Integrating the Healthcare Enterprise

IHE IT Infrastructure
Technical Framework Supplement

Cross-Community Patient Discovery (XCPD)

Trial Implementation

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Foreword

This is a supplement to the IHE IT Infrastructure Technical Framework 9.0. Each supplement undergoes a process of public comment and trial implementation before being incorporated into the volumes of the Technical Frameworks.

This supplement is submitted for Trial Implementation as of August 31, 2012 and will be available for testing at subsequent IHE Connectathons. The supplement may be amended based on the results of testing. Following successful testing it will be incorporated into the IT Infrastructure (ITI) Technical Framework. Comments are invited and can be submitted at http://www.ihe.net/iti/iticomments.cfm or by email to iti@ihe.net.

This supplement describes changes to the existing technical framework documents and where indicated amends text by addition (**bold underline**) or removal (~~**bold strikethrough**~~), as well as addition of large new sections introduced by editor's instructions to "add new text" or similar, which for readability are not bolded or underlined.

"Boxed" instructions like the sample below indicate to the Volume Editor how to integrate the relevant section(s) into the relevant Technical Framework volume:

Replace Section X.X by the following:

General information about IHE can be found at: www.ihe.net

Information about the IHE IT Infrastructure can be found at: http://www.ihe.net/Domains/index.cfm

Information about the structure of IHE Technical Frameworks and Supplements can be found at: http://www.ihe.net/About/process.cfm and http://www.ihe.net/profiles/index.cfm

The current version of the IHE Technical Framework can be found at: http://www.ihe.net/Technical_Framework/index.cfm

CONTENTS

Introduction

The Cross-Community Patient Discovery profile complements the XCA profile by supporting the ability to locate communities which hold a patient's relevant health data and the translation of patient identifiers across communities holding the same patient's data. This profile adds to ITI TF Volumes 1, 2b and 2x by describing the new profile and transactions related to this profile.

During the development of this profile a detailed analysis was done of the use cases and various environments that might be supported. Because of the detailed level of this analysis its content has been moved out of this profile and into a separate document. The document can be found at:

ftp://ftp.ihe.net/IT_Infrastructure/iheitiyr7-2009-2010/Technical_Cmte/Profile_Work/XCPD/XCPD_Use_Case_Analysis.doc

We encourage those who are interested in the thought process involved in the creation of this profile to review this material.

In addition to the default synchronous transmission pattern, this profile also describes the use of the Asynchronous Web Services Exchange pattern as first defined in XDS.b. This profile includes Asynchronous Web Services Exchange because when the use of the transactions scales to large numbers of communities Asynchronous Web Services Exchange allows for more efficient handling of latency and scale.

Profile Abstract

The Cross-Community Patient Discovery (XCPD) profile supports the means to locate communities which hold patient relevant health data and the translation of patient identifiers across communities holding the same patient's data. A community is defined as a group of facilities/enterprises that have agreed to work together using a common set of policies for the purpose of sharing health information within the community via an established mechanism. Facilities/enterprises may host any type of healthcare application such as EHR, PHR, etc. A community is identifiable by a globally unique id called the homeCommunityId. Membership of a facility/enterprise in one community does not preclude it from being a member in another community. Such communities may be XDS Affinity Domains which define document sharing using the XDS profile or any other communities, no matter what their internal sharing structure.

Open Issues and Questions

- **X006:** Should the soapAction follow the previous pattern for HL7 V3 transactions of being the message id. It was felt that the soapAction should be different to distinguish it from the PDQ transaction which has different expected actions for responder. This would put us inconsistent with current HL7 V3 practices but the plan is to influence the HL7 ITS group to change their approach to allow for this situation. The approach described in this trial

implementation version of the supplement is a temporary solution which will be adjusted based on HL7 response regarding our request for support of this type of situation.

- **X021:** Use of revoke when Initiating Gateway does not choose to send a patient identifier in the Patient Discovery request. This is only allowed when the Initiating Gateway is not grouped with a Responding Gateway. The Patient Discovery request receiver can also not send a revoke unless grouped with an Initiating Gateway. Assuming that both sides contain a grouping of Initiating and Responding, and the rule regarding specification of a patient identifier in the request is ignored, the responder to the Patient Discovery request has no patient identifier to create a correlation with, so will have difficulty, and no real purpose, for saving any information about the request. So it will most likely have no reason to send a revoke. So this function is not supported, the initiating side must supply a patient identifier in order to receive a revoke.

Closed Issues

- **X001:** Should this be an update to the XCA Profile or a separate profile? Agreed this should be a separate profile.
- **X002:** If HL7 messaging is used should it be v2 or v3? Agreed that HL7 V3 should be used.
- **X003:** Concern that the term used in XCA – homeCommunityId – is confused with the Patient Medical Home concept common in healthcare IT discussions. The homeCommunityId concept relates to the home of healthcare data, not a patient home. Agreed this is a semantic issue but not significant enough to warrant a change in terminology at this time.
- **X004:** During the development of this profile we considered an environment where a Health Data Locator existed external to any community. This is slightly more complicated an environment than this capability within a community. Because of the lack of a clear requirement this environment is not currently addressed in the profile.
- **X005:** Should the QD and QDLA be merged? After review of the details of each it was agreed that only one transaction was needed, with an optional return attribute indicating support for the QIL transaction for this patient identifier.
- **X007:** Consider other names for Location Authority. Agreed to use Health Data Locator – all references to Location Authority replaced with Health Data Locator.
- **X008:** Consider other names for this profile. Agreed to use Cross-Community Patient Discovery (XCPD)
- **X009:** Consider other names for the responding side actor in this profile. Agreed to stay with Responding Gateway.
- **X010:** Need names for the transactions.
  a. **QD –** Cross Gateway Patient Discovery
  b. **QIL -** Patient Location Query

- **X011:** Stored Query identifier for QIL transaction needs to be assigned - urn:uuid:2f6c6a44-3979-11de-9bf3-6bd6d027702d . After public comment this urn was no longer needed.
- **X012:** New objectType UUID needs to be assigned - urn:uuid:3bb8ba6e-3979-11de-a40d-fbfedee106c1. After public comment this urn was no longer needed.
- **X014:** Need Risk Assessment and Auditing requirements. Done.
- **X013:** Does this profile support the requirement to organize XCA and XCPD transactions hierarchically. For example, if a state has multiple communities it may provide a message routing system to allow other states to talk to one entity which then spawns and collects from all the communities in the states. This router provides a thin coverage, not hiding the multiplicity of homeCommunityId's or patient identifiers for a single patient. The receiver of requests sent to this router would need to understand how to manage this verboseness in response – for example the response to a query may include multiple patients that all match the request but have different patient identifies to use within a XCA Cross Gateway Query. This environment is supported in this profile.
- **X015:** Should the Patient Location Query re-use the XDS error codes as described in section 3.56.4.1.3 or should it create new error codes that are specific to the cross-community environment. Resolution: Create new error codes for the transaction. Error codes are delivered a SOAP faults, so no dependency on XDS in this transaction.
- **X016:** Should the Cross Gateway Patient Discovery transaction provide coded values to describe events like:
  - I know the person but I have no data for them and I don't have an identifier to share with you (in this case should respond as if you don't know this person)
  - I know the person but I'm not willing to share data with you unless you follow a manual procedure (in this case respond either way, and manual process is out of scope)
  - I can't give you that answer (all of the above generically?)

  The above can be coded within DetectedIssueManagement code value. Resolution: All the cases listed are reflected in one coded value "AnswerNotAvailable" – since they require human intervention it was felt that separate error codes were not necessary .
- **X017:** Should PDQV3 be used without change to accomplish the needs of this profile? The profile starts with the same HL7 V3 message but uses this message in different ways due to the different purposes required by the profile. Due to this different type of use and different environment, although PDQV3 and this profile are profiling the same HL7 V3 message the details of that profiling are significantly different. Some differences are: support for asynchronous web services exchange, mutual discovery of patient identifier correlations, special error codes, requiring LivingSubjectName and LivingSubjectAdministrativeGender unless a patient identifier is specified, using MothersMaidenName, using PrincipalCareProviderId, non-use of some elements that exist in PDQV3, specification of homeCommunityId and Community patient id assigning authority. This list is not intended to be complete, but givens a representation of the types of differences spelled out in the profile.

- **X018:** What standard should the Patient Location Query be based on? The following were considered: ebXML, HL7 V3, PIXV3. These were discarded because they did not directly address the need, which is very simple. By convoluting PIXV3 or any other HL7 V3 message we could carry the right information needed for the transaction, but it would have been extremely complicated and confusing. There would be significant excess baggage (meaning XML elements) carried on the transaction for no reason. For these reasons the implementation challenges were felt to be too great. ebXML was also considered, and while it does carry the data in a reasonable way, it seemed also too heavy handed for the simple transaction. So the transaction uses Web Services and an IHE defined schema to accomplish the need.
- **X019:** Patient Location Query support for multiple health data locators for different kinds of data. This requirement was not addressed because of the desire to keep the Patient Location Query strictly focused on location of potential data and not bleed into the transaction information beyond the location – like types of data at a location. It is felt that the XCA Query supports the ability to search for types of data and that function should be addressed at that layer of the workflow.
- **X020:** SOAP actions for synchronous and asynchronous messaging are defined by the Web Services Exchange Supplement to be different yet this profile does not follow that pattern. As of the time this Supplement was going to Trial Implementation release there is an open CP 420 which requests that the specification of SOAP actions for asynchronous messaging be changed. Since CP 420 has not been resolved it is not clear which way to describe them in this profile so the author has chosen to leave the specification out with the intention of providing it as part of CP 420 once the direction has been decided. Please refer to CP 420 for a decision and any necessary changes for XCPD. Resolved: CP 420 resolves the specification of asynchronous messaging in such a way that no further detail is needed in this specification.

Volume 1 – Integration Profiles

Glossary

Add the following term to the Glossary:

Health Data Locator: Health Data Locator is a function provided by a community or external entity that manages the locations of patient health data for a selected set of patients. A Health Data Locator keeps track of communities that know a patient and provides a list of these communities to a requesting community.

Update the Community term in the Glossary as follows:

Community: A community is defined as a ~~coupling~~ **group** of facilities/enterprises that have agreed to work together using a common set of policies for the purpose of sharing **health** ~~clinical~~ information via an established mechanism. Facilities/enterprises may host any type of healthcare application such as EHR, PHR, etc. A community is identifiable by a globally unique id called the homeCommunityId. Membership of a facility/enterprise in one community does not preclude it from being a member in another community. Such communities may be XDS Affinity Domains which define document sharing using the XDS profile or any other communities, no matter what their internal sharing structure.

1.7 History of Annual Changes

Add the following bullet to the end of the bullet list in Section 1.7

- Added the XCPD Profile that supports the means to locate communities which hold patient relevant health data and the translation of patient identifiers across communities holding the same patient's data.

2.1 Dependencies among Integration Profiles

Add the following to Table 2-1

XCPD	Audit Trail and Node Authentication	Each XCPD Actor shall be grouped with Secure Node or Secure Application Actor	- Required to manage audit trail of exported PHI, node authentication and transport security.
XCPD	Consistent Time	Each XCPD Actor shall be grouped with the Time Client Actor	- Required due to ATNA grouping.

Add the following section to Section 2.2

2.2.27 XCPD Integration Profile

The Cross-Community Patient Discovery (XCPD) profile supports the means to locate communities that hold patient relevant health data and the translation of patient identifiers across communities holding the same patient's data. A community is defined as a group of facilities/enterprises that have agreed to work together using a common set of policies for the purpose of sharing health information within the community via an established mechanism. Facilities/enterprises may host any type of healthcare application such as EHR, PHR, etc. A community is identifiable by a globally unique id called the homeCommunityId. Membership of a facility/enterprise in one community does not preclude it from being a member in another community. Such communities may be XDS Affinity Domains which define document sharing using the XDS profile or any other communities, no matter what their internal sharing structure.

Add Section 27

27 XCPD Integration Profile

The Cross-Community Patient Discovery (XCPD) profile supports the means to locate communities that hold patient relevant health data and the translation of patient identifiers across communities holding the same patient's data. A community is defined as a group of facilities/enterprises that have agreed to work together using a common set of policies for the purpose of sharing health information within the community via an established mechanism. Facilities/enterprises may host any type of healthcare application such as EHR, PHR, etc. A community is identifiable by a globally unique id called the homeCommunityId. Membership of a facility/enterprise in one community does not preclude it from being a member in another community. Such communities may be XDS Affinity Domains which define document sharing using the XDS profile or any other communities, no matter what their internal sharing structure.

27.1 Actors/ Transactions

Figure 27.1-1 shows the actors directly involved in the XCPD Integration Profile and the relevant transactions between them. Other actors that may be indirectly involved due to their participation in XCA, XDS, PIX, PDQ, etc. are not necessarily shown.

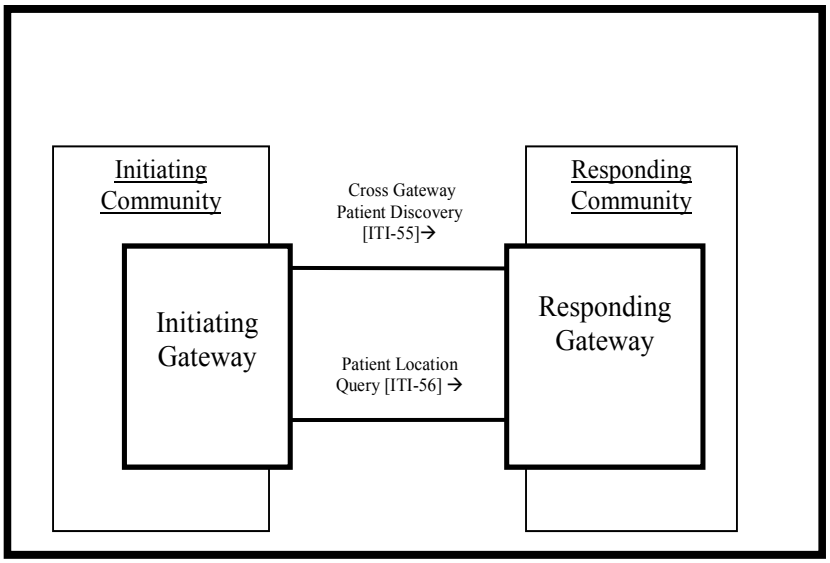


Figure 27.1-1: XCPD Actor Diagram

Table 27.1-1 lists the transactions for each actor directly involved in the XCPD Profile. In order to claim support of this Integration Profile, an implementation must perform the required transactions (labeled "R"). Transactions labeled "O" are optional. A complete list of options defined by this Integration Profile and that implementations may choose to support is listed in Section 27.2.

Table 27.1-1: XCPD Integration Profile - Actors and Transactions

Actors	Transactions	Optionality	Section
Initiating Gateway	Cross Gateway Patient Discovery [ITI-55]	R	ITI TF-2b:3.55
	Patient Location Query [ITI-56]	O	ITI TF-2b:3.56
Responding Gateway	Cross Gateway Patient Discovery [ITI-55]	R	ITI TF-2b:3.55
	Patient Location Query [ITI-56]	O	ITI TF-2b:3.56

27.1.1 Actors

27.1.1.1 Initiating Gateway

The Initiating Gateway supports all outgoing inter-community communications. XCPD uses this actor to initiate the Cross Gateway Patient Discovery [ITI-55] and, optionally, the Patient Location Query [ITI-56] transactions. The Initiating Gateway is required to support synchronous transaction messaging and may declare an option to support Asynchronous Web Services

Exchange. Choosing Asynchronous Web Services Exchange will allow the Initiating Gateway to support workflows which scale to large numbers of communities because Asynchronous Web Services Exchange allows for more efficient handling of latency and scale.

27.1.1.2 Responding Gateway

The Responding Gateway supports all incoming inter-community communications. XCPD uses this actor to receive the Cross Gateway Patient Discovery [ITI-55] and, optionally, the Patient Location Query [ITI-56] transactions. The Responding Gateway is required to support Asynchronous Web Services Exchange on all implemented transactions. This allows the Initiating Gateway to choose the best of the two messaging patterns (synchronous or asynchronous) that fit the needs of the workflow. Support for Asynchronous Web Services Exchange allows for workflows which scale to large numbers of communities because it can handle latency and scale more efficiently.

27.1.2 Transactions

27.1.2.1 Cross Gateway Patient Discovery [ITI-55]

The Cross Gateway Patient Discovery transaction supports the ability for Initiating Gateways and Responding Gateways to discover mutually known patients. This transaction assumes an environment where patient data is well described and high quality demographic data is available.

Because the transaction supports the mutual discovery of patients it can be seen as having dual purposes.

- To support a query by the Initiating Gateway requesting a demographically matching patient from within the Responding Gateway's community.
- To support a feed to Responding Gateway announcing that the patient is known by the Initiating Gateway's community.

This dual nature of the transaction is chosen for scalability purposes, as demographic matching algorithms are expensive on a large scale and once a match is identified it is important that both the initiating and responding sides of the transaction can use the results of that successful match.

The Cross Gateway Patient Discovery transaction has several modes, useful in different environments:

- Demographic Query only mode – in this mode only the demographics of the patient are included in the request. The initiating community does not have, or does not choose to specify, a patient identifier for use by the Responding Gateway.
- Demographic Query and Feed – in this mode both the demographic and initiating community identifier are included in the request.

- Shared/national Patient Identifier Query and Feed – in this mode only a shared/national identifier is specified. Demographics are not necessary because matching can be done on the identifier alone.

The Cross Gateway Patient Discovery transaction also supports the ability for Initiating Gateways to send a revoke message to Responding Gateways when a prior patient identifier correlation may no longer be valid. The revoke message is used when Responding Gateways and Initiating Gateways may have cached the correlation identified as part of a Cross Gateway Patient Discovery transaction.

This transaction can be used synchronously and asynchronously.

27.1.2.2 Patient Location Query [ITI-56]

The Patient Location Query supports the ability for an Initiating Gateway to query the Responding Gateway for a list of communities which may have relevant health data about particular patients. This transaction can be used synchronously and asynchronously.

27.2 XCPD Integration Profile Options

Options that may be selected for this Integration Profile are listed in Table 27.2-1 along with the Actors to which they apply. Dependencies between options when applicable are specified in notes.

Table 27.2-1: XCPD - Actors and Options

Actor	Options	Vol & Section
Initiating Gateway	*Health Data Locator Option*	ITI TF-1: 27.2.1
	Revoke Option	ITI TF-1: 27.2.2
	Asynchronous Web Services Exchange	ITI TF-1: 27.2.3
	Deferred Response	ITI TF-1:27.2.4
Responding Gateway	*Health Data Locator Option*	ITI TF-1: 27.2.1
	Revoke Option	ITI TF-1: 27.2.2
	Deferred Response	ITI TF-1:27.2.4

27.2.1 Health Data Locator Option

Initiating Gateways which support the Health Data Locator Option shall support the Patient Location Query [ITI-56] transaction to request the location of a patient (or set of patients) health data.

Responding Gateways which support the Health Data Locator Option shall collect locations of health data for selected patients and make that information available to Initiating Gateways from other communities via the Patient Location Query [ITI-56] transaction.

27.2.2 Revoke Option

XCPD allows for the caching of correlations resulting from the Cross Gateway Patient Discovery transaction. This caching is not required of any XCPD implementation but when used may be combined with use of the revoke message of the Cross Gateway Patient Discovery [ITI-55] transaction to invalidate cached correlations.

Initiating Gateways which support the Revoke Option shall be able to use the revoke message of the Cross Gateway Patient Discovery [ITI-55] transaction to notify a Responding Gateway that a patient identifier correlation may no longer be valid.

Responding Gateways which support the Revoke Option shall be able to receive the revoke message of the Cross Gateway Patient Discovery [ITI-55] transaction to be notified by an Initiating Gateway that a patient identifier correlation is no longer valid.

27.2.3 Asynchronous Web Services Exchange Option

Initiating Gateways which support Asynchronous Web Services Exchange shall support Asynchronous Web Services Exchange on the Cross Gateway Patient Discovery [ITI-55] and Patient Location Query [ITI-56] transactions. Asynchronous processing is necessary to support scaling to large numbers of communities because Asynchronous Web Services Exchange allows for more efficient handling of latency and scale.

27.2.4 Deferred Response Option

Responding Gateways which support the Deferred Response Option shall support Deferred Response as described in ITI TF-2b: 3.55.6.2 on the Cross Gateway Patient Discovery [ITI-55] transaction.

Initiating Gateways which support the Deferred Response Option shall support Deferred Response as described in ITI TF-2b: 3.55.6.2 on the Cross Gateway Patient Discovery [ITI-55] transaction.

The Deferred Response option reflects the more detailed understanding and feedback from implementers regarding processing that may result in significant delay. The existing Asynchronous Web Services Exchange Option can support some scenarios with delayed response but not environments where the delay in responding may be as much as days or weeks. These cases require a mechanism that is managed by the application and which supports recovery through system restart. Deferred Response mode provides applications with such capability. In doing so it also adds responsibilities to the application, in particular for managing message correlation, creating application level acknowledgements and determining where to send a Deferred Response message. The new flexibility allowed by the Deferred Response option is deemed worthy of these additional requirements on the application. For more information about Deferred Response and Asynchronous messaging in general see http://wiki.ihe.net/index.php?title=Asynchronous_Messaging.

27.3 XCPD Process Flow

27.3.1 Use Cases

This section lists the use cases considered in developing this profile.

Use Case: Multiple primary residences

This use case describes the situation where a patient maintains more than one principal residence. Generally the principal residences are not geographically close so the medical data generated while in each residence would be created by separate institutions.

A common example of this use case is what is described in the United States as the Snow Bird. This is a person who maintains two residences, one in the northern part of the USA for use during the hot summer months and one in the south for the colder winter. If a patient lives in Florida in the winter and in New York in the summer, this patient will likely have medical records in both places which need to be shared. If the patient is managing a long term medical condition, like diabetes, it will be important as she moves from New York to Florida and back that the background and related testing associated with management of the medical condition is readily accessible to the local physician.

Use Case: Border towns

A variation of the multiple primary residence use case involves a patient who lives on the border between two communities or works and lives at some distance. A patient who lives in Longwy, France, which is on the border between the France and Belgium, may access health facilities both in France and Belgium. If that patient works in the European Investment Fund, he might also access health organizations in Luxembourg. All of these disparate areas, although closer geographically than the two French cities Longwy and Toulouse would probably hold patient information in separate domains thereby requiring the same kind of cross domain sharing as the snowbird case described above.

Use Case: Patient Move

A patient moves from one region to a different, remote region. The new region needs to access records from the patients prior location.

Use Case: Vacationer

A patient is traveling and goes to the hospital. The hospital needs to access records from organizations in the patient's region of residence. Upon return from vacation, organizations in the region of residence need to access records from the remote hospital.

Use Case: Regional coalition

Several medical facilities, related by region or other purpose, form an alliance to share medical data in an ongoing and integrated way. Patients across these facilities see seamless integration of medical records.

Use Case: Specialized treatment in different region

The patient travels for specialized treatment and upon return requests the provider access records associated with the specialized treatment. Patient knows the city or region of the treatment but not the specific facility.

Use Case: Patient changes last name

The patient changes her last name as a result of marriage.

27.3.2 Detailed Interactions (Informative)

This section details some of the likely interactions when using XDS, XCA and XCPD to share health data across communities.

Due to the peer-to-peer nature of XCPD interactions the Initiating Gateway must determine which communities to contact. XCPD does not address this question directly. Some possible approaches are:

- The patient carries an identification card which points to a Patient Medical Home. The Initiating Gateway uses the identification of the Patient Medical Home to determine the correct Responding Gateway to contact.
- A nation supports a registry of communities which can be searched using keys like homeCommunityId, regions within the nation, states, cities or other mechanisms to narrow a set of communities. When seeing a patient with a known home address a community may search the registry for communities near that home address and contact those first.
- A nation would have a set of recognized communities that is accessible either through the registry or via configuration.

Prior to any point-to-point sharing of protected health data the initiating and responding communities will need to agree to policies regarding the use of the data being shared. Those agreements may be:

- Peer-to-Peer – each community negotiates with each other community in a one-to-one method.
- Regional – a regional government or regional organization creates an agreement that all within the region may agree to and by doing so join sharing within that region.
- Across Region – A super regional (e.g., national) brings together sharing across regional sets of communities.
- Across Nation – At some point in the future nations may develop agreements for sharing across national boundaries, and as such will enable regions to share at a much larger scale.

27.3.2.1 Illustration of use of Transactions (Informative)

The following sections illustrate scenarios for use of XCPD transactions. The illustrations assume grouping of XCPD Initiating and Responding Gateways and XCA Initiating and Responding Gateways[1] for simplicity of the diagram and that each community is an XDS Affinity Domain. The interactions depicted in the diagrams are examples of use of the transactions, not requirements. The XCPD transactions are designed to enable a variety of behaviors. Implementers are free to choose some or none of the behaviors described.

Scenario # 1: Peer-to-peer

Figure 27.3.2.1-1 shows the transactions involved in sharing healthcare data for one patient among three communities. Details on each interaction follow the diagram. "I&R Gateway" indicates the grouping of Initiating and Responding Gateways.

[1] IHE defines an actor in the context of a profile, so an XCA Initiating Gateway does not have to be grouped with an XCPD Initiating Gateway and likewise for an XCA Responding Gateway and XCPD Responding Gateway. In practice these actors may customarily be grouped but it is not a requirement of IHE.

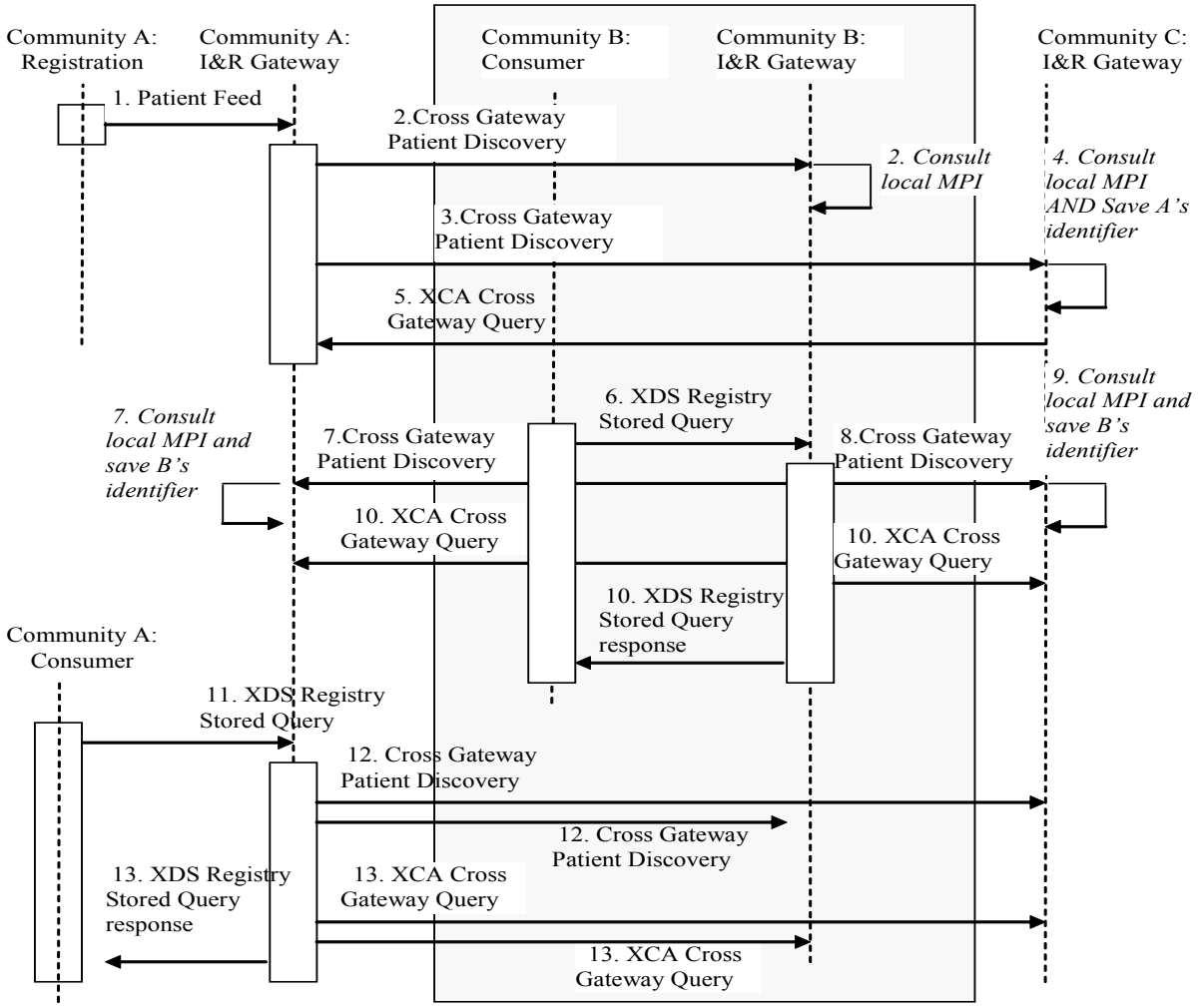


Figure 27.3.2.1-1: Detailed Interactions Peer-to-peer (Informative)

- [1] The patient registers within Community A and a Patient Feed is sent to the Gateway.
- [2] The Gateway uses the Cross Gateway Patient Discovery transaction to determine if this patient is known in community B. Community B consults with its local MPI and, finding no match, responds with no matches, indicating the patient is not known in community B.
- [3] The Gateway uses the Cross Gateway Patient Discovery transaction to determine if this patient is known in community C. Community C responds with one match including the patient identifier in C.
- [4] Community C consults with its local MPI and finds a match. It saves the identifier designated on the Cross Gateway Patient Discovery transaction as Community A's identifier for this patient.

- [5] Community C pre-loads data for this patient by sending a XCA Cross Gateway Query to community A.
- [6] This patient is seen, for the first time, within an organization in community B which subsequently requests data about this patient and sends an XDS Registry Stored Query to its local Gateway.
- [7] The Gateway uses the Cross Gateway Patient Discovery transaction to determine if this patient is known in community A. Community A consults its local MPI and responds with one match including the patient identifier in A. Community A saves the identifier designated on the Cross Gateway Patient Discovery transaction as community B's identifier for this patient.
- [8] The Gateway uses the Cross Gateway Patient Discovery transaction to determine if this patient is known in Community C. Community C responds with one match including the patient identifier in C.
- [9] Community C consults with its local MPI and finds a match. It saves the identifier designated on the Cross Gateway Patient Discovery transaction as community B's identifier for this patient.
- [10] The community B gateway sends a XCA Cross Gateway Query to both Community A and C because both responded positively to the Cross Gateway Patient Discovery transaction. Both responses are combined by the community B gateway and returned to the organization which originated the XDS Registry Stored Query in step [6].
- [11] An organization in community A requests data about this patient and sends an XDS Registry Stored Query to its local Gateway.
- [12] The Gateway has saved the community B identifier in step [7] and Community A identifier in step [3]. But this query may happen days or weeks or years later. To verify the correlation of the identifier, community A's gateway repeats the Cross Gateway Patient Discovery to both B and C. B and C will consult their local MPI to identify the match.
- [13] Having verified the correlation, community A sends an XCA Cross Gateway Query to both community B and C and combines the responses in order to respond to the XDS Registry Stored Query from step [11].

Scenario # 2: Use of Health Data Locator (Informative)

Figure 27.3.2.1-2 shows the transactions involved in sharing healthcare data for one patient among three communities. In this scenario community C is a Health Data Locator for the patient. Details on each interaction follow the diagram.

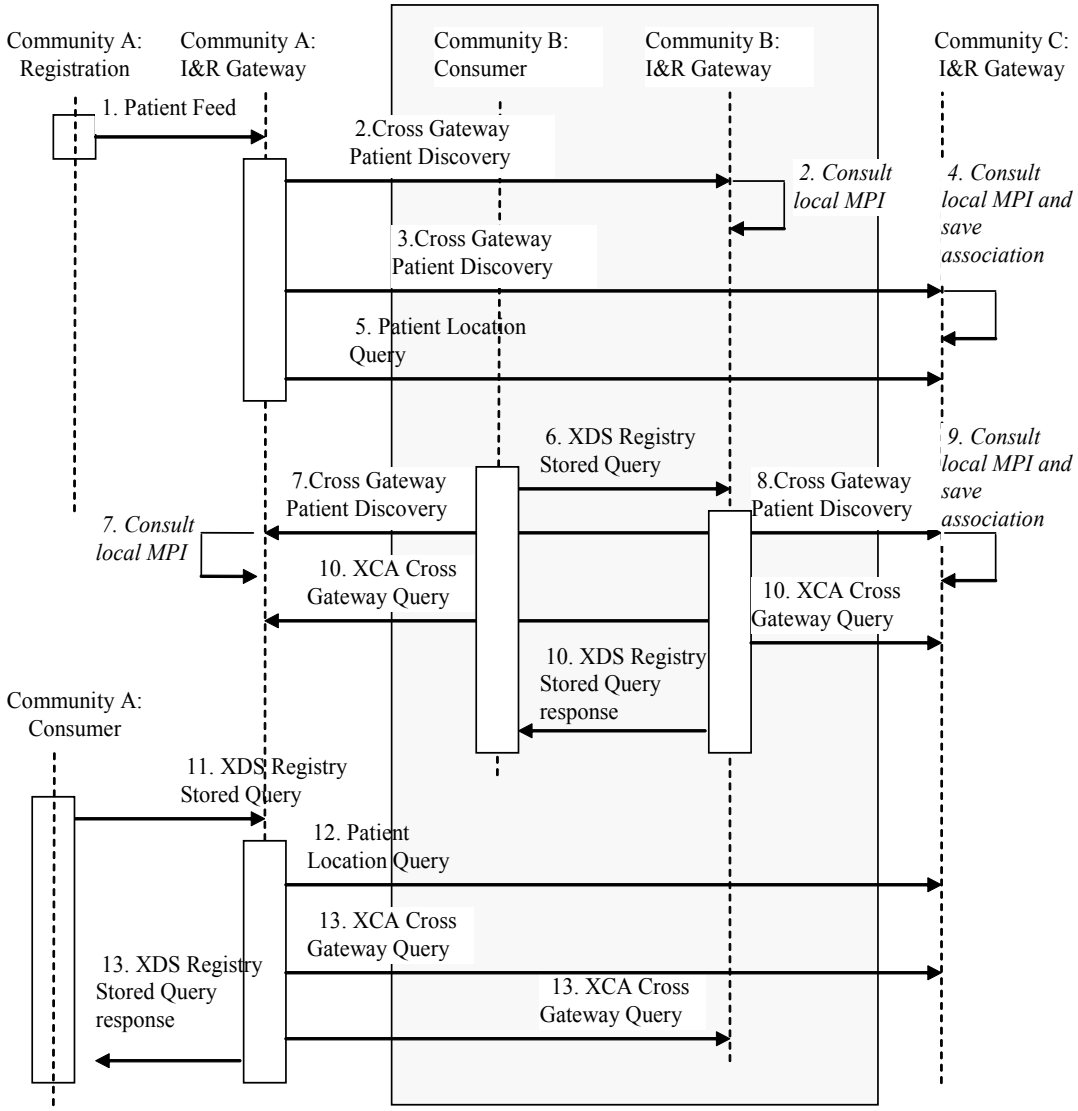


Figure 27.3.2.1-2: Detailed Interactions Health Data Locator (Informative)

- [1] The patient registers within Community A and a Patient Feed is sent to the Gateway.
- [2] The Gateway uses the Cross Gateway Patient Discovery transaction to determine if this patient is known in community B. Community B consults with its local MPI and responds with no matches, indicating the patient is not known in community B.
- [3] The Gateway uses the Cross Gateway Patient Discovery transaction to determine if this patient is known in community C. Community C responds with one match including the patient identifier in C and the indication that community C is a Health Data Locator for this patient.

- [4] Community C consults with its local MPI and finds a match. It saves the association that the identifier designated on the Cross Gateway Patient Discovery transaction is community A's identifier for this patient.
- [5] Community A pre-loads locations for this patient by sending a Patient Location Query to community C which has identified itself as a Health Data Locator.
- [6] This patient is seen, for the first time, within an organization in community B which subsequently requests data about this patient and sends an XDS Registry Stored Query to its local Gateway.
- [7] The Gateway uses the Cross Gateway Patient Discovery transaction to determine if this patient is known in community A. Community A consults with its local MPI and responds with one match including the patient identifier in A.
- [8] The Gateway uses the Cross Gateway Patient Discovery transaction to determine if this patient is known in community C. Community C responds with one match including the patient identifier in C and the indication that community C is a Health Data Locator for this patient.
- [9] Community C consults with its local MPI and finds a match. It saves the association that the identifier designated on the Cross Gateway Patient Discovery transaction is community B's identifier for this patient.
- [10] The community B gateway sends a XCA Cross Gateway Query to both Community A and C because both responded positively to the Cross Gateway Patient Discovery transaction. Both responses are combined by the community B gateway and returned to the organization which originated the XDS Registry Stored Query in step [6].
- [11] An organization in community A requests data about this patient and sends an XDS Registry Stored Query to its local Gateway.
- [12] The Gateway has saved the locations retrieve from community C in step [5] but this query may happen days or weeks or years later. To get a fresh copy of the locations for this patient, community A's gateway sends another Patient Location Query to C. By doing so it discovers that B also knows this patient.
- [13] Community A sends an XCA Cross Gateway Query to both community B and C and combines the responses in order to respond to the XDS Registry Stored Query

27.3.2.2 Hierarchical use of Cross Gateway Patient Discovery (Informative)

The Cross Gateway Patient Discovery transaction has been designed to support the use of a Responding Gateway representing multiple organizations where each has its own patient identification domain and there is no patient identification domain in common across the organizations represented.

Figure 27.3.2.2-1 shows the flow when an Initiating Gateway interacts with a Responding Gateway which is representing multiple organizations and reflecting those organizations in its

Cross Gateway Patient Discovery response. The Responding Gateway interacts, using a community internal mechanism or any standard mechanism (e.g., XCPD, PDQ), with each of the Master Patient Indices (MPI) to find a match for the specified demographics. The figure shows the Responding Gateway interacting with three MPI's and discovering three matching patient identifiers: X in the A domain, Y in the B domain and Z in the C domain. All three of the patient identifiers are returned in the Cross Gateway Patient Discovery response in a way that indicates that they represent three different domains, rather than three matches from one domain (which is also possible and coded in a different way see ITI TF-2b: 3.55.4.2.2.4). In order for the Initiating Gateway to access all data it must issue three separate XCA Cross Gateway Query transactions, each with one of the patient identifiers returned from the Cross Gateway Discovery transaction.

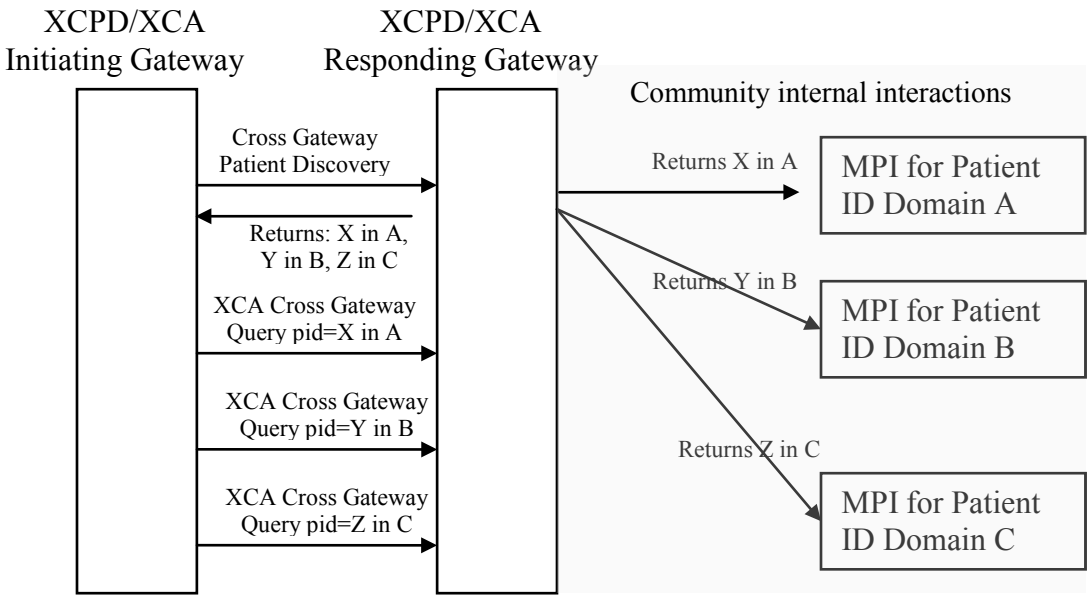


Figure 27.3.2.2-1: Hierarchical use of Cross Gateway Query (Informative)

27.4 XCPD Security Considerations

The risk analysis for XCPD enumerates assets, threats, and mitigations. The complete risk data is stored and maintained in a central location. The complete risk data is stored and available from IHE[2].

The purpose of this risk assessment is to notify vendors of some of the risks that they are advised to consider in implementing XCPD actors. For general IHE risks and threats please see ITI TF-

[2] The risk analysis data may be found at: ftp://ftp.ihe.net/IT_Infrastructure/iheitiyr7-2009-2010/Technical_Cmte/Profile_Work/XCPD/ XCPD_Risk_assessment_and_mitigation_table.xls

1: Appendix L. The vendor is also advised that many risks cannot be mitigated by the IHE profile and instead the responsibility for mitigation is transferred to the vendor, and occasionally to the XDS Affinity Domain and enterprises. In these instances, IHE fulfills its responsibility to notify affected parties through the following section.

27.4.2 Requirements/Recommendations

The following mitigations shall be implemented by all XCPD actors. These mitigations moderate all high impact risks.

- All actors in XCPD shall be grouped with an ATNA Secure Node actor (or ATNA Secure Application) and a CT Time Client actor.
- As a consequence of grouping with ATNA Secure Node or Secure Application both incoming and outgoing messages will be via a secure communication channel, including all asynchronous response messages.

The following mitigations are transferred to the vendors, XDS Affinity Domains, and enterprises.

- Network protection services are recommended to be sufficient to guard against denial of service attacks on all service interfaces.
- A process that reviews audit records and acts on inappropriate actions is recommended.
- It is recommended that service interfaces be implemented with a good design to guard against corruption and denial of service attacks

27.4.3 Policy Choices

Policy choices will not be addressed by this profile. Each community may have different policies. The profile has been designed with this fact in mind and an understanding of enough variety of policies so that any reasonable policy can be implemented without violating the profile.

Add the following new definitions to Appendix B

Appendix B: Transaction Summary Definitions

Cross Gateway Patient Discovery – supports the ability to discover patients mutually know across communities.

Patient Location Query – supports the ability to query for a list of communities which may have relevant health data about particular patients.

Volume 2b - Transactions

Add Section 3.55

3.55 Cross Gateway Patient Discovery

This section corresponds to Transaction 55 of the IHE ITI Technical Framework. Transaction 55 is used by the Initiating Gateway and Responding Gateway actors.

3.55.1 Scope

The Cross Gateway Patient Discovery transaction supports the ability for Initiating Gateways and Responding Gateways to discover mutually known patients. This transaction assumes an environment where patient data is well described and high quality demographic data is available.

Because the transaction supports the mutual discovery of patients it can be seen as having dual purposes.

- To support a query by the Initiating Gateway requesting a demographically matching patient from within the Responding Gateway's community.
- To support a feed to Responding Gateway announcing that the patient is known by the Initiating Gateway's community.

This dual nature of the transaction is chosen for scalability purposes, as demographic matching algorithms are expensive on a large scale and once a match is identified it is important that both the initiating and responding sides of the transaction can use the results of that successful match.

The Cross Gateway Patient Discovery transaction has several modes, useful in different environments:

- Demographic Query only mode – in this mode only the demographics of the patient are included in the request. The initiating community does not have, or does not choose to specify, a patient identifier for use by the Responding Gateway.
- Demographic Query and Feed – in this mode both the demographic and initiating community identifier are included in the request.
- Shared/national Patient Identifier Query and Feed – in this mode only a shared/national identifier is specified. Demographics are not necessary because matching can be done on the identifier alone.

This transaction can be used synchronously and asynchronously.

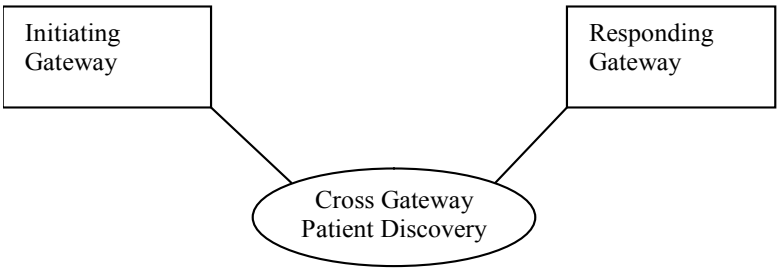
The Cross Gateway Patient Discovery request asks for information about patients whose demographic data match data provided in the query message. The request is received by the Responding Gateway Actor. The Responding Gateway Actor indicates in its response whether

the community has knowledge of a patient matching the set of demographic data and, if a match is found, returns the demographics known by the responding community. If more than one match is found the Responding Gateway has the option of providing a list[3] of matching patients or returning nothing. When nothing is returned the Responding Gateway may include in the response a set of additional demographic attributes which, if supplied, would aid in disambiguating the multiple matches.

In the case of a match, the Responding Gateway may further update its own cache to indicate that the initiating community knows this patient and should be queried if data for this patient is desired. The Cross Gateway Patient Discovery transaction also supports the ability for Initiating Gateways to send a revoke message to Responding Gateways when prior patient identifier correlation may no longer be valid. The revoke message is used when Responding Gateways and Initiating Gateways may have cached the correlation identified as part of a Cross Gateway Patient Discovery transaction.

The criteria used for demographic matching is defined by policy and not specified here, but fully enabled by the transaction.

3.55.2 Use Case Roles



Actor: Initiating Gateway

Role: Requests the Responding Gateway to indicate whether the community has knowledge of a patient matching a set of demographic criteria.

Corresponding HL7 v3 Application Roles:

Person Registry Query Placer (PRPA_AR201303UV02)

[3] Returning a list of matches may potentially expose information that is unrelated to the patient requested. Implementers are encouraged to consider ways to keep the number of elements in a list to a minimum. Deployment organizations may choose to declare a limit to the number of elements allowed to be returned.

Actor: Responding Gateway

Role: If a demographics match is found, returns demographics known by the responding community. If more than one match is found the Responding Gateway has the option of providing a small list of matching patients or returning no match. In the case of no match, the Responding Gateway may provide a list of additional demographic attributes needed to disambiguate multiple matches.

Corresponding HL7 v3 Application Roles:

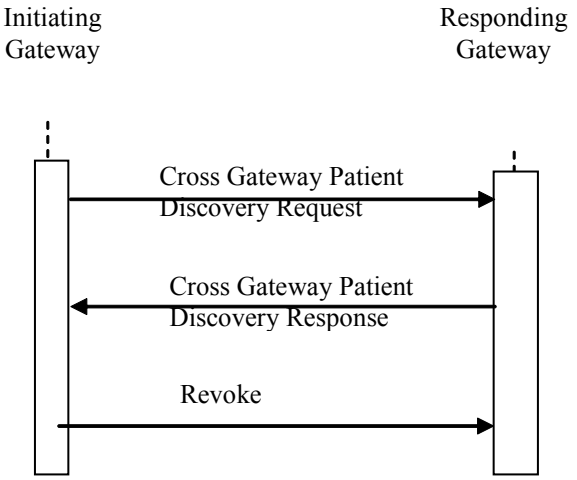
Person Registry Query Fulfiller (PRPA_AR201304UV02)

3.55.3 Referenced Standard

HL7 Version 3 Edition 2008, Patient Administration DSTU, Patient Topic (found at http://www.hl7.org/memonly/downloads/v3edition.cfm#V32008)

Implementers of this transaction shall comply with all requirements described in ITI TF-2x: Appendix V Web Services for IHE Transactions

3.55.4 Interaction Diagram



3.55.4.1 Cross Gateway Patient Discovery Request

The Cross Gateway Patient Discovery Request is implemented using the HL7 Patient Registry Query by Demographics (PRPA_MT201306UV02) message.

3.55.4.1.1 Trigger Events

The initiating community needs to determine whether a patient is known by another community. Specific possible trigger events include, but are not limited to:

- The initiating community registers a new patient who has permitted sharing of healthcare data with external communities.
- A healthcare provider within the community requests that records regarding a particular patient be accessed from a particular external community or all external communities known.

3.55.4.1.2 Message Semantics

The components of the Patient Registry Query by Demographics message with cardinality greater than 0 (as shown below) are required, and the detailed description of the message is provided in ITI TF-2b: 3.55.4.1.2.1 to 3.55.4.1.2.3.

For each element which is required, the element shall be specified by the Initiating Gateway in the request and shall be used by the Responding Gateway as part of its demographic matching algorithm.

For each element which is optional the element does not need to be specified by the Initiating Gateway in the request but, if specified, shall be used by the Responding Gateway as part of its demographic matching algorithm.

The Responding Gateway shall support Asynchronous Web Services Exchange as described in ITI TF-2x: V.5, Synchronous and Asynchronous Web Services Exchange. If the Initiating Gateway declares the Asynchronous Web Services Exchange Option it shall also support Asynchronous Web Services Exchange as described in ITI TF-2x: V.5. Use of Asynchronous Web Services Exchange is necessary when transactions scale to large numbers of communities because it allows for more efficient handling of latency and scale.

The Initiating Gateway may specify a duration value in the SOAP Header element of the request. This value suggests to the Responding Gateway a length of time that the Initiating Gateway recommends caching any correlation resulting from the interaction. The duration value is specified in the SOAP Header using the CorrelationTimeToLive element and contains a value conformant with the xs:duration type defined in http://www.w3.org/TR/xmlschema-2/#duration. If no CorrelationTimeToLive element is specified in the SOAP Header the Responding Gateway shall interpret this as a recommendation against caching, unless a mutually agreed policy states otherwise. Mutually agreed policies may also be used to bind an Initiating Gateway to a specific timeframe for use of the Revoke message.

An example of specifying the CorrelationTimeToLive element follows, which recommends caching of 7 days.

```
<xcpd:CorrelationTimeToLive>P0Y0M7D</xcpd:CorrelationTimeToLive>
```


3.55.4.1.2.1 Major Components of the Patient Registry Query by Demographics

LivingSubjectName Parameter

This required parameter specifies the name of the person whose information is being queried. If multiple instances of LivingSubjectName are provided, the receiver shall consider them as possible alternatives, logically connected with an "or". Within each LivingSubjectName element, a single person name (PN) data item shall be specified in the LivingSubjectName.value attribute. An Initiating Gateway may specify all, or only a subset of the name parts within the PN data type (e.g., family name). The use attribute of the value element shall not be set to "SRCH".

LivingSubjectAdministrativeGender Parameter

This optional parameter specifies the administrative gender of the person whose information is being queried. For this parameter item, a single administrative gender code shall be specified in the LivingSubjectAdministrativeGender.value attribute.

LivingSubjectBirthTime Parameter

This required parameter specifies the birth data and time of the person whose information is being queried. This parameter can convey an exact moment (e.g., January 1, 1960 @ 03:00:00 EST), an approximate date (e.g., January 1960), or even a range of dates (e.g., December 1, 1959 through March 31, 1960).

PatientAddress Parameter

This optional parameter specifies one or more addresses associated with the person whose information is being queried.

LivingSubjectId Parameter

This optional repeating parameter specifies an identifier associated with the patient whose information is being queried (e.g., a local identifier, or an account identifier). If this parameter is specified, LivingSubjectName and LivingSubjectBirthTime are optional. This feature allows this query to be used when a national/shared patient identifier is known. The identifier specified in the LivingSubjectId.value attribute is expressed using the II data type. Please see ITI TF-2x: Appendix E for the use of the II data type for patient identifiers.

The Initiating Gateway has the option of designating one of the identifiers in LivingSubjectId as the patient identifier that the Responding Gateway may use in an XCA Cross Gateway Query to the community represented by the Initiating Gateway. See ITI TF-2b: 3.55.4.1.2.4 .

LivingSubjectBirthPlaceAddress Parameter

This optional parameter specifies the birth address of the patient.

LivingSubjectBirthPlaceName Parameter

This optional parameter specifies the name of the entity (like hospital name) where the patient was born.

MothersMaidenName Parameter

This optional parameter specifies the maiden name of the mother of the person whose information is being queried. For this parameter item, a single person name (PN) data item shall be specified in the Person.value attribute. Within the PN data type, the given name and family name may be specified. The use attribute of the value element shall not be set to "SRCH"

PatientTelecom

This optional parameter specifies a telecommunication address or addresses for communication with the patient.

PrincipalCareProviderId

This optional parameter specifies the care provider identifier of a person who has been assigned as the principal care provider of this patient. The requestor may specify multiple PrincipalCareProviderId elements which the responder shall consider as possible alternatives, logically connected with an "or". Within each PrincipalCareProviderId element, a single identifier shall be specified in the PrincipalCareProviderId.value attribute.

3.55.4.1.2.2 Message Information Model of the Patient Registry Query by Demographics Message

Below is the Message Information Model for the Query by Demographics message, as restricted for this transaction. The purpose of the model is to describe the data elements relevant for this transaction. It is a strict subset of the *Patient Registry Query by Demographics (PRPA_RM201306UV02) RMIM*.

The base RMIM can be found on the HL7 V3 2008 Edition CD at Edition2008/domains/uvpa/editable/PRPA_RM201306UV.htm. The following restrictions were made on the original RMIMs to arrive at the restricted model:

- The optional attributes ParameterList.id, MatchCriterionList.id, QueryByParameter responseElementGroupId, QueryByParameter.modifyCode, and QueryByParameter.executionAndDeliveryTime were omitted from the model.
- QueryByParameter.responsePriorityCode is required and is either I (Immediate) or D (Deferred). See Section ITI TF-2b:3.55.6.2 for use of Deferred.
- QueryByParameter.responseModalityCode is required and is fixed to R (Real Time).
- QueryByParameter.statusCode is defaulted to "new".
- The data type of MatchAlgorithm.value is constrained to ST.
- The data type of MinimumDegreeMatch.value is constrained to INT between 0 and 100.
- The data type of LivingSubjectName.value is constrained to PN.

- The optional SortControl was omitted from the model.
- The optional MatchWeight was omitted from the model.
- The following optional parameters were omitted from the model:
  - PatientStatusCode
  - LivingSubjectDeceaseTime
  - OtherIDsScopingOrganization
  - initialQuantity
  - initialQuantityCode

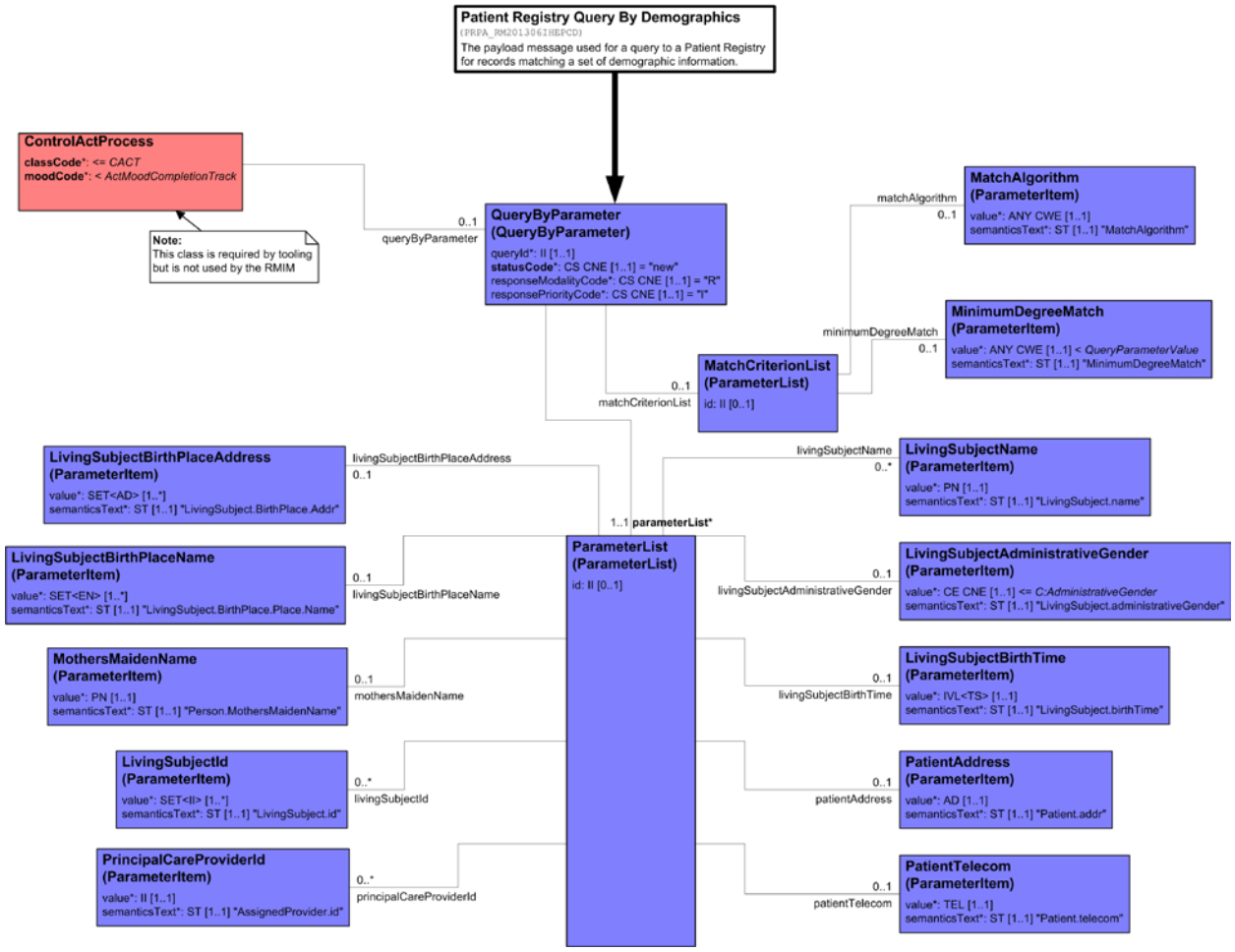


Figure 3.55.4.1.2-1: Patient Registry Query by Demographics Message

The attributes of this model are described in the following table:

Table 3.55.4.1.2-1:

PRPA_HD201306IHE Patient Registry Query by Demographics	This HMD extract defines the message used to query a community for patients matching a set of demographics information. Derived from Figure 3.55.4.1.2-1 (PRPA_RM201306IHEXCPD)
QueryByParameter	The entry point for the domain content in this query
queryId [1..1] QueryByParameter (II)	Unique identifier for the query
statusCode [1..1] (M) QueryByParameter (CS) {CNE:QueryStatusCode, fixed value="new"}	The status of the query, shall be "new"
responseModalityCode [1..1] QueryByParameter (CS) {CNE:ResponseModality, fixed value="R"}	The mode of the response – always real-time.
responsePriorityCode [1..1] QueryByParameter (CS) {CNE:QueryPriority}	Either "I" or "D" shall be specified. "I" (Immediate) indicates that the Responding Gateway is required to send an immediate response. "D" (Deferred) indicates the Responding Gateway is required to send a deferred response, see Section ITI TF-2b:3.55.6.2.
initialQuantity [0..1] QueryByParameter (INT)	Not supported, any value will be ignored by responder.
initialQuantityCode [0..1] QueryByParameter (CE) {CWE:QueryRequestLimit, default="RD"}	Not supported, any value will be ignored by responder.
MatchAlgorithm	This parameter conveys instructions to the Responding Gateway specifying the preferred matching algorithm to use and may be ignored
value [1..1] ParameterItem (ST)	The name of the algorithm
semanticsText [1..1] ParameterItem (ST){default= "MatchAlgorithm"}	
MinimumDegreeMatch	This parameter conveys instructions to the Responding Gateway specifying minimum degree of match to use in filtering results and may be ignored
value [1..1] ParameterItem (INT)	The numeric value of the degree of match. Shall be value between 0 and 100 .
semanticsText [1..1] ParameterItem (ST){default= "MinimumDegreeMatch"}	
LivingSubjectAdministrativeGender	This query parameter is a code representing the administrative gender of a person in a patient registry.
value [1..1] ParameterItem (CE) {CWE:AdministrativeGender}	
semanticsText [1..1] ParameterItem (ST){default= "LivingSubject.administrativeGender"}	
LivingSubjectBirthTime	This query parameter is the birth date of a living subject.
value [1..1]	A date or date range. This parameter can convey an exact

PRPA_HD201306IHE Patient Registry Query by Demographics	This HMD extract defines the message used to query a community for patients matching a set of demographics information. Derived from Figure 3.55.4.1.2-1 (PRPA_RM201306IHEXCPD)
ParameterItem (IVL<TS>)	moment (e.g., January 1, 1960 @ 03:00:00 EST), an approximate date (e.g., January 1960), or even a range of dates (e.g., December 1, 1959 through March 31, 1960).
semanticsText [1..1] ParameterItem (ST){default= "LivingSubject.birthTime"}	
LivingSubjectId	
value [1..*] (M) ParameterItem (II)	A patient identifier, used to assist in finding a match for the query and, when so designated by the Initiating Gateway, used by the Responding Gateway in a XCA Cross Gateway Query directed to the Community designated by the homeCommunityId value specified in the Control Act Wrapper – see ITI TF-2b: 3.55.4.1.2.4.
semanticsText [1..1] ParameterItem (ST){default= "LivingSubject.id"}	
LivingSubjectName	This query parameter is the name of a person. If multiple instances of LivingSubjectName are provided, the receiver must consider them as possible alternatives, logically connected with an "or".
value [1..1] ParameterItem (PN)	Only one instance of the value element is allowed. Only some of the name parts may be populated. If, for example, only the family and given name parts of a person's name are sent, then the query would match all persons with that family name and given name regardless of their initials. The use attribute of the value element shall not be set to "SRCH".
semanticsText [1..1] ParameterItem (ST){default= "LivingSubject.name"}	
PatientAddress	This query parameter is a postal address for corresponding with a patient
value [1..1] ParameterItem (AD)	
semanticsText [1..1] ParameterItem (ST){default= "Patient.addr"}	
LivingSubjectBirthPlaceAddress	This query parameter is a patient's birthplace represented as an address
value [1..*] ParameterItem (SET<AD>)	
semanticsText [1..1] ParameterItem (ST){default= "LivingSubject.BirthPlace.Addr"}	
LivingSubjectBirthPlaceName	This query parameter is a patient's birthplace represented as a place name
value [1..*] ParameterItem (SET<EN>)	

PRPA_HD201306IHE Patient Registry Query by Demographics	This HMD extract defines the message used to query a community for patients matching a set of demographics information. Derived from Figure 3.55.4.1.2-1 (PRPA_RM201306IHEXCPD)
semanticsText [1..1] ParameterItem (ST){default= "LivingSubject.BirthPlace.Place.Name"}	
PrincipalCareProviderId	This query parameter is the care provider identifier of a person who has been assigned as the principal care provider of this patient. The requestor may specify multiple PrincipalCareProviderId elements which responder shall consider as possible alternatives, logically connected with an "or".
value [1..1] ParameterItem (II)	There shall have only one id in the “value” attribute.
semanticsText [1..1] ParameterItem (ST){default= "AssignedProvider.id"}	
MothersMaidenName	This query parameter is the maiden name of a focal person's mother. It is included as a parameter because it is a common attribute for confirming the identity of persons in some registries. This parameter does not map to a single RIM attribute, instead, in RIM terms Mother's maiden name is the person name part of "family" with an EntityNamePartQualifier of "birth" for the person who is the player in a PersonalRelationship of type of "mother" to the focal person.
value [1..1] ParameterItem (PN)	A person name. In this case it may consist of only the given name part, the family name part, or both.
semanticsText [1..1] ParameterItem (ST){default= "Person.MothersMaidenName"}	
PatientTelecom	This query parameter is a telecommunications address for communicating with a living subject in the context of the target patient registry. It could be a telephone number, fax number or even an email address.
value [1..1] ParameterItem (TEL)	A telecommunications address. The scheme attribute specifies whether this is a telephone number, fax number, email address, etc.
semanticsText [1..1] ParameterItem (ST){default= "Patient.telecom"}	

3.55.4.1.2.3 Control Act and Transmission Wrappers

Please see ITI TF-2x: Appendix O for details on the IHE guidelines for implementing the wrappers. Table 3.55.4.1.2-2 contains the Transmission and Control Act wrappers used for this interaction, and the associated constraints.

Table 3.55.4.1.2-2: Wrappers and Constraints

Transmission Wrapper	Trigger Event Control Act Wrapper
MCCI_MT000100UV01 - Send Message Payload	QUQI_MT021001UV01 - Query Control Act Request : Query By Parameter
The value of interactionId shall be set to PRPA_IN201305UV02 The value of processingModeCode shall be set to T The acceptAckCode shall be set to AL There shall be only one receiver Device	The value of ControlActProcess.moodCode shall be set to EVN The trigger event code in ControlActProcess.code shall be set to PRPA_TE201305UV02 If an authorOrPerformer participation is present, the value of authorOrPerformer.typeCode SHALL be set to AUT

The composite message schemas which describe the full payload of this interaction, including the wrappers, can be found online on the IHE FTP site, see ITI TF-2x: Appendix W (the schemas from the HL7 V3 2008 Normative Edition can be found at:

Edition2008/processable/multicacheschemas/PRPA_IN201305UV02.xsd)

3.55.4.1.2.4 Values used by Responding Gateway for a reverse Cross Gateway Query

The Initiating Gateway shall specify two values in the request which allow the responding community to generate a reverse Cross Gateway Query in search of data about the patient identified in the Cross Gateway Patient Discovery request. The two values are homeCommunityId and community patient id assigning authority.

homeCommunityId – this value is a globally unique identifier for a community – further defined in ITI TF-2b: 3.38.4.1.2.1. The Initiating Gateway shall specify this value in the Cross Gateway Patient Discovery request unless the Initiating Gateway is not grouped with a Responding Gateway.

The Responding Gateway uses the homeCommunityId to obtain the Web Services endpoint of services that provide access to data in the Initiating Gateway's community. The Responding Gateway may also use the specified value as an entry in its response to a Patient Location Query transaction.

The homeCommunityId is specified as the id element within the Organization associated with the device of the sender. The id element designating the homeCommunityId shall have only the root element the contents of which is the homeCommunityId.

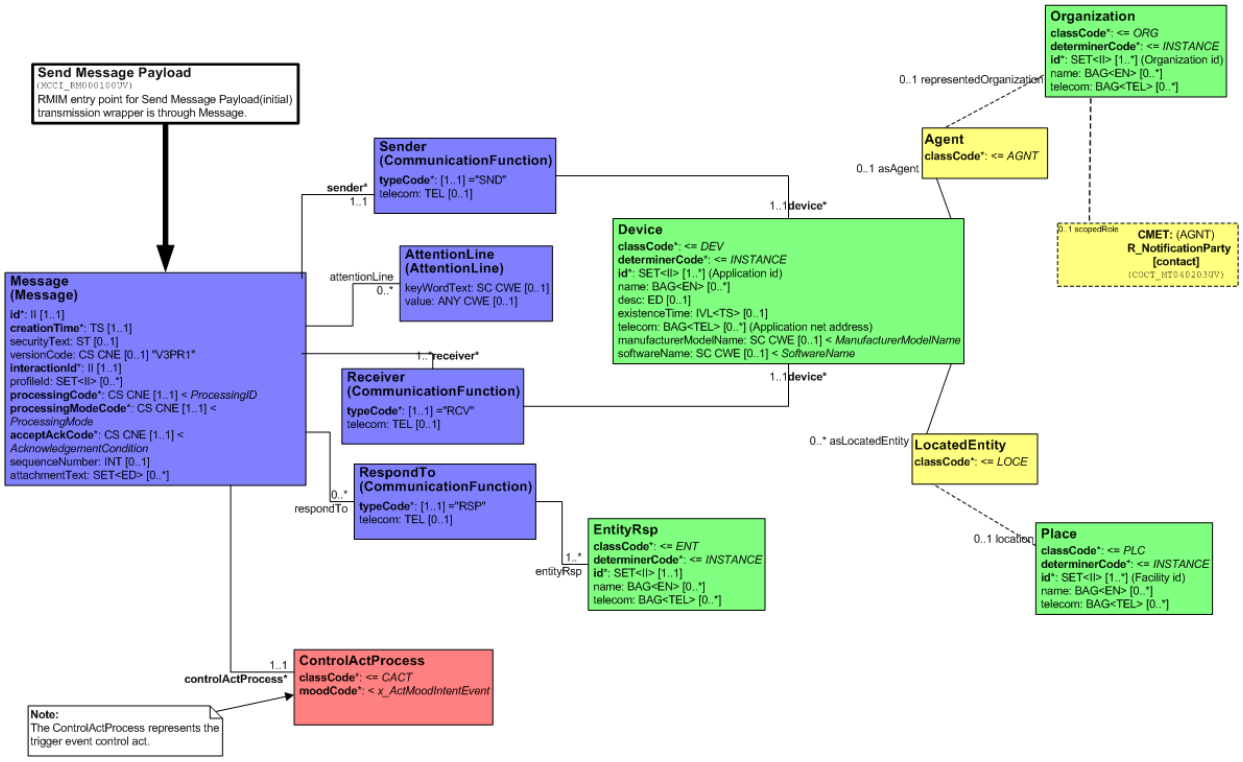


Figure 3.55.4.1.2.4-1: Send Message Payload

An example of specifying the homeCommunityId element follows, where homeCommunityId=1.2.3.

```
    <sender typeCode="SND">
        <device classCode="DEV" determinerCode="INSTANCE">
            <id root="1.2.840.114350.1.13.999.567"/>
            <asAgent classCode="AGNT">
               <representedOrganization classCode="ORG" determinerCode="INSTANCE">
                      <!-- homeCommunityId=urn:oid:1.2.3 -->
                       <id root="1.2.3"/>
               </representedOrganization>
            </asAgent>
        </device>
    </sender>
```

Community patient id assigning authority – this value designates the assigning authority for the patient identifier to be used within a reverse Cross Gateway Query. This value is not the assigning authority for all patient identifiers used by that community, but only the patient identifier used for the patient identified in the query. The Initiating Gateway shall be capable of specifying this value in the Cross Gateway Patient Discovery request.

The Responding Gateway may use the specified assigning authority to identify which of the LivingSubjectID values to use in a reverse Cross Gateway Query. The Responding Gateway may also use the identified LivingSubjectID value as an entry in its response to a Patient Location Query transaction.

The community patient id assigning authority is specified as the id element within the assignedDevice associated with the authorOrPerformer element. The id element designating the community patient id assigning authority shall have only the root element, the contents of which designate the assigning authority of the LivingSubjectId to be used in the reverse Cross Gateway Query.

An example of specifying the community patient id assigning authority element follows, where the assigning authority specified is 1.2.840.114350.1.13.99997.2.3412 (see highlighted text) which identifies the first LivingSubjectID (root="1.2.840.114350.1.13.99997.2.3412" extension="1234") as the patient identifier to be used in a reverse Cross Gateway Query. In essence, the highlighted text must match to designate the patient identifier.

```
<controlActProcess  classCode="CACT" moodCode="EVN">
    <code code="PRPA_TE201305UV02" codeSystem="2.16.840.1.113883.1.6"/>
    <!-- Identifies the first LivingSubjectID in the parameterList as the patient
         Identifier to be used by responder in a reverse Cross Gateway Query -->
    <authorOrPerformer typeCode="AUT">
           <assignedDevice>
                  <id root="1.2.840.114350.1.13.99997.2.3412"/>
           </assignedDevice>
    </authorOrPerformer>

    <queryByParameter>
        <queryId root="1.2.840.114350.1.13.28.1.18.5.999" extension="18204"/>
        <statusCode code="new"/>
        <parameterList>
            <livingSubjectBirthTime>
               <value value="19630804"/>
               <semanticsText>LivingSubject..birthTime</semanticsText>
            </livingSubjectBirthTime>
            <livingSubjectName>
                <value>
                    <given>Jimmy</given>
                    <family>Jones</family>
                </value>
                <semanticsText>LivingSubject.name</semanticsText>
            </livingSubjectName>
            <LivingSubjectId>
              <value root="1.2.840.114350.1.13.99997.2.3412" extension="1234"/>
              <semanticsText>LivingSubject.id</semanticsText>
            </LivingSubjectId>
            <LivingSubjectId>
```



```
                    <value root="2.16.840.1.113883.4.1" extension="58910"/>
                    <semanticsText>LivingSubject.id</semanticsText>
                </LivingSubjectId>
            </parameterList>
        </queryByParameter>
    </controlActProcess>
```

Comparison of homeCommunityId and assigning authority

The value of homeCommunityId is an OID which may, or may not, also be an assigning authority. An assigning authority is designated by an OID and issues identifiers, in this case patient identifiers. A community's patient identifier assigning authority issues patient identifiers for patients managed by the community. It is possible for there to be more than one patient identifier assigning authority in a community. The Initiating Gateway must specify the right patient identifier assigning authority for the patient being described. There is only one homeCommunityId per community. This OID may also be used by the community as the patient identifier assigning authority, but this is not required and should not be expected. While both values are OID's they have no necessary relationship. In general it is expected that the homeCommunityId will be assigned by an organization which governs the interaction among communities. In many countries this will be facilitated by the government who will manage the community level agreements necessary for sharing and also assign homeCommunityIds. An assigning authority has no expected level of management, and there may be multiple patient identifier assigning authorities within a community.

3.55.4.1.3 Expected Actions

If responsePriorityCode is "I" the Responding Gateway shall return a Find Candidates Response message as specified in ITI TF-2b: 3.55.4.2. The response message uses the Application Acknowledgement transmission wrapper, as specified in ITI TF-2x: O.1.3, and no other acknowledgments are part of this the transaction.

If responsePriorityCode is "D" and the Responding Gateway does not support the Deferred Response Option, it shall return an application error in the HL7 V3 Accept Acknowledgement with acknowledgeDetail to indicate Unsupported Processing Mode.

```
<MCCI_IN000002UV01 …
        ( . . . )
    <acknowledgement>
        <typeCode code="AE"/>
        <targetMessage>
            <id root="22a0f9e0-4454-11dc-a6be-3603d6866807"/>
        </targetMessage>
        <acknowledgementDetail typeCode="E">
            <code code="NS250" displayName="Unsupported processing mode"/>
            <text>Deferred Response not supported.</text>
```



```
        </acknowledgementDetail>
    </acknowledgement>
</MCCI_IN000002UV01>
```

If the Responding Gateway supports the Deferred Response Option, it shall respond as described in ITI TF-2b:3.55.6.2.

If the Responding Gateway is unable to process the request due to an internal error, such as the local Master Patient Index system is offline, the Responding Gateway shall return an application error as described in TF-2b:3.55.4.2.3 Case 5.

The community associated with the Responding Gateway may make use of the homeCommunityId and community patient identifier assigning authority by initiating a Cross Gateway Query and/or saving the information for use in a Patient Location Query response. See ITI TF-2b: 3.55.4.1.2.4 for more information. This provisioning of the Responding Gateway community may be cached indefinitely, but efforts are needed to ensure that changes are properly reflected. For more detail about this issue refer to ITI TF-2b: 3.55.4.2.3.1 and the Revoke Message.

The Responding Gateway shall indicate in the response to the Cross Gateway Patient Discovery transaction whether it is acting as a Health Data Locator for this patient. See section 3.55.4.2.2 for more information.

3.55.4.1.3.1 Query Parameter Processing

The Responding Gateway Actor shall be capable of accepting, searching on, and responding with attributes in the Query Person by Demographics message.

Handling of phonetic issues, alternate spellings, upper and lower case, accented characters, etc., if deemed appropriate, is to be supported by the Responding Gateway rather than by the Initiating Gateway. The Responding Gateway shall return any matches to the query parameters that reflect a high degree of match, after consideration of all policy constraints; IHE does not further specify matching requirements, except as already discussed in the LivingSubjectName parameter description.

3.55.4.2 Cross Gateway Patient Discovery Response

The Cross Gateway Patient Discovery Response is implemented using the HL7 Patient Registry Find Candidates Response PRPA_MT201310UV02) message.

3.55.4.2.1 Trigger Events

The Patient Registry Find Candidates Response message (PRPA_MT201310UV02) is sent by the Responding Gateway Actor in response to the query (PRPA_MT201306UV02) message previously received.

3.55.4.2.2 Message Semantics

The components of the message with cardinality greater than 0 (as shown below) are required, and the detailed description of the message is provided in ITI TF-2b: 3.55.4.2.2.1 to 3.55.4.2.2.7. All other attributes of the message are optional.

For each element that is required this means that it shall be provided by Responding Gateway, unless not available, and shall be accepted by requestor but requestor is not required to process the value in any way, only accept it without any error.

The Responding Gateway shall support Asynchronous Web Services Exchange as described in ITI TF-2x: V.5, Synchronous and Asynchronous Web Services Exchange. If the Initiating Gateway declares the Asynchronous Web Services Exchange Option it shall also support Asynchronous Web Services Exchange as described in ITI TF-2x: V.5. Use of Asynchronous Web Services Exchange is necessary when transactions scale to large numbers of communities because it allows for more efficient handling of latency and scale.

The Responding Gateway may specify a duration value in the SOAP Header element of the request. This value suggests to the Initiating Gateway a length of time that the Responding Gateway recommends caching any correlation resulting from the interaction. The duration value is specified in the SOAP Header using the CorrelationTimeToLive element and contains a value conformant with the xs:duration type defined in http://www.w3.org/TR/xmlschema-2/#duration. If no CorrelationTimeToLive element is specified in the SOAP Header the Initiating Gateway shall interpret this as a recommendation against caching, unless a mutually agreed policy states otherwise. Mutually agreed policies may also be used to bind a Responding Gateway to a specific timeframe for use of the Revoke message.

An example of specifying the CorrelationTimeToLive element follows, which recommends caching of 7 days.

```
<xcpd:CorrelationTimeToLive>P0Y0M7D</xcpd:CorrelationTimeToLive>
```

3.55.4.2.2.1 Major Components of the Patient Registry Find Candidates Response Message

This message shares all the major components of the Patient Activate/Revise messages, as described in ITI TF-2b: 3.44.4.1.2.1. The only additional component is the QueryMatchObservation class.

Query Match Observation

The `QueryMatchObservation` class is used to convey information about the quality of the match for each record returned by the query response.

3.55.4.2.2.2 Message Information Model of the Patient Registry Find Candidates Response Message

Below is the Message Information Model for the Patient Registry Find Candidates Response message, as restricted for this transaction. The purpose of the model is to describe the data elements relevant for this transaction. It is a strict common subset of the Patient Registry Find Candidates Response (PRPA_RM201310UV02) RMIM.

The base RMIM can be found on the HL7 V3 2008 Edition CD at Edition2008/domains/uvpa/editable/PRPA_RM201310UV.htm. The following restrictions were made on the original RMIMs to arrive at the restricted model:

- The focal entity choice is restricted to be only a person
- The relationship holder of the personal relationship is restricted to be a person (using CMET COCT_MT030207UV)
- The following roles are omitted:
  - asPatientOfOtherProvider
  - guarantor
  - guardian
  - contactParty
  - asMember
  - careGiver
  - asStudent

The following participations are omitted:

- subjectOf2 (administrativeObservation)
- coveredPartyOf (coverage)

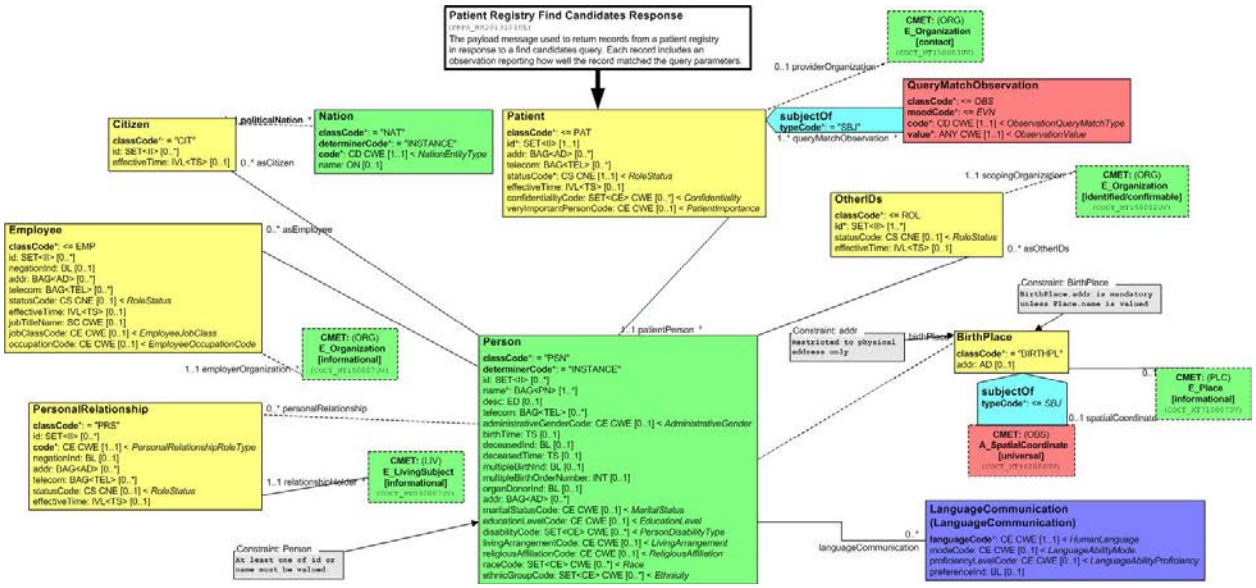


Figure 3.55.4.2.2-1: Patient Registry Find Candidates Response Message

The attributes of this model are described in the following table. Note that CMETs are not discussed, as the HL7 definitions for them are being used.

1055 **Table 3.55.4.2.2-1:**

PRPA_HD201310IHE Patient Registry Find Candidates Response	This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.55.4.2.2-1 (PRPA_RM201310IHE)
Patient	The primary record for the focal person
classCode [1..1] (M) Patient (CS) {CNE:PAT}	Structural attribute; this is a "patient" role
id [1..1] (M) Patient (SET<II>)	The Patient Identifier to be used in subsequent XCA Cross Gateway Query transactions related to this patient when sent to the Responding Gateway sending the response. All other patient identifiers shall be specified in the OtherIDs.id attribute.
statusCode [1..1] Patient (CS) {CNE:active, fixed value= "active"}	A value specifying the state of this record in a patient registry (based on the RIM role class state-machine). This record is active.
confidentialityCode [0..*] Patient (SET<CE>) {CWE:Confidentiality}	Value(s) that control the disclosure of information about this living subject as a patient
veryImportantPersonCode [0..1] Patient (CE) {CWE:PatientImportance}	A code specifying the patient's special status granted by the scoper organization, often resulting in preferred treatment and special considerations. Examples include board member, diplomat.
Person	A subtype of LivingSubject representing a human being Either Person.name or Patient.id must be non-null
classCode [1..1] (M) Person (CS) {CNE:PSN, fixed value= "PSN"}	Structural attribute; this is a "person" entity

PRPA_HD201310IHE Patient Registry Find Candidates Response	This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.55.4.2.2-1 (PRPA_RM201310IHE)
determinerCode [1..1] (M) Person (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific person
name [1..*] Person (BAG<PN>)	Name(s) for this person. May be null i.e., <name nullFlavor=”NA”/> only if the request contained only a patient identifier and no demographic data.
telecom [0..*] Person (BAG<TEL>)	Telecommunication address(es) for communicating with this person
administrativeGenderCode [0..1] Person (CE) {CWE:AdministrativeGender}	A value representing the gender (sex) of this person. Note: this attribute does not include terms related to clinical gender which is a complex physiological, genetic and sociological concept that requires multiple observations in order to be comprehensively described.
birthTime [0..1] Person (TS)	The date and time this person was born
birthPlace	
deceasedInd [0..1] Person (BL)	An indication that this person is dead
deceasedTime [0..1] Person (TS)	The date and time this person died
multipleBirthInd [0..1] Person (BL)	An indication that this person was part of a multiple birth
multipleBirthOrderNumber [0..1] Person (INT)	The order in which this person was born if part of a multiple birth
addr [0..*] Person (BAG<AD>)	Address(es) for corresponding with this person
maritalStatusCode [0..1] Person (CE) {CWE:MaritalStatus}	A value representing the domestic partnership status of this person
religiousAffiliationCode [0..1] Person (CE) {CWE:ReligiousAffiliation}	A value representing the primary religious preference of this person
raceCode [0..*] Person (SET<CE>) {CWE:Race}	A set of values representing the races of this person
ethnicGroupCode [0..*] Person (SET<CE>) {CWE:Ethnicity}	A set of values representing the ethnic groups of this person
OtherIDs	Used to capture additional identifiers for the person such as a Drivers’ license or Social Security Number.
classCode [1..1] (M) Role (CS) {CNE:ROL}	Structural attribute. This can be any specialization of "role" except for Citizen, or Employee.,
id [1..*] (M)	One or more identifiers issued to the focal person by the associated

PRPA_HD201310IHE Patient Registry Find Candidates Response	This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.55.4.2.2-1 (PRPA_RM201310IHE)
Role (SET<II>)	scopingOrganization (e.g., identifiers from a different Patient Identity Domain).
PersonalRelationship	A personal relationship between the focal living subject and another living subject
classCode [1..1] (M) Role (CS) {CNE:PRS, fixed value= "PRS"}	Structural attribute; this is a "personal relationship" role
id [0..*] Role (SET<II>)	Identifier(s) for this personal relationship
code [1..1] (M) Role (CE) {CWE:PersonalRelationshipRoleType}	A required value specifying the type of personal relationship between the relationshipHolder and the scoping living subject drawn from the PersonalRelationshipRoleType domain, for example, spouse, parent, unrelated friend
Citizen	Used to capture person information relating to citizenship.
classCode [1..1] (M) Role (CS) {CNE:CIT, fixed value= "CIT"}	Structural attribute; this is a "citizen" role
id [0..*] Role (SET<II>)	Identifier(s) for the focal person as a citizen of a nation
Nation	A politically organized body of people bonded by territory and known as a nation.
classCode [1..1] (M) Organization (CS) {CNE:NAT, fixed value= "NAT"}	Structural attribute; this is a 'nation' type of entity
determinerCode [1..1] (M) Organization (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific entity
code [1..1] (M) Organization (CD) {CWE:NationEntityType}	A value that identifies a nation state
name [0..1] Organization (ON)	A non-unique textual identifier or moniker for this nation
Employee	A relationship of the focal person with an organization to receive wages or salary. The purpose of this class is to identify the type of relationship the employee has to the employer rather than the nature of the work actually performed. For example, it can be used to capture whether the person is a Military Veteran or not..
classCode [1..1] (M) Employee (CS) {CNE:EMP}	Structural attribute; this is an "employee" role
statusCode [0..1] Employee (CS) {CNE:RoleStatus}	A value specifying the state of this employment relationship (based on the RIM Role class state-machine), for example, active, suspended, terminated.
occupationCode [0..1] Employee (CE) {CWE:EmployeeOccupationCode}	A code qualifying the classification of kind-of-work based upon a recognized industry or jurisdictional standard. OccupationCode is used to convey the person's occupation as opposed to jobClassCode (not used in this transaction) which characterizes

PRPA_HD201310IHE Patient Registry Find Candidates Response	This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.55.4.2.2-1 (PRPA_RM201310IHE)
	this particular job. For example, it can be used to capture whether the person is a Military Veteran or not.
LanguageCommunication	A language communication capability of the focal person
languageCode [1..1] (M) LanguageCommunication (CE) {CWE:HumanLanguage}	A value representing a language for which the focal person has some level of proficiency for written or spoken communication. Examples: Spanish, Italian, German, English, American Sign
preferenceInd [0..1] LanguageCommunication (BL)	An indicator specifying whether or not this language is preferred by the focal person for the associated mode
QueryMatchObservation	Used to convey information about the quality of the match for each record.
classCode [1..1] (M) Observation (CS) {CNE:, default= "OBS"}	Structural attribute – this is an observation
moodCode [1..1] (M) Observation (CS) {CNE:, default= "EVN"}	Structural attribute – this is an event
code [1..1] (M) Observation (CD) {CWE:QueryMatchObservationType}	A code, identifying this observation as a query match observation.
value [1..1] (M) QueryMatchObservation (INT)	A numeric value indicating the quality of match for this record. It shall correspond to the MinimumDegreeMatch.value attribute of the original query, and it shall have the same meaning (e.g., percentage, indicating confidence in the match).

3.55.4.2.2.3 Control Act and Transmission Wrappers

Please see ITI TF-2X: Appendix O for details on the IHE guidelines for implementing the wrappers. Table 3.44.4.1.2-2 contains the Transmission and Control Act wrappers used for this interaction, and the associated constraints.

Table 3.55.4.4.2-2: Wrappers and Constraints

Transmission Wrapper	Trigger Event Control Act Wrapper
MCCI_MT000300UV01 – Send Application Acknowledgement	MFMI_MT700711UV01 – Master File/Registry Query Response Control Act (Role Subject)
The value of interactionId shall be set to PRPA_IN201306UV02 The value of processingModeCode shall be set to T The acceptAckCode shall be set to NE There shall be only one receiver Device	The value of ControlActProcess.moodCode shall be set to EVN The trigger event code in ControlActProcess.code shall be set to PRPA_TE201306UV02 There shall be zero or more RegistrationEvents present in this message. For each matching record returned, there shall be exactly one RegistrationEvent present in this message. If a RegistrationEvent is part of the message, there shall be

Transmission Wrapper	Trigger Event Control Act Wrapper
	exactly one Patient role present in the payload. There shall be no replacementOf act-relationship present in this message The QueryAck.resultTotalQuantity, QueryAck.resultCurrentQuantity, and QueryAck.resultRemainingQuantity attributes shall not be populated. There shall be a QueryByParameter copy of the original query which shall be in the control act wrapper following the queryAck element.

The composite message schemas which describe the full payload of this interaction, including the wrappers, can be found online on the IHE FTP site, see Appendix W (the schemas from the HL7 V3 2008 Normative Edition can be found at:

Edition2008/processable/multicacheschemas/PRPA_IN201306UV02.xsd).

3.55.4.2.2.4 Specifying homeCommunityId in Response

The homeCommunityId is a globally unique identifier for a community – further defined in ITI TF-2b: 3.38.4.1.2.1. The Responding Gateway shall specify this value within every RegistrationEvent element in the Cross Gateway Patient Discovery response.

The Responding Gateway may specify the same homeCommunityId in every RegistrationEvent, or may specify different homeCommunityId's. The Initiating Gateway shall interpret multiple RegistrationEvents as follows:

- Multiple RegistrationEvents with the same homeCommunityId represent multiple matches within the homeCommunityId identified community. The Initiating Gateway may choose one of the matches to use for subsequent processing.
- Each set of RegistrationEvents with the same homeComunityId represents a different possible source for documents, so in order to get the complete list of relevant documents for the patient, the Initiating Gateway shall select at least one RegistrationEvent from each set with the same homeCommunityId and use the resulting collection of patient identifiers for subsequent processing. See ITI TF-1: 27.3.2.2 for an introduction to this environment.

The homeCommunityId is specified as the id element within the assignedEntity of the custodian of the RegistrationEvent. The id element designating the homeCommunityId shall have only the root element, the contents of which is the homeCommunityId.

The following example shows part of a response specifying a homeCommunityId value of urn:oid:1.2.840.114350.1.13.99998.8734.

```
<subject typeCode="SUBJ">
    <registrationEvent classCode="REG" moodCode="EVN">
```

```
            <id nullFlavor="NA"/>
            <statusCode code="active"/>
            <subject1 typeCode="SBJ">
                …  (details of the matching patient)
            </subject1>
            <custodian typeCode="CST">
                <assignedEntity classCode="ASSIGNED">
                    <id root="1.2.840.114350.1.13.99998.8734"/>
                   <code code="SupportsHealthDataLocator"
                         codeSystem="1.3.6.1.4.1.19376.1.2.27.2"/>
                </assignedEntity>
            </custodian>
        </registrationEvent>
    </subject>
```

3.55.4.2.2.5 Specifying support as a Health Data Locator

The Responding Gateway shall specify its support for this patient as a Health Data Locator. This specification is a coded value within the assignedEntity of the custodian of the RegistrationEvent. The valid codes for this designation are described in Table 3.55.4.4.2-3. The codeSystem for these code elements is 1.3.6.1.4.1.19376.1.2.27.2.

If the response contains multiple RegistrationEvent elements with different homeCommunityId values this indicates that there may be multiple Health Data Locators operating within the community. To access all locations for the patient the Initiating Gateway is encouraged to send multiple Patient Location Query transactions, one for each RegistrationEvent with a unique homeCommunityId and declaring SupportsHealthDataLocator.

Table 3.55.4.4.2-3: Coded values for codeSystem=1.3.6.1.4.1.19376.1.2.27.2

Value for code	Meaning of code
SupportsHealthDataLocator	This community maintains location information about this patient and makes it available to other communities via the Patient Location Query transaction.
NotHealthDataLocator	This community does not maintain externally available location information about this patient and will respond with no data to a Patient Location Query transaction related to this patient.

The following example shows part of a response specifying support for Health Data Locator:

```
    <subject typeCode="SUBJ">
        <registrationEvent classCode="REG" moodCode="EVN">
            <id nullFlavor="NA"/>
            <statusCode code="active"/>
            <subject1 typeCode="SBJ">
                …  (details of the matching patient)
            </subject1>
```



```
            <custodian typeCode="CST">
                <assignedEntity classCode="ASSIGNED">
                    <id root="1.2.840.114350.1.13.99998.8734"/>
                   <code code="SupportsHealthDataLocator"
                         codeSystem="1.3.6.1.4.1.19376.1.2.27.2"/>
                </assignedEntity>
            </custodian>
        </registrationEvent>
    </subject>
```

3.55.4.2.2.6 Special handling for more attributes requested

The Responding Gateway has the option of informing the Initiating Gateway when additional demographic attributes may result in a match. This would most often be used in cases where the security and privacy policies do not allow release of patient data unless and until there is a level of assurance that the same patient is referenced. In this case the Responding Gateway cannot return a matching patient or patients because the level of assurance is not great enough. If the Initiating Gateway were able to specify further demographic attributes the Responding Gateway might have greater assurance of the match and thus be able to return the match information.

To indicate this situation in its response the Responding Gateway codes a DetectedIssueEvent within the controlActProcess element, where the code in the actOrderRequired element references one of the coded elements described in Table 3.55.4.4.2-4. There may be as many triggerFor elements, each of them containing an ActOrderRequired element, as needed to code the attributes which would increase the assurance of the match. The codeSystem for these code elements is 1.3.6.1.4.1.19376.1.2.27.1.

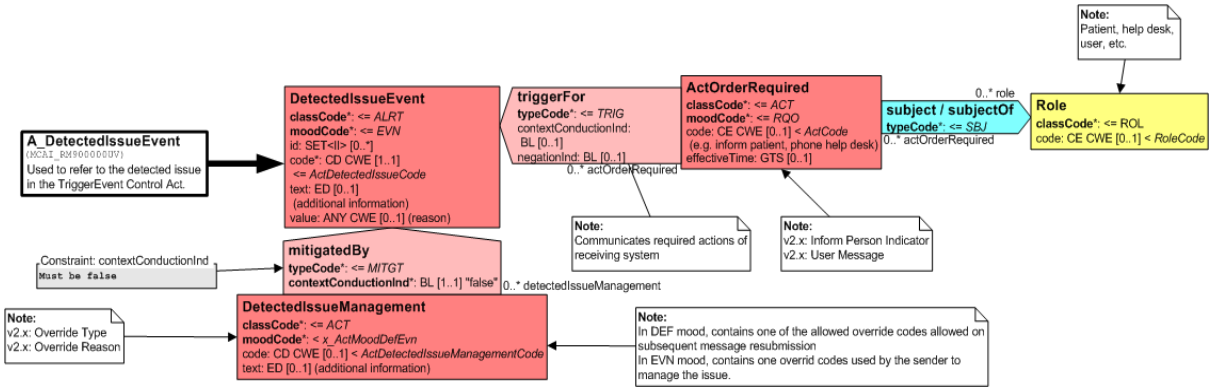


Figure 3.55.4.2.2-2: RMIM for DetectedIssueEvent

Table 3.55.4.4.2-4: Coded values for codeSystem=1.3.6.1.4.1.19376.1.2.27.1

Value for code	Meaning of code
LivingSubjectAdministrativeGenderRequested	Requests the LivingSubjectAdministrativeGender attribute be specified
PatientAddressRequested	Requests the PatientAddress attribute be specified

Value for code	Meaning of code
PatientTelecomRequested	Requests the PatientTelecom attribute be specified
LivingSubjectBirthPlaceNameRequested	Requests the LivingSubjectBirthPlaceName attribute be specified
LivingSubjectBirthPlaceAddressRequested	Requests the LivingSubjectBirthPlaceAddress attribute be specified
MothersMaidenNameRequested	Requests the MothersMaidenName attribute be specified

The following example shows part of a response requesting the PatientAddress and PatientTelecom attributes.

```
<detectedIssueEvent classCode="ALRT" moodCode="EVN">
  <code code="ActAdministrativeDetectedIssueCode" codeSystem="2.16.840.1.113883.5.4"/>
  <triggerFor typeCode="TRIG">
    <actOrderRequired classCode="ACT" moodCode="RQO">
       <code code="PatientAddressRequested" codeSystem="1.3.6.1.4.1.19376.1.2.27.1"/>
    </actOrderRequired>
  </triggerFor>
  <triggerFor typeCode="TRIG">
    <actOrderRequired classCode="ACT" moodCode="RQO">
      <code code="PatientTelecomRequested" codeSystem="1.3.6.1.4.1.19376.1.2.27.1"/>
    </actOrderRequired>
  </triggerFor>
</detectedIssueEvent>
```

3.55.4.2.2.7 Specify details about problems handling request

The Responding Gateway has the option of informing the Initiating Gateway with some detail regarding a problem handling the request.

The Responding Gateway may code a DetectedIssueEvent within the controlActProcess element, where the code in the detectedIssueManagement element references one of the coded elements described in Table 3.55.4.4.2-5. The codeSystem for these code elements is 1.3.6.1.4.1.19376.1.2.27.3.

Table 3.55.4.4.2-5: Coded values for codeSystem=1.3.6.1.4.1.19376.1.2.27.3

Value for code	Meaning of code
ResponderBusy	The responder was not able to process the request because it is currently overloaded.
AnswerNotAvailable	The answer is not available. Human intervention may be needed.
InternalError	The responder was not able to respond due to an internal error or inconsistency.

The following example shows part of a response specifying that the responder is busy.

```
<detectedIssueEvent classCode="ALRT" moodCode="EVN">
  <code code="ActAdministrativeDetectedIssueCode" codeSystem="2.16.840.1.113883.5.4"/>
  <mitigatedBy typeCode="MITGT">
```

```
    <detectedIssueManagement classCode="ACT" moodCode="EVN">
       <code code="ResponderBusy" codeSystem="1.3.6.1.4.1.19376.1.2.27.3"/>
    </detectedIssueManagement>
  </mitigatedBy>
</detectedIssueEvent>
```

3.55.4.2.3 Expected Actions

The Initiating Gateway shall accept a SOAP fault representing a transmission error. An internal error in the Responding Gateway is covered under Case 5. The Initiating Gateway Actor shall act on a valid query response as described by the following 5 cases:

Case 1: The Responding Gateway Actor finds exactly one patient record matching the criteria sent in the query parameters.

AA (application accept) is returned in Acknowledgement.typeCode (transmission wrapper).

OK (data found, no errors) is returned in QueryAck.queryResponseCode (control act wrapper)

One RegistrationEvent (and the associated Patient role, subject of that event) is returned from the patient information source for the patient record found. The community associated with the Initiating Gateway may use the patient demographics and identifiers to: a) run an independent matching algorithm to ensure the quality of the match b) use the designated patient identifier in a Cross Gateway Query to get information about records related to the patient c) cache the correlation for future use (see ITI TF-2b: 3.55.4.2.3.1 for more information about caching) d) use a Patient Location Query transaction to get a list of patient data locations.

Case 2: The Responding Gateway Actor finds more than one patient close to matching the criteria sent in the query parameters and the policy allows returning multiple.

AA (application accept) is returned in Acknowledgement.typeCode (transmission wrapper).

OK (data found, no errors) is returned in QueryAck.queryResponseCode (control act wrapper)

One RegistrationEvent (and the associated Patient role, subject of that event) is returned for each patient record found. The community associated with the Initiating Gateway may run its own matching algorithm to select from the list of returned patients. If a correlation is found the Responding Gateway may continue as if only one entry had been returned. If a correlation is still not clear it is expected that human intervention is required, depending on the policies of the Initiating Gateway's community.

Case 3: The Responding Gateway Actor finds more than one patient close to matching the criteria sent in the query parameters but no matches close enough for the necessary assurance level and more attributes might allow the Responding Gateway to return a match.

AA (application accept) is returned in Acknowledgement.typeCode (transmission wrapper).

OK (data found, no errors) is returned in QueryAck.queryResponseCode (control act wrapper)

No RegistrationEvent is returned in the response, but the Responding Gateway provides a suggestion in terms of demographics that may help identify a match. The mechanism for specifying the suggestion is detailed in ITI TF-2b: 3.55.4.2.2.6 for description of coding of the response. The Initiating Gateway may use this feedback to initiate a new Cross Gateway Patient Discovery request including the requested additional attributes.

Case 4: The Responding Gateway Actor finds no patients anywhere close to matching the criteria sent in the query parameters.

AA (application accept) is returned in Acknowledgement.typeCode (transmission wrapper).

NF (data found, no errors) is returned in QueryAck.queryResponseCode (control act wrapper)

There is no RegistrationEvent returned in the response. The Initiating Gateway can assume this patient has no healthcare information held by the community represented by the Responding Gateway. This lack of correlation may be cached, see ITI TF-2b: 3.55.4.2.3.1 for more information about caching.

Case 5: The Responding Gateway Actor is unable to satisfy the request. This may be because the request came synchronously and an asynchronous request may be feasible, or because the Responding Gateway Actor is overloaded with other requests and does not expect to answer for a significant period of time. It may also be that the Responding Gateway may need some manual configuration update to authorize responder or another error occurred while the Responding Gateway Actor was processing the message payload.

AE (application error) is returned in Acknowledgement.typeCode (transmission wrapper).

AE (application error) is returned in QueryAck.queryResponseCode (control act wrapper)

There is no RegistrationEvent returned in the response. See ITI TF-2b: 3.55.4.2.2.7 for more information about coding errors for this case.

3.55.4.2.3.1 Caching (Informative)

This section presents some considerations regarding caching of information learned through the Cross Gateway Patient Discovery transaction. There are no requirements regarding caching of the information, as this is a complex issue and must be addressed as part of deployment. The caching resulting from receiving and responding to the query is not updating any local information but only saving a record in a cache if so desired.

Both the requesting and responding side of the Cross Gateway Patient Discovery transaction gain knowledge through this transaction. That knowledge may be used immediately, by sending a Patient Location Query or Cross Gateway Query transaction, or may be cached for use at some other time (or both). This section addresses caching considerations when the Cross Gateway Patient Discovery transaction is used in the Demographic Query and Feed mode. Other modes are a simplification of this mode with corresponding simplifications of the considerations presented.

The knowledge gained on both sides can be represented as a tuple:

1. LocalPid – Local patient identifier and demographics associated with that identifier
2. ExternalCommunityId – The homeCommunityId of another community.
3. ExternalPid – The patient identifier for the same patient as LocalPid within the community identified by ExternalCommunityId. This identifier also has associated demographics

For the Initiating Gateway the ExternalPid may be null indicating that the community represented by ExternalCommunityId has no correlating patient identifier available.

The tuple represents a correlation, or lack thereof, of patients in a pair of communities. The validity of this correlation may degrade over time, as changes in demographics, merge/link events and new patient registrations affect the correlation.

Local changes in demographics, merge/link

When a local change in demographics or a merge/link event affects the LocalPid, the community may initiate a Cross Gateway Patient Discovery request to validate the correlation or use the Revoke message to remove any correlation previously identified.

External changes in demographics, merge/link

When an external change in demographics or merge/link event occurs, the external community may initiate a Cross Gateway Patient Discovery request which, when received, can be used to re-assess the correlation and adjust accordingly. Alternately, the external community may initiate a Revoke. If the external community chooses not to initiate a Cross Gateway Patient Discovery request or Revoke the local community cannot know about changes. Mutually agreed policies for use of the CorrelationTimeToLive SOAP header may enable greater assurance that changes are reflected when needed.

New patient registrations

When the Initiating Gateway's community discovers the lack of correlation to its local patient (ExternalPid null) it may monitor incoming Cross Gateway Patient Discovery transactions in order to discover later if that patient has arrived in the Responding Gateway's community.

3.55.4.3 Revoke Message

The Revoke Message is implemented using the HL7 Patient Registry Record Nullified (PRPA_IN201303UV02) message.

3.55.4.3.1 Trigger Events

The initiating community has cached a correlation between a local patient identifier and an external patient identifier. A significant change has occurred related to the local identifier which suggests that the cached correlation may no longer be valid. The Initiating Gateway sends this

message to notify the responding community that the previously identified correlation may no longer be valid.

3.55.4.3.2 Message Semantics

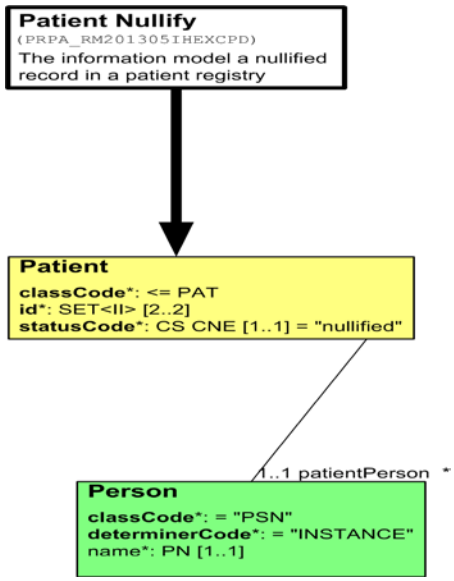
The Responding Gateway shall support Asynchronous Web Services Exchange as described in ITI TF-2x: V.5, Synchronous and Asynchronous Web Services Exchange. If the Initiating Gateway declares the Asynchronous Web Services Exchange Option it shall also support Asynchronous Web Services Exchange as described in ITI TF-2x: V.5. Use of Asynchronous Web Services Exchange is necessary when transactions scale to large numbers of communities because it allows for more efficient handling of latency and scale.

3.55.4.3.2.1 Message Information Model of the Patient Nullify Message

Below is the Message Information Model for the Patient Nullify message, as restricted for this transaction. The purpose of the model is to describe the data elements relevant for this transaction. It is a strict common subset of the Patient Nullify Message (PRPA_RM201305UV) RMIM.

The base RMIM can be found on the HL7 V3 2008 Edition CD at: Edition2008/domains/uvpa/editable/PRPA_RM201305UV.htm. The following restrictions were made on the original RMIMs to arrive at the restricted model:

- The focal entity choice is restricted to be only a person
- The Patient shall have exactly two patient identifiers
- Person.name shall be null and all other optional elements shall be omitted, i.e.,:
    - administrativeGender
    - birthTime
    - birthplace



1310 **Figure 3.55.4.3-1: Patient Nullify Message**

The attributes of this model are described in the following table. Note that CMETs are not discussed, as the HL7 definitions for them are being used.

PRPA_HD201305IHE Patient Registry Record Nullified	This HMD extract defines the message used to ... Derived from Figure 3.55.4.3-1 (PRPA_RM201305IHEXCPD)
Patient	The primary record for the focal person
classCode [1..1] (M) Patient (CS) {CNE:PAT}	Structural attribute; this is a "patient" role
id [2..2] (M) Patient (SET<II>)	Shall contain two elements reflecting the correlation that is no longer valid. One of the identifiers is the patient identifier from the Initiating Gateway domain, the other is the identifier from the Responding Gateway domain.
statusCode [1..1] Patient (CS) {CNE:active, fixed value= "nullified"}	A value specifying the state of this record in a patient registry (based on the RIM role class state-machine). This record is nullified.
Person	A subtype of LivingSubject representing a human being Either Person.name or Patient.id must be non-null
classCode [1..1] (M) Person (CS) {CNE:PSN, fixed value= "PSN"}	Structural attribute; this is a "person" entity
determinerCode [1..1] (M) Person (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific person
name [1..1] Person (BAG<PN>)	Name(s) for this person Shall contain null i.e., <name nullFlavor=”NA”/>

3.55.4.3.2.2 Control Act and Transmission Wrappers

Please see ITI TF-2x: Appendix O for details on the IHE guidelines for implementing the wrappers. Table 3.55.4.3-2 contains the Transmission and Control Act wrappers used for this interaction, and the associated constraints.

Table 3.55.4.3-2: Wrappers and Constraints

Transmission Wrapper	Trigger Event Control Act Wrapper
MCCI_MT000100UV01 – Send Message Payload	MFMI_MT700701UV01 – Master File / Registry Notification Control Act, Role Subject
The value of interactionId shall be set to PRPA_IN201303UV02 The value of processingModeCode shall be set to T The acceptAckCode shall be set to AL There shall be only one receiver Device	The trigger event code in ControlActProcess.code shall be set to PRPA_TE201303UV02 RegistrationEvent.statusCode shall be set to "active" There shall be no InReplacementOf act relationship for these interactions.

The composite message schemas which describe the full payload of these interactions, including the wrappers, can be found online on the IHE FTP site, see ITI TF-2x: Appendix W (the HL7 V3 2008 Normative Edition schemas are at: Edition2008/processable/multicacheschemas/PRPA_IN201303UV02.xsd).

3.55.4.3.3 Expected Actions

The Responding Gateway shall send an accept acknowledgement for any properly formatted Patient Nullify Message. The Responding Gateway may update its cached patient correlations and/or initiate a workflow to update the cache.

3.55.5 Security Considerations

No transaction specific security considerations.

3.55.5.1 Security Audit Considerations

The Cross Gateway Patient Discovery Transaction is a Query Information event as defined in Table ITI TF-2a: 3.20.6-1.

There is no specific auditing requirements for the Revoke Message.

The Actors involved shall record audit events according to the following:

3.55.5.1.1 Initiating Gateway audit message:

	Field Name	Opt	Value Constraints
Event	EventID	M	EV(110112, DCM, "Query")

	EventActionCode	M	"E" (Execute)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("ITI-55", "IHE Transactions", "Cross Gateway Patient Discovery")
Source (Initiating Gateway) (1)			
Human Requestor (0..n)			
Destination (Responding Gateway) (1)			
Audit Source (Initiating Gateway) (1)			
Patient (0) No patient identifiers are included in this audit message.			
Query Parameters(1)			

1335 Where:

Source **AuditMessage/ ActiveParticipant**	UserID	C	When WS-Addressing is used: value of <ReplyTo/> element
	AlternativeUserID	M	the process ID as used within the local operating system in the local system logs.
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"true"
	RoleIDCode	M	EV(110153, DCM, "Source")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.
Human Requestor (if known) **AuditMessage/ ActiveParticipant**	UserID	M	Identity of the human that initiated the transaction.
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"true"
	RoleIDCode	U	Access Control role(s) the user holds that allows this transaction.
	NetworkAccessPointTypeCode	*NA*	
	NetworkAccessPointID	*NA*	

Destination **AuditMessage/ ActiveParticipant**	UserID	M	SOAP endpoint URI.
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"false"
	RoleIDCode	M	EV(110152, DCM, "Destination")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.

Audit Source **AuditMessage/ AuditSourceIdentification**	*AuditSourceID*	*U*	*Not specialized.*
	AuditEnterpriseSiteID	*U*	*not specialized*
	AuditSourceTypeCode	*U*	*not specialized*

Query Parameters (AuditMessage/ ParticipantObject Identification)	ParticipantObjectTypeCode	M	"2" (system object)
	ParticipantObjectTypeCodeRole	M	"24" (query)
	ParticipantObjectDataLifeCycle	U	not specialized
	ParticipantObjectIDTypeCode	M	EV("ITI-55, "IHE Transactions", "Cross Gateway Patient Discovery")
	ParticipantObjectSensitivity	U	not specialized
	ParticipantObjectID	M	not specialized
	ParticipantObjectName	C	If known the value of <ihe:HomeCommunityId/>
	ParticipantObjectQuery	M	the QueryByParameter segment of the query, base64 encoded.
	ParticipantObjectDetail	U	not specialized

3.55.5.1.2 Responding Gateway audit message:

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110112, DCM, "Query")
	EventActionCode	M	"E" (Execute)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("ITI-55", "IHE Transactions", "Cross Gateway Patient Discovery")
Source (Initiating Gateway) (1)			
Destination (Responding Gateway) (1)			
Audit Source (Responding Gateway) (1)			
Patient (0..n) ***one for each patient whose demographic information was returned in the response.***			
Query Parameters(1)			

Where:

Source AuditMessage/ ActiveParticipant	UserID	C	When WS-Addressing is used: value of <ReplyTo/> element
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"true"
	RoleIDCode	M	EV(110153, DCM, "Source")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.

Destination AuditMessage/ ActiveParticipant	UserID	M	SOAP endpoint URI.
	AlternativeUserID	M	the process ID as used within the local operating system in the local system logs.
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"false"
	RoleIDCode	M	EV(110152, DCM, "Destination")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.

Audit Source **AuditMessage/ AuditSourceIdentification**	*AuditSourceID*	*U*	*Not specialized.*
	AuditEnterpriseSiteID	*U*	*not specialized*
	AuditSourceTypeCode	*U*	*not specialized*

Patient **(AuditMessage/ ParticipantObject Identification)**	ParticipantObjectTypeCode	M	"1" (Person)
	ParticipantObjectTypeCodeRole	M	"1" (Patient)
	ParticipantObjectDataLifeCycle	U	not specialized
	ParticipantObjectIDTypeCode	M	EV(2, RFC-3881, "Patient Number")
	ParticipantObjectSensitivity	U	not specialized
	ParticipantObjectID	M	The patient ID in HL7 CX format.
	ParticipantObjectName	U	not specialized
	ParticipantObjectQuery	U	not specialized
	ParticipantObjectDetail	U	not specialized
Query Parameters **(AuditMessage/ ParticipantObject Identification)**	ParticipantObjectTypeCode	M	"2" (system object)
	ParticipantObjectTypeCodeRole	M	"24" (query)
	ParticipantObjectDataLifeCycle	U	not specialized
	ParticipantObjectIDTypeCode	M	EV("ITI-55", "IHE Transactions", "Cross Gateway Patient Discovery")
	ParticipantObjectSensitivity	U	not specialized
	ParticipantObjectID	M	Not specialized
	ParticipantObjectName	C	If known the value of <ihe:HomeCommunityId/>
	ParticipantObjectQuery	M	the QueryByParameter segment of the query, base64 encoded.
	ParticipantObjectDetail	U	not specialized

3.55.6 Protocol Requirements

The Cross Gateway Patient Discovery request and response will be transmitted using Synchronous or Asynchronous Web Services Exchange, according to the requirements specified in ITI TF-2x: Appendix V. If the Deferred Response Option is being used the request and response will be transmitted as described in ITI TF-2b:3.55.6.2.

The following WSDL naming conventions shall apply:

```
query message    -> "PRPA_IN201305UV02_Message"
```

The following WSDL snippet describes the type for this message:

```
       …
 <types>
<xsd:schema elementFormDefault="qualified" targetNamespace="urn:hl7-org:v3"
xmlns:hl7="urn:hl7-org:v3">
<!-- Include the message schema -->
<xsd:import namespace="urn:hl7-org:v3"
schemaLocation="../schema/HL7V3/NE2008/multicacheschemas/PRPA_IN201305UV02.xsd"/>
<xsd:element name="PRPA_IN201305UV02"/>
</xsd:schema>
```



```
  </types>
…
The message is described by the following snippet:
      …
  <message name="PRPA_IN201305UV02_Message">
<part element="hl7:PRPA_IN201305UV02" name="Body"/>
  </message>
      …
```

3.55.6.1 Web Services Port Type and Binding Definitions

Responding Gateway:

IHE-WSP201) The attribute /wsdl:definitions/@name SHALL be "RespondingGateway".

The following WSDL naming conventions shall apply:

```
wsdl:definitions/@name="RespondingGateway":
ITI-55 query                    -> "PRPA_IN201305UV02_Message"
ITI-55 response                 -> "PRPA_IN201306UV02_Message"
accept acknowledgement          -> "MCCI_IN000002UV01_Message"
portType                        -> "RespondingGateway_PortType"
ITI-55 operation                -> "RespondingGateway_PRPA_IN201305UV02"
ITI-55 Deferred Response operation ->
                              "RespondingGateway_Deferred_PRPA_IN201305UV02"
SOAP 1.2 binding                -> "RespondingGateway_Binding_Soap12"
SOAP 1.2 port                   -> "RespondingGateway_Port_Soap12"
```

Initiating Gateway:

IHE-WSP201) The attribute /wsdl:definitions/@name SHALL be "InitiatingGateway".

The following WSDL naming conventions shall apply:

```
wsdl:definitions/@name="InitiatingGateway":
ITI-55 response                 -> "PRPA_IN201306UV02_Message"
accept acknowledgement          -> "MCCI_IN000002UV01_Message"
portType                        -> "InitiatingGateway_PortType"
ITI-55 Deferred Response operation ->
                              "InitiatingGateway_Deferred_PRPA_IN201306UV02"
SOAP 1.2 binding                -> "InitiatingGateway_Binding_Soap12"
SOAP 1.2 port                   -> "InitiatingGateway_Port_Soap12"
```

The following WSDL snippets specify the Cross Gateway Patient Discovery Query Port Type and Binding definitions, according to the requirements specified in ITI TF-2x: Appendix V.

3.55.6.1.1 Port Type

Responding Gateway:

```
  <portType name="RespondingGateway_PortType">
```



```
        <operation name="RespondingGateway_PRPA_IN201305UV02">
<input message="tns:PRPA_IN201305UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201305UV02:CrossGatewayPatientDiscovery"/>
<output message="tns:PRPA_IN201306UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201306UV02:CrossGatewayPatientDiscovery"/>
</operation>
<operation name="RespondingGateway_Deferred_PRPA_IN201305UV02">
<input message="tns:PRPA_IN201305UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201305UV02:Deferred:CrossGatewayPatientDiscovery"/>
<output message="tns:MCCI_IN000002UV01_Message" wsaw:Action="urn:hl7-org:v3:MCCI_IN000002UV01"/>
</operation>
</portType>
```

Initiating Gateway:

```
<portType name="InitiatingGatewayDeferredResponse_PortType">
        <operation name="InitiatingGateway_Deferred_PRPA_IN201306UV02">
                <input message="tns:PRPA_IN201306UV02_Message" wsaw:Action="urn:hl7-
org:v3:PRPA_IN201306UV02:Deferred:CrossGatewayPatientDiscovery"/>
                <output message="tns:MCCI_IN000002UV01_Message" wsaw:Action="urn:hl7-
org:v3:MCCI_IN000002UV01"/>
        </operation>
</portType>
```

3.55.6.1.2 Bindings

SOAP 1.2 binding:

Responding Gateway:

```
…
  <binding name="RespondingGateway_Binding_Soap12" type="RespondingGateway_PortType">
    <wsoap12:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
    <operation name="RespondingGateway_PRPA_IN201305UV02">
      <wsoap12:operation soapAction="urn:hl7-
org:v3:PRPA_IN201305UV02:CrossGatewayPatientDiscovery"/>
       <input>
        <wsoap12:body use="literal"/>
      </input>
      <output>
        <wsoap12:body use="literal"/>
      </output>
    </operation>
    <operation name="RespondingGateway_Deferred_PRPA_IN201305UV02">
      <wsoap12:operation soapAction="urn:hl7-
org:v3:PRPA_IN201305UV02:Deferred:CrossGatewayPatientDiscovery"/>
       <input>
       <wsoap12:body use="literal"/>
       </input>
```



```
        <output>
        <wsoap12:body use="literal"/>
        </output>
    </operation>
  </binding>
…
```

Initiating Gateway:

```
…
  <binding name="InitiatingGatewayDeferredResponse_Binding"
type="tns:InitiatingGatewayDeferredResponse_PortType">
        <soap12:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
        <operation name="InitiatingGateway_Deferred_PRPA_IN201306UV02">
                <soap12:operation soapAction="urn:hl7-
org:v3:PRPA_IN201306UV02:Deferred:CrossGatewayPatientDiscovery"/>
                <input>
                        <soap12:body use="literal"/>
                </input>
                <output>
                        <soap12:body use="literal"/>
                </output>
        <operation>
</binding>
…
```

Informative WSDL for the Responding Gateway Actor is available online on the IHE FTP site, see ITI TF-2x: Appendix W.

3.55.6.2 Deferred Response Option

The Deferred Response Message pattern is a message exchange pattern where the request/response web service message exchange has been converted into two request/response message exchange patterns, where the original request and response messages are used as the request portion of each message and an application acknowledgement is the response. Figure 3.55.6.2-1 illustrates this pattern as it is used for the Cross Gateway Patient Discovery [ITI-55] transaction.

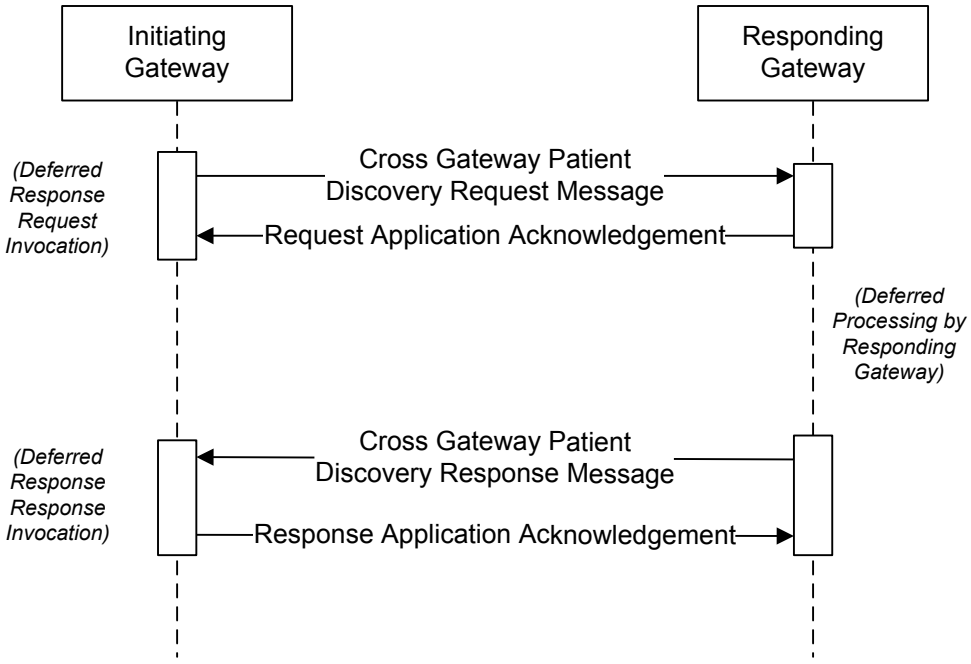


Figure 3.55.6.2-1: Deferred Response Message Pattern

Cross Gateway Patient Discovery Request Message

The Initiating Gateway that supports the Deferred Response option may request the use of Deferred Response message exchange by specifying the following in the Cross Gateway Patient Discovery Request Message:

- The WS-Addressing Action value shall be urn:hl7-org:v3:PRPA_IN201305UV02:Deferred: CrossGatewayPatientDiscovery
- The responsePriorityCode element shall be set to a value of 'D' to represent the deferred processing mode.
- The respondTo element of the transmission wrapper, see the figure in Section ITI TF-2b:3.55.4.1.2.4, shall contain a telecom element with the Web Services Endpoint where the response shall be sent.

Example of specifying the respondTo element:

```
<respondTo typeCode="RSP">
   <telecom value="service entry point url"
   <entityRsp classCode="ENT" determinerCode="INSTANCE" xsi:nil="true"/>
</respondTo>
```


Cross Gateway Patient Discovery Request Application Acknowledgement Message

If the Responding Gateway supports the Deferred Response Option it shall respond with an HL7 V3 Accept Acknowledgement message (MCCI_IN000002UV01). The WS-Addressing Action value shall be urn:hl7-org:v3:MCCI_IN000002UV01.

Cross Gateway Patient Discovery Response Message

The Responding Gateway will process the Cross Gateway Patient Discovery Request Message and generate a Cross Gateway Patient Discovery Response Message following all the applicable requirements for the transaction. If the Responding Gateway supports the Deferred Response Option, the Cross Gateway Patient Discovery Response Message will be sent as a new request as follows:

- The Responding Gateway shall direct the response message to the address specified in the respondTo element in the transmission wrapper.
- The WS-Addressing RelatesTo element of the response message shall be populated with the message identifier from the WS-Addressing MessageID element of the request message
- The WS-Addressing Action value shall be urn:hl7-org:v3:PRPA_IN201306UV02:Deferred:CrossGatewayPatientDiscovery
- Correlation with the request message is also supplied through the queryID element from the request message which shall be the same as the queryID element of the Response message.

Cross Gateway Patient Discovery Response Application Acknowledgement Message

The Initiating Gateway that supports the Deferred Response option shall respond with an HL7 V3 application acknowledgement message (MCCI_IN000002UV01). The WS-Addressing Action value shall be urn:hl7-org:v3:MCCI_IN000002UV01.

Add Section 3.56

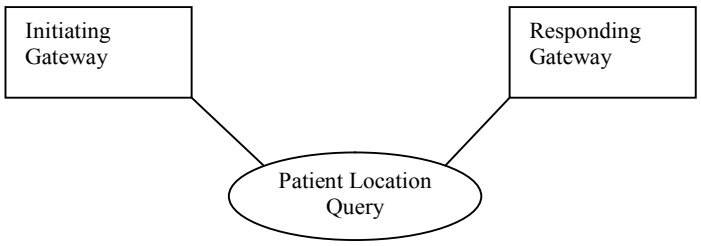
3.56 Patient Location Query

This section corresponds to Transaction 56 of the IHE Technical Framework. Transaction 56 is used by the Initiating Gateway and Responding Gateway actors.

3.56.1 Scope

The Patient Location Query transaction supports a query that retrieves a list of communities which may have healthcare data for a patient referenced by patient identifier.

3.56.2 Use Case Roles



Actor: Initiating Gateway

Role: Requests the Responding Gateway to provide patient data locations in the form of a list of community identifiers (homeCommunityId) that reference communities that may have healthcare records for the patient identifier specified in the request.

Actor: Responding Gateway

Role: Responds with a list of patient data locations.

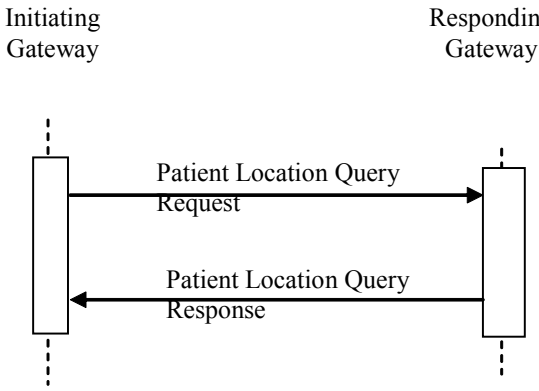
3.56.3 Referenced Standard

Implementers of this transaction shall comply with all requirements described in ITI TF-2x: Appendix V: Web Services for IHE Transactions.

HL7 V3 Datatypes 2008 Normative Edition

Appendix V ITI TF-2x: Appendix V: Web Services for IHE Transactions
Contains references to all Web Services standards and requirements of use

3.56.4 Interaction Diagram



3.56.4.1 Patient Location Query Request

This message carries a request for a list of communities which may have healthcare data about the identified patient.

3.56.4.1.1 Trigger Events

A new patient arrives at a medical provider and medical records for this patient are desired from outside the medical provider's community. In cases of an existing patient, this transaction may be used to determine if there is new data available outside the community.

3.56.4.1.2 Message Semantics

The Patient Location Query request is a Web Service request complying with all requirements in ITI TF-2x: Appendix V: Web Services for IHE Transactions. The content of the message is a single <xcpd:PatientLocationQueryRequest/> element which contains a single <xcpd:RequestedPatientId/> element. The <xcpd:RequestedPatientId/> contains the patient identifier which shall be coded consistent with the HL7 V3 II Data Type.

The Responding Gateway shall support Asynchronous Web Services Exchange as described in ITI TF-2x: V.5 Synchronous and Asynchronous Web Services Exchange. If the Initiating Gateway declares the Asynchronous Web Services Exchange Option it shall also support Asynchronous Web Services Exchange as described in ITI TF-2x: V.5. Use of Asynchronous Web Services Exchange is necessary when transactions scale to large numbers of communities because it allows for more efficient handling of latency and scale.

The Initiating Gateway has acquired the correct patient identifier to use in this transaction through some other interactions outside the scope of this transaction. One approach is to use the Cross Gateway Patient Discovery transaction, which returns the identifier associated with a set of demographics.

An example of the Patient Location Query request:

```
<xcpd:PatientLocationQueryRequest xmlns:xcpd="urn:ihe:iti:xcpd:2009
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:ihe:iti:xcpd:2009>
  <xcpd:RequestedPatientId
        root="1.2.840.114350.1.13.99997.2.3412" extension="38273N237"/>
</xcpd:PatientLocationQueryRequest>
```

3.56.4.1.2.1 Web Services Transport

See ITI TF-2b: 3.56.6 below.

3.56.4.1.2.2 Example request message

A complete example of the request message is:


```
<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:2009:PatientLocationQuery</a:Action>
<a:MessageID>urn:uuid:a02ca8cd-86fa-4afc-a27c-16c183b2055</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/Service/IHERespondingGateway.svc</a:To>
</s:Header>
  <s:Body>
<xcpd:PatientLocationQueryRequest xmlns:xcpd="urn:ihe:iti:xcpd:2009
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="urn:ihe:iti:xcpd:2009>
<xcpd:RequestedPatientId
    root="1.2.840.114350.1.13.99997.2.3412" extension="38273N237"/>
</xcpd:PatientLocationQueryRequest>
</s:Body>
</s:Envelope>
```

3.56.4.1.3 Expected Actions

The Responding Gateway shall respond with the Patient Location Query Response Message indicating the data it has related to the specified patient identifier.

The Responding Gateway shall use the SOAP Faults defined in Table 3.56-1 when appropriate. Initiating Gateways shall be capable of accepting other values beyond the ones specified here.

Table 3.56-1:

Description of error	Code	Reason Text
The Responding Gateway is too busy to respond to the request	Receiver	Busy
The Responding Gateway resources are too low to respond to the request	Receiver	Resources Low
The Responding Gateway is not a Health Data Locator for the patient specified in the request.	Sender	Not a Health Data Locator for the specified patient identifier

An example of a SOAP Fault is:

```
<env:Envelope xmlns:env="http://www.w3.org/2003/05/soap-envelope"
              xmlns:xml="http://www.w3.org/XML/1998/namespace">
 <env:Body>
  <env:Fault>
   <env:Code>
```

```
      <env:Value>env:Receiver</env:Value>
    </env:Code>
    <env:Reason>
      <env:Text xml:lang="en">Busy</env:Text>
    </env:Reason>
  </env:Fault>
 </env:Body>
</env:Envelope>
```

3.56.4.2 Patient Location Query Response

This message carries a response to a request for a list of communities which may have healthcare data about the identified patient.

3.56.4.2.1 Trigger Events

A Patient Location Query Request Message is received.

3.56.4.2.2 Message Semantics

The Patient Location Query response is a Web Services response complying with all requirements in ITI TF-2x: Appendix V: Web Services for IHE Transactions.

The Responding Gateway shall support Asynchronous Web Services Exchange as described in ITI TF-2x: V.5 Synchronous and Asynchronous Web Services Exchange. If the Initiating Gateway declares the Asynchronous Web Services Exchange Option it shall also support Asynchronous Web Services Exchange as described in ITI TF-2x: V.5. Use of Asynchronous Web Services Exchange is necessary when transactions scale to large numbers of communities because it allows for more efficient handling of latency and scale.

The Responding Gateway has acquired the data returned in this transaction through some other interactions outside the scope of this transaction. One approach is to use the Cross Gateway Patient Discovery transaction.

The content of the message is a single <ihe:PatientLocationQueryResponse/> element which is defined as:

- An optional sequence of <xcpd:PatientLocationResponse/> elements which contain:
  - A required <xcpd:HomeCommunityId/> element. The value of this element shall be the identifier of a community which might have data about the patient identified in the request. Shall be coded consistent with the anyURI Data Type.
  - A required <xcpd:CorrespondingPatientId/> element that contains the patient identifier that the requested patient is known by within the community identified by the ihe:HomeCommunityId element. Shall be coded consistent with the HL7 V3 II Data Type.

- A required <xcpd:RequestedPatientId/> that is the same identifier specified in the query request. Shall be coded consistent with the HL7 V3 II Data Type

The <xcpd:PatientLocationResponse> element in the schema may have additional sub-elements defined by national committees. Initiating Gateways shall accept extra sub-elements and may ignore them. National committees are responsible for providing an extended schema if the schema is extended. The schema shall not be extended outside of IHE national/regional committees.

If the Responding Gateway is not managing patient data locations for the identified patient, or does not know the patient identifier, it shall respond with a SOAP Fault see ITI TF-2b: 3.56.4.1.3.

3.56.4.2.2.2 Web Services Transport

See ITI TF-2b: 3.56.6.

3.56.4.2.2.3 Example response message

A complete example of the response message is:

```
<xcpd:PatientLocationQueryResponse
 xmlns:xcpd="urn:ihe:iti:xcpd:2009"
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
 xsi:schemaLocation="urn:ihe:iti:xcpd:2009">
    <xcpd:PatientLocationResponse>
        <xcpd:HomeCommunityId>urn:oid:1.2.333495.30291</xcpd:HomeCommunityId>
        <xcpd:CorrespondingPatientId
          root="1.2.840.114350.1.13.99997.12" extension="38273N237"/>
        <xcpd:RequestedPatientId
          root="1.2.840.114350.1.13.99997.2.3412"
                extension="38273N237"/>
    </xcpd:PatientLocationResponse>
    <xcpd:PatientLocationResponse>
        <xcpd:HomeCommunityId>urn:oid:555.324.1.2.3</xcpd:HomeCommunityId>
        <xcpd:CorrespondingPatientId
          root="555.324.1.2.3.12" extension="7382931"/>
        <xcpd:RequestedPatientId
          root="1.2.840.114350.1.13.99997.2.3412" extension="38273N237"/>
    </xcpd:PatientLocationResponse>
</xcpd:PatientLocationQueryResponse>
```

3.56.4.2.3 Expected Actions

The Initiating Gateway may use the list of communities to send a XCA Cross Gateway Query transaction to each, using the value of the CorrespondingPatientId, to find all data about the patient. The Initiating Gateway may also cache the information, maintaining its cache through repeated polling of the original responder, or through receipt of subsequent Cross Gateway

Patient Discovery transactions. Support for subscription to updates to the list is not profiled by IHE.

3.56.5 Security Considerations

1700 #### 3.56.5.1 Security Audit Considerations

The Patient Location Query Transaction is a Query Information event as defined in Table ITI TF-2a: 3.20.6-1. The Actors involved shall record audit events according to the following:

3.56.5.1.1 Initiating Gateway audit message:

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110112, DCM, "Query")
	EventActionCode	M	"E" (Execute)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("ITI-56", "IHE Transactions", "Patient Location Query")
Source (Initiating Gateway) (1)			
Human Requestor (0..n)			
Destination (Responding Gateway) (1)			
Audit Source (Initiating Gateway) (1)			
Patient (1..n)			
Query Parameters(1)			

Where:

Source AuditMessage/ ActiveParticipant	UserID	C	When WS-Addressing is used: value of <ReplyTo/> element
	AlternativeUserID	M	the process ID as used within the local operating system in the local system logs.
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"true"
	RoleIDCode	M	EV(110153, DCM, "Source")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.
Human Requestor (if known) AuditMessage/ ActiveParticipant	UserID	M	Identity of the human that initiated the transaction.
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"true"
	RoleIDCode	U	Access Control role(s) the user holds that allows this transaction.
	NetworkAccessPointTypeCode	*NA*	
	NetworkAccessPointID	*NA*	

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Destination	UserID	M	SOAP endpoint URI.

	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"false"
	RoleIDCode	M	EV(110152, DCM, "Destination")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.

Audit Source **AuditMessage/ AuditSourceIdentification**	*AuditSourceID*	*U*	*Not specialized.*
	AuditEnterpriseSiteID	*U*	*not specialized*
	AuditSourceTypeCode	*U*	*not specialized*

Patient **(AuditMessage/ ParticipantObject Identification)**	ParticipantObjectTypeCode	M	"1" (Person)
	ParticipantObjectTypeCodeRole	M	"1" (Patient)
	ParticipantObjectDataLifeCycle	U	not specialized
	ParticipantObjectIDTypeCode	M	EV(2, RFC-3881, "Patient Number")
	ParticipantObjectSensitivity	U	not specialized
	ParticipantObjectID	M	The patient ID in HL7 CX format.
	ParticipantObjectName	U	not specialized
	ParticipantObjectQuery	U	not specialized
	ParticipantObjectDetail	U	not specialized
Query Parameters **(AuditMessage/ ParticipantObject Identification)**	ParticipantObjectTypeCode	M	"2" (system object)
	ParticipantObjectTypeCodeRole	M	"24" (query)
	ParticipantObjectDataLifeCycle	U	not specialized
	ParticipantObjectIDTypeCode	M	EV("ITI-56", "IHE Transactions", "Patient Location Query")
	ParticipantObjectSensitivity	U	not specialized
	ParticipantObjectID	M	"PatientLocationQueryRequest"
	ParticipantObjectName	U	not specialized
	ParticipantObjectQuery	M	the PatientLocationQueryRequest, base64 encoded.
	ParticipantObjectDetail	U	not specialized

3.56.5.1.2 Responding Gateway audit message:

	Field Name	Opt	Value Constraints
Event	EventID	M	EV(110112, DCM, "Query")

	EventActionCode	M	"E" (Execute)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("ITI-56", "IHE Transactions", "Patient Location Query")
Source (Initiating Gateway) (1)			
Destination (Responding Gateway) (1)			
Audit Source (Initiating Gateway) (1)			
Patient (0..n)			
Query Parameters(1)			

Where:

Source **AuditMessage/ ActiveParticipant**	UserID	C	When WS-Addressing is used: value of <ReplyTo/> element
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"true"
	RoleIDCode	M	EV(110153, DCM, "Source")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.

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Destination **AuditMessage/ ActiveParticipant**	UserID	M	SOAP endpoint URI.
	AlternativeUserID	M	the process ID as used within the local operating system in the local system logs.
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"false"
	RoleIDCode	M	EV(110152, DCM, "Destination")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.

Audit Source **AuditMessage/ AuditSourceIdentification**	*AuditSourceID*	*U*	*Not specialized.*
	AuditEnterpriseSiteID	*U*	*not specialized*
	AuditSourceTypeCode	*U*	*not specialized*

Patient (AudittMessage/ ParticipantObject Identification)	ParticipantObjectTypeCode	M	"1" (Person)
	ParticipantObjectTypeCodeRole	M	"1" (Patient)
	ParticipantObjectDataLifeCycle	U	not specialized
	ParticipantObjectIDTypeCode	M	EV(2, RFC-3881, "Patient Number")
	ParticipantObjectSensitivity	U	not specialized
	ParticipantObjectID	M	The patient ID in HL7 CX format.
	ParticipantObjectName	U	not specialized
	ParticipantObjectQuery	U	not specialized
	ParticipantObjectDetail	U	not specialized
Query Parameters (AudittMessage/ ParticipantObject Identification)	ParticipantObjectTypeCode	M	"2" (system object)
	ParticipantObjectTypeCodeRole	M	"24" (query)
	ParticipantObjectDataLifeCycle	U	not specialized
	ParticipantObjectIDTypeCode	M	EV("ITI-56", "IHE Transactions", "Patient Location Query")
	ParticipantObjectSensitivity	U	not specialized
	ParticipantObjectID	M	"PatientLocationQueryRequest"
	ParticipantObjectName	U	not specialized
	ParticipantObjectQuery	M	The PatientLocationQueryRequest, base64 encoded.
	ParticipantObjectDetail	U	not specialized

The Patient Location Query transaction does not require auditing of the returned result because the result contains only opaque identifiers. Implementers are free to audit more extensively if it is desired.

3.56.6 Protocol Requirements

The Patient Location Query request and response will be transmitted using Web Services, according to the requirements specified in ITI TF-2x: Appendix V. The specific values for the WSDL describing the Patient Location Query transaction are described in this section.

The Responding Gateway actor shall accept a Patient Location Query Request formatted as a SIMPLE SOAP message and respond with a Patient Location Query Response formatted as a SIMPLE SOAP message. The Initiating Gateway actor shall generate the Patient Location Query Request formatted as a SIMPLE SOAP message and accept a Patient Location Query Response formatted as a SIMPLE SOAP message.

IHE-WSP201) The attribute /wsdl:definitions/@name shall be "RespondingGateway".

The following WSDL naming conventions shall apply:

wsdl:definitions/@name="RespondingGateway":

query message -> "PatientLocationQuery_Message"

query response -> "PatientLocationQueryResponse_Message"

portType -> "RespondingGateway_PortType"

operation -> "PatientLocationQuery"

SOAP 1.2 binding -> "RespondingGateway_Binding_Soap12"

SOAP 1.2 port -> "RespondingGateway_Port_Soap12"

IHE-WSP202) The targetNamespace of the WSDL shall be “urn:ihe:iti:xcpd:2009”

These are the requirements for the Patient Location Query transaction presented in the order in which they would appear in the WSDL definition:

- The following types shall be imported (xsd:import) in the /definitions/types section:
  - namespace=" urn:ihe:iti:xcpd:2009"
- The /definitions/message/part/@element attribute of the Patient Location Query Request message shall be defined as “xcpd: PatientLocationQueryRequest”
- The /definitions/message/part/@element attribute of the Patient Location Query Response message shall be defined as “xcpd: PatientLocationQueryResponse”
- The /definitions/portType/operation/input/@wsaw:Action attribute for the Patient Location QueryRequest message shall be defined as “urn:ihe:iti:2009:PatientLocationQuery”
- The /definitions/portType/operation/output/@wsaw:Action attribute for the Patient Location Query Response message shall be defined as “urn:ihe:iti:2009:PatientLocationQueryResponse”
- The /definitions/binding/operation/soap12:operation/@soapAction attribute should be defined as “urn:ihe:iti:2009:PatientLocationQuery”

A full WSDL for the Initiating and Responding Gateway actors is found in ITI TF-2x: Appendix W.

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Update ITI TF-2x: Appendix O of the PIX/PDQ V3 Supplement to support reasonOf in the Master File/Registry Event Notification Control Act Information Model

Appendix O

O.2.1 Master File/Registry Event Notification Control Act (Role Subject) Information Model (MFMI_MT700701IHE)

Update Section O.2.1 as follows:

The following restrictions were made on the original RMIM to arrive at the restricted model:

- The following optional class attributes have been omitted:
  - ControlActProcess.text
  - ControlActProcess.priorityCode
  - ControlActProcess.reasonCode
- All participations related to the ControlActProcess have been omitted
- ~~The reasonOf act relationship has been omitted~~
- The following act relationships to the RegistrationEvent have been omitted:
  - inFullfilmentOf
  - definition
  - subject2

Replace Figure O.2.1-1 with the following figure

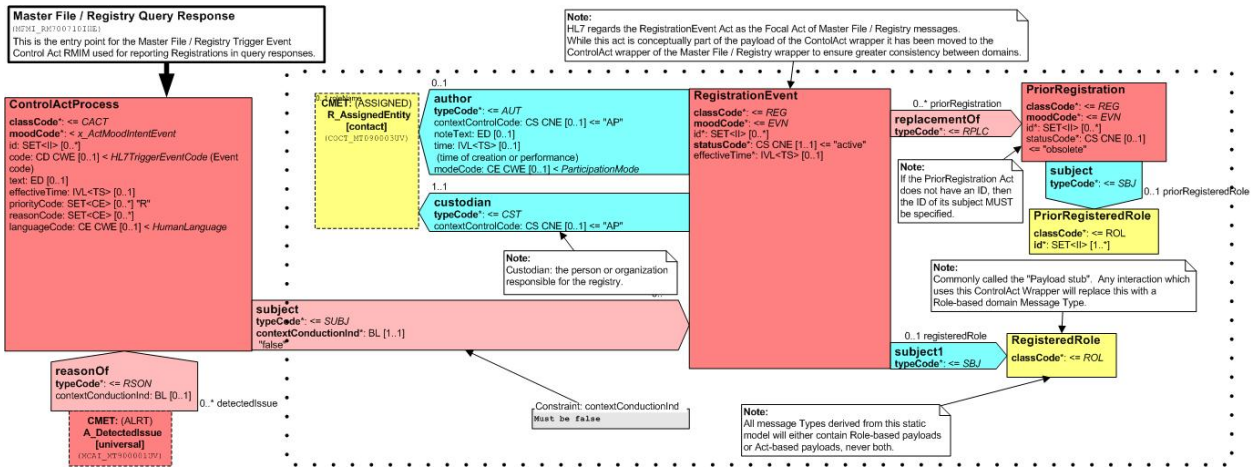

Figure O.2.1-1:

Add the following four rows to Table O.2.1-1 just before the first row containing "subject":

Table O.2.1-1:

MFMI_HD700701IHE Master File / Registry Event Notification (Role Subject)	**This HMD extract defines the control act wrapper used to send HL7 V3 master file or registry messages with the subject being a role. Derived from Figure O.2.1-1 (MFMI_RM700701IHE)**
reasonOf	Act relationship linking the ControlActProcess to a detected issue
typeCode [1..1] (M) ActRelationship (CS) {CNE:V:ActRelationshipReason, root= "RSON"}	Structural attribute; this act relationship is "ReasonOf"
contextConductionInd [0..1] ActRelationship (BL)	The context conduction Indicator value in this control act wrapper
detectedIssueEvent [1..1] (A_DetectedIssueDeprecated)	The detected issue related to this event
subject	Act relationship linking the ControlActProcess to the Registration event

Update ITI TF-2x: Appendix V to allow an extension to the Action value to indicate different uses for the same HL7 message.

Appendix V

V.3.1.1: HL7 WS Basic Profile Constraints

The Sender and Receiver shall conform to the HL7 WS Basic Profile with **five**~~four~~ modifications. The first modification is the requirement of supporting SOAP 1.2, while the HL7 WS Basic Profile provides the choice of supporting either SOAP 1.1 or SOAP 1.2, or both.

The second modification is to HL7-WSP200, which recommends that a WSDL document describes a specific HL7 application role. For consistency with non-HL7 V3 transactions, IHE specifications shall provide an example WSDL document for all transactions of an actor per profile (see IHE-WSP200).

The third modification is to HL7-WSP201, which recommends that the HL7 Application Role ID is to be used as the name of the WSDL definition. For consistency with non-HL7 V3 transactions the name of the example WSDL definition provided in the IHE specification shall be the actor name of the transaction's receiver (see the IHE-WSP201).

The fourth modification is to HL7-WSP202, which specifies the use of the HL7 namespace as the target namespace of the WSDL document. This would prevent creating a single WSDL for actors which use both HL7 V3 and non-HL7 V3 IHE transactions (e.g., an XDS registry implementing the XDS.b profile with the Patient Identity Feed HL7 V3 transaction). For consistency among all IHE transactions, when creating an IHE transaction specification, the WSDL target namespace shall be specified as “urn:ihe:<committee name>:<profile>:<year> (see IHE-WSP202).

The fifth modification is to HL7-WSP208, which specifies that “WSDL messages for Interactions SHOULD use wsdl:operation/wsdl:input/@wsa:Action = "urn:hl7-org:v3:{Interaction_Artifact_Id}”. IHE extends the “should” to support situations where one HL7 message is being used within two transactions for significantly different purposes. For this case the second use of the message shall extend the HL7 specified Action string with “:[transaction-name]” where [transaction-name] is the name of the second transaction.

