tel:+1-342-555-8394"></telecom>
                            </contactParty>
                        </providerOrganization>
                    </patient>
                    <queryByParameter>
                        <queryId root="1.2.840.114350.1.13.99999.4567.34" extension="33452"/>
                        <statusCode code="new"/>
                        <responsePriorityCode code="I"/>
                        <parameterList>
                            <patientIdentifier>
                                <value root="1.2.840.114350.1.13.99997.2.3412"
                                       extension="38273N237"/>
                                <semanticsText>Patient.Id</semanticsText>
                            </patientIdentifier>
                        </parameterList>
                    </queryByParameter>
                </subject1>
                <custodian>
                    <assignedEntity>
                        <id root="1.2.840.114350.1.13.99998.8734" />
                    </assignedEntity>
```

```
                </custodian>
            </registrationEvent>
        </subject>
        <queryAck>
            <queryId root="1.2.840.114350.1.13.99999.4567.34" extension="33452"/>
            <queryResponseCode code="OK"/>
        </queryAck>
    </controlActProcess>
</PRPA_IN201310UV>
```

4   Error Handling

No special error handling is identified. If an NHIE receives a Reidentification request and is not able to respond with the true identifier, it shall respond as defined by the IHE PIX/PDQ V3 supplement.

The IHE supplement says that for error conditions, no registrationEvent element shall be returned. However, since this element is required by the HL7 V3 schema, the registrationEvent element should use the attribute xsi:nil set to "true" when no matching subject is returned.

5   Auditing

NHIEs should create an "export" audit event when responding to a Reidentification request.

6   Appendix A – WSDL

The following WSDL is an update to the "NhieSubjectDiscovery.wsdl" file that defines the NHIN Subject Discovery interface. It is intended that these Subject Discovery and Pseudonymization will be defined in the same WSDL file, since they both use services defined by the IHE PIX/PDQ v3 profile and share the common set of HL7 XML schemas.

```
<wsdl:definitions name="PIXConsumer" targetNamespace="urn:ihe:iti:pixv3:2007"
      xmlns:tns="urn:ihe:iti:pixv3:2007"
      xmlns:wsoap11="http://schemas.xmlsoap.org/wsdl/soap/"
      xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
      xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"
      xmlns:xsd="http://www.w3.org/2001/XMLSchema"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xmlns:hl7="urn:hl7-org:v3">
      <wsdl:documentation>Example WSDL for PIX Consumer, receiving update
notifications</wsdl:documentation>
    <wsdl:types>
           <xsd:schema elementFormDefault="qualified" targetNamespace="urn:hl7-org:v3"
             xmlns:hl7="urn:hl7-org:v3">
             <!--
                   Include the message schema
              -->
             <xsd:include
schemaLocation="../schemas/HL7V3/multicacheschemas/PRPA_IN201301UV.xsd" />
             <xsd:include
schemaLocation="../schemas/HL7V3/multicacheschemas/PRPA_IN201302UV.xsd" />
             <xsd:include
schemaLocation="../schemas/HL7V3/multicacheschemas/PRPA_IN201303UV.xsd" />
             <xsd:include
schemaLocation="../schemas/HL7V3/multicacheschemas/PRPA_IN201304UV.xsd" />
             <xsd:include
schemaLocation="../schemas/HL7V3/multicacheschemas/MCCI_IN000002UV01.xsd" />
             <xsd:include
schemaLocation="../schemas/HL7V3/multicacheschemas/PRPA_IN201309UV.xsd" />
             <xsd:include
schemaLocation="../schemas/HL7V3/multicacheschemas/PRPA_IN201310UV.xsd" />
           </xsd:schema>
    </wsdl:types>
    <wsdl:message name="PRPA_IN201301UV_Message">
        <wsdl:part element="hl7:PRPA_IN201301UV" name="Body" />
    </wsdl:message>
    <wsdl:message name="PRPA_IN201302UV_Message">
        <wsdl:part element="hl7:PRPA_IN201302UV" name="Body" />
    </wsdl:message>
    <wsdl:message name="PRPA_IN201303UV_Message">
        <wsdl:part element="hl7:PRPA_IN201303UV" name="Body" />
    </wsdl:message>
    <wsdl:message name="PRPA_IN201304UV_Message">
        <wsdl:part element="hl7:PRPA_IN201304UV" name="Body" />
    </wsdl:message>
    <wsdl:message name="MCCI_IN000002UV01_Message">
        <wsdl:part element="hl7:MCCI_IN000002UV01" name="Body" />
    </wsdl:message>
    <wsdl:message name="PRPA_IN201309UV_Message">
        <wsdl:part element="hl7:PRPA_IN201309UV" name="Body" />
    </wsdl:message>
    <wsdl:message name="PRPA_IN201310UV_Message">
        <wsdl:part element="hl7:PRPA_IN201310UV" name="Body" />
    </wsdl:message>

    <wsdl:portType name="PIXConsumer_PortType">
         <wsdl:operation name="PIXConsumer_PRPA_IN201301UV">
             <wsdl:input message="tns:PRPA_IN201301UV_Message"
                     wsaw:Action="urn:hl7-org:v3:PRPA_IN201301UV" />
             <wsdl:output message="tns:MCCI_IN000002UV01_Message"
```

```
                wsaw:Action="urn:hl7-org:v3:MCCI_IN000002UV01" />
        </wsdl:operation>
        <wsdl:operation name="PIXConsumer_PRPA_IN201302UV">
            <wsdl:input message="tns:PRPA_IN201302UV_Message"
                        wsaw:Action="urn:hl7-org:v3:PRPA_IN201302UV" />
            <wsdl:output message="tns:MCCI_IN000002UV01_Message"
                        wsaw:Action="urn:hl7-org:v3:MCCI_IN000002UV01" />
        </wsdl:operation>
        <wsdl:operation name="PIXConsumer_PRPA_IN201303UV">
            <wsdl:input message="tns:PRPA_IN201303UV_Message"
                        wsaw:Action="urn:hl7-org:v3:PRPA_IN201303UV" />
            <wsdl:output message="tns:MCCI_IN000002UV01_Message"
                        wsaw:Action="urn:hl7-org:v3:MCCI_IN000002UV01" />
        </wsdl:operation>
        <wsdl:operation name="PIXConsumer_PRPA_IN201304UV">
            <wsdl:input message="tns:PRPA_IN201304UV_Message"
                        wsaw:Action="urn:hl7-org:v3:PRPA_IN201304UV" />
            <wsdl:output message="tns:MCCI_IN000002UV01_Message"
                        wsaw:Action="urn:hl7-org:v3:MCCI_IN000002UV01" />
        </wsdl:operation>
    <wsdl:operation name="PIXConsumer_PRPA_IN201309UV">
        <wsdl:input message="tns:PRPA_IN201309UV_Message"
                    wsaw:Action="urn:hl7-org:v3:PRPA_IN201309UV" />
        <wsdl:output message="tns:PRPA_IN201310UV_Message"
                    wsaw:Action=" urn:hl7-org:v3:PRPA_IN201310UV" />
    </wsdl:operation>
</wsdl:portType>

<wsdl:binding name="PIXConsumer_Binding_Soap11" type="tns:PIXConsumer_PortType">
        <wsoap11:binding style="document" transport="http://schemas.xmlsoap.org/soap/http" />

    <wsdl:operation name="PIXConsumer_PRPA_IN201301UV">
            <wsoap11:operation soapAction="urn:hl7-org:v3:PRPA_IN201301UV" />
        <wsdl:input>
                <wsoap11:body use="literal" />
        </wsdl:input>
        <wsdl:output>
                <wsoap11:body use="literal" />
        </wsdl:output>
    </wsdl:operation>

    <wsdl:operation name="PIXConsumer_PRPA_IN201302UV">
        <wsoap11:operation soapAction="urn:hl7-org:v3:PRPA_IN201302UV" />
        <wsdl:input>
                <wsoap11:body use="literal" />
        </wsdl:input>
        <wsdl:output>
                <wsoap11:body use="literal" />
        </wsdl:output>
    </wsdl:operation>

    <wsdl:operation name="PIXConsumer_PRPA_IN201303UV">
        <wsoap11:operation soapAction="urn:hl7-org:v3:PRPA_IN201303UV" />
        <wsdl:input>
                <wsoap11:body use="literal" />
        </wsdl:input>
        <wsdl:output>
                <wsoap11:body use="literal" />
        </wsdl:output>
    </wsdl:operation>

    <wsdl:operation name="PIXConsumer_PRPA_IN201304UV">
        <wsoap11:operation soapAction="urn:hl7-org:v3:PRPA_IN201304UV" />
        <wsdl:input>
                <wsoap11:body use="literal" />
        </wsdl:input>
        <wsdl:output>
                <wsoap11:body use="literal" />
        </wsdl:output>
```

```
        </wsdl:operation>

        <wsdl:operation name="PIXConsumer_PRPA_IN201309UV">
            <wsoap11:operation soapAction="urn:hl7-org:v3:PRPA_IN201309UV" />
            <wsdl:input>
                <wsoap11:body use="literal" />
            </wsdl:input>
            <wsdl:output>
                <wsoap11:body use="literal" />
            </wsdl:output>
        </wsdl:operation>

    </wsdl:binding>

    <wsdl:service name="PIXConsumer_Service">
        <wsdl:port binding="tns:PIXConsumer_Binding_Soap11" name="PIXConsumer_Port_Soap11">
                <wsoap11:address location="http://localhost:18183/PIXConsumer_Soap11" />
        </wsdl:port>
    </wsdl:service>
</wsdl:definitions>
```