Integrating the Healthcare Enterprise

IHE Quality, Research and Public Health Technical Framework Supplement

Retrieve Process for Execution (RPE)

Rev. 4.2 – Trial Implementation

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Foreword

30   This is a supplement to the IHE Quality, Research and Public Health (QRPH) Technical Framework. Each supplement undergoes a process of public comment and trial implementation before being incorporated into the volumes of the Technical Frameworks.

This supplement is published on September 7, 2018 for trial implementation and may be available for testing at subsequent IHE Connectathons. The supplement may be amended based

35   on the results of testing. Following successful testing it will be incorporated into the QRPH Technical Framework. Comments are invited and may be submitted at http://www.ihe.net/QRPH_Public_Comments.

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

40   *Amend Section X.X by the following:*

Where the amendment adds text, make the added text **bold underline**. Where the amendment removes text, make the removed text **bold strikethrough**. When entire new sections are added, introduce with editor's instructions to "add new text" or similar, which for readability are not bolded or underlined.

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

Information about the IHE QRPH domain can be found at http://www.ihe.net/IHE_Domains.

Information about the organization of IHE Technical Frameworks and Supplements and the process used to create them can be found at http://www.ihe.net/IHE_Process and

50   http://www.ihe.net/Profiles.

The current version of the IHE QRPH Technical Framework can be found at http://www.ihe.net/Technical_Frameworks.

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Introduction

Retrieve Process for Execution (RPE) is a profile for *collaborative workflow* or *collaborative process managemen*t involving three main actors:

220
1. the manager of process definitions

2. the manager of runtime processes

3. the performer of process activities

Note that the process definition contains specification for all activities to be performed. An activity defines a specific act, several of which define the entire process.

225 RPE started as Retrieve *Protocol* for Execution Profile, a proposed automated mechanism for an Electronic Health Record (EHR) to retrieve a complex set of clinical research instructions (a study protocol) from a research sponsor's Electronic Data Capture (EDC) system or research site's Clinical Trials Management System (CTMS) and to execute these instructions within the EHR. Interest has since grown to expand RPE to support processes from other domains
230 involving collaborative workflows like quality, public health and patient care support. RPE now does this consistent with accepted IT standards for process management. In September of 2011, RPE underwent a substantial re-write that required current users of RPE to re-develop their implementations of the profile. The current version harmonizes the original Retrieve *Protocol* for Execution and the new Retrieve *Process* for Execution to lessen the burden on users of the
235 profile to conform to the profile.

RPE defines the transport mechanism for process definitions, but does not provide the definitions per se. Additional profiles that define specific processes will complement RPE and bring the process automation capability to completion. One of these profiles is the Clinical Research Process Content (CRPC) Profile.

240 **Open Issues and Questions**

No open issues at this time.

Closed Issues

No closed issues at this time.

Volume 1 – Integration Profiles

X Retrieve Process for Execution (RPE) Profile

Retrieve Process for Execution (RPE) is a profile for *collaborative workflow* or *collaborative process management* involving three main actors:

1. the manager of process definitions

2. the manager of runtime processes

3. the performer of process activities

X.1 RPE Actors/Transactions

Figure X.1-1 shows the actors directly involved in the Retrieve Process for Execution Profile and the relevant transactions between them. Other actors that may be indirectly involved due to their participation in other profiles are not necessarily shown.
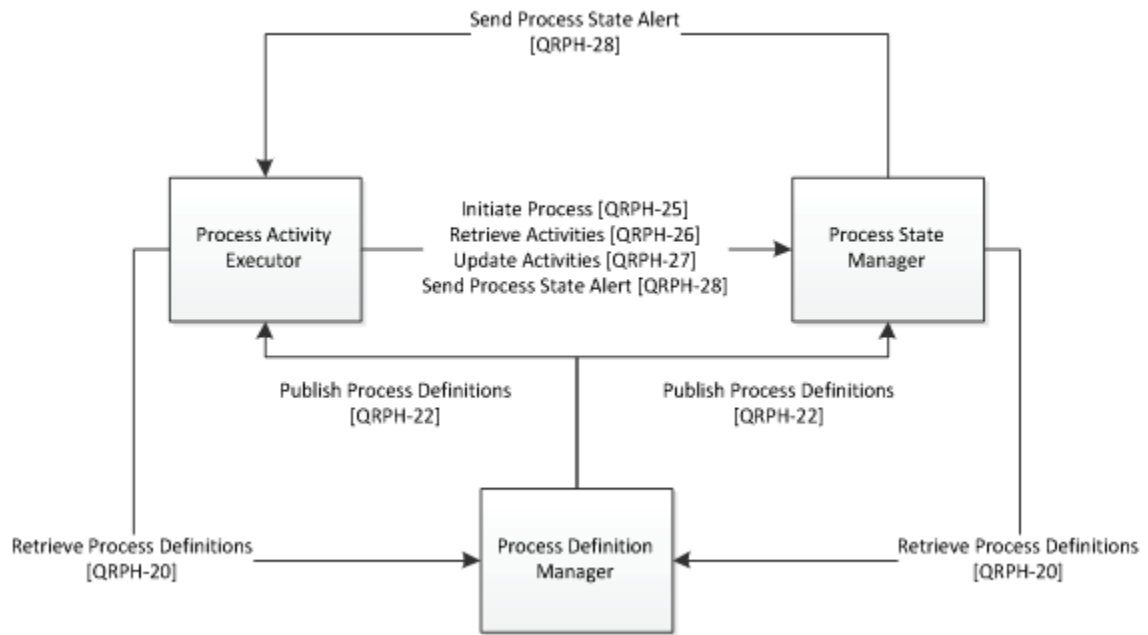
Figure X.1-1: RPE Actor Diagram

Table X.1-1 lists the transactions for each actor directly involved in the RPE 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, which implementations may choose to support, is listed in Section X.2.

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Table X.1-1: RPE Actors and Transactions

Actors	Transactions	Optionality	Reference
Process Definition Manager	Retrieve Process Definitions [QRPH-20]	R	QRPH TF-2: 3.20
	Publish Process Definitions [QRPH-22]	R	QRPH TF-2: 3.22
Process State Manager	Retrieve Process Definitions [QRPH-20]	O (Note 1)	QRPH TF-2: 3.20
	Publish Process Definitions [QRPH-22]	O (Note 1)	QRPH TF-2: 3.22
	Initiate Process [QRPH-25]	R	QRPH TF-2: 3.25
	Retrieve Activities [QRPH-26]	O	QRPH TF-2: 3.26
	Update Activity [QRPH-27]	O	QRPH TF-2: 3.27
	Send Process State Alert [QRPH-28]	R	QRPH TF-2: 3.28
Process Activity Executor	Retrieve Process Definitions [QRPH-20]	O (Note 2)	QRPH TF-2: 3.20
	Publish Process Definitions [QRPH-22]	O (Note 2)	QRPH TF-2: 3.22
	Initiate Process [QRPH-25]	R	QRPH TF-2: 3.25
	Retrieve Activities [QRPH-26]	O	QRPH TF-2: 3.26
	Update Activity [QRPH-27]	O	QRPH TF-2: 3.27
	Send Process State Alert [QRPH-28]	R	QRPH TF-2: 3.28

Note 1 – A Process State Manager SHALL implement either the Retrieve Process Definitions or Publish Process Definitions transactions.

265　　Note 2 – A Process Activity Executor SHALL implement either the Retrieve Process Definitions or Publish Process Definitions transactions.

X.1.1 Actor Descriptions and Requirements

X.1.1.1 Process Definition Manager

270　The Process Definition Manager manages access to a repository of process definitions, allowing for search and retrieval.

An example would be a research sponsor providing access to the clinical research processes it has developed. Another would be a provider of evidence-based clinical practice guidelines.

X.1.1.2 Process State Manager

275　The Process State Manager manages the initiation and state of runtime process instances. The Process State Manager typically also supports the initiation and lifecycle management of task activities associated with a process while providing the ability for task performers to retrieve and update activities.

X.1.1.3 Process Activity Executor

280　The Process Activity Executor performs activities as prescribed by a running process being managed by a Process State Manager. The Process Activity Executor retrieves current activity or task lists, works its list, updating the Process State Manager on activity state until completion.

This cycle is repeated until all process activities have been worked and the process itself completes.

X.2 RPE Actor Options

Options that may be selected for each actor in this profile, if any, are listed in the Table X.2-1.

Table X.2-1: RPE Actor Options

Actor	Options	Reference
Process State Manager	Retrieve Process Definitions	Section X.2.1
	Publish Process Definitions	Section X.2.4
	Retrieve Activities	Section X.2.2
	Update Activity	Section X.2.3
Process Activity Executor	Retrieve Process Definitions	Section X.2.1
	Publish Process Definitions	Section X.2.4
	Retrieve Activities	Section X.2.2
	Update Activity	Section X.2.3

The optional transactions extend the capabilities of the participating actor. Each actor can participate in any or all appropriate optional transactions.

X.2.1 Retrieve Process Definitions Option

The Retrieve Process Definitions Option allows a Process State Manager or Process Activity Executor to retrieve the process definition. An actor that supports the Retrieve Process Definitions Option shall support the [QRPH-20] transaction.

X.2.2 Retrieve Activities Option

The Retrieve Activities Option allows a Process Activity Executor to retrieve the current set of activities it needs to execute as part of processes it is a participant in and managed by the given Process State Manager. An actor that supports the Retrieve Activities Option shall support the [QRPH-26] transaction.

X.2.3 Update Activity Option

Update Activity allows a Process Activity Executor to provide an update on activity's state or data to a Process State Manager for a process it is a participant in. An actor that supports the Update Activity Option shall support the [QRPH-27] transaction.

X.2.4 Publish Process Definitions Option

305 Publish Process Definitions allows a Process Definition Manager to push updates to processes to Process Activity Executors and Process State Managers. An actor that supports the Publish Process Definitions Option shall support the [QRPH-22] transaction.

X.3 Groupings

No groupings specified.

310 ## X.4 RPE Process Flow

X.4.1 Use Cases

The clinical research use case below describes the before and after effects of implementing the Retrieve Process for Execution (RPE) Profile for an investigational new drug clinical trial scenario.

315 • Scenario

The setting for the clinical trial use case is a physicians' practice where patient care is delivered side-by-side with clinical research. The site, Fictitious Medical Group, is a multi-site physician practice, employing over 100 physicians in a variety of specialties. The Fictitious CEO encourages the physicians to participate as site investigators for 320 pharmaceutical-sponsored clinical trials.

Before RPE

Preconditions

1. A Clinical Research Process is defined by a clinical trials expert at Sponsor, a biopharma research company.

325 2. Fictitious provides support for clinical research activities in the form of a Research Department of twelve dedicated study coordinators, mostly RNs, along with clerical and data-entry support personnel.

3. Fictitious Medical Group uses an Electronic Health Record (EHR) and a number of sponsor-provided Electronic Data Capture (EDC) systems for documenting clinical trial 330 activities.

Clinical Research Site's Involvement:

Fictitious involvement in a clinical study begins when the Research Department receives a request for proposal (RFP) from Sponsor. A Study Coordinator, Patricia Zone, RN, evaluates the RFP for business viability and clinical appropriateness, provides the requested documentation 335 back to the sponsor, and agrees to participate. After being approved as a site for the Sponsor #1234 trial, the Fictitious Medical Group provides the required regulatory documentation to the sponsor.

Following trial set up, Patricia contacts Corey Jones, a patient at Fictitious, about participating in the trial and Corey agrees to participate as a subject. A number of tasks deal with this individual
340   patient:

1. Obtain proper consent and other documentation from study candidate Corey Jones.

2. Register Corey in the EHR as a candidate in trial #1234, using the EHR's patient index.

3. Register Corey as a candidate in the EDC system.

4. Schedules Corey's study screening visits using the EHR scheduling module, and flag the
345   visits as pertaining to the trial #1234.

5. Examine screening results to confirm continued enrollment in the trial.

6. After screening, Patricia obtains and schedules the next set of study activities corresponding to the path (arm) of the Sponsor #1234 trial.

350   Post conditions

1. Fictitious Medical Group uses an EHR and the EDC system to document the Sponsor #1234 trial activities.

After RPE

Preconditions

355   1. A Clinical Research Process is defined by the clinical trials expert at Sponsor using a study design tool.

2. The resulting study design definition document is stored and made available for access by a Process Definition Manager (implemented by an EDC or other system).

3. A Process State Manager (implemented by an EDC or other system) is available to
360   deploy, run and manage the execution of the clinical trial process.

4. The Fictitious EHR (or other system) can implement the Process Activity Executor role.

Clinical Research Site's Involvement:

Initial:

1. The Process Definition Manager pushes a list of processes to the Process Activity
365   Executor

Screening:

1. Process Activity Executor uses the Initiate Process transaction to notify the Process State Manager that the site wishes to enter a patient into the study.

2. Process Activity Executor uses the Retrieve Activities transaction to obtain from the
370   Process State Manager the set of screening activities.

3. Process Activity Executor uses the Update Activity transaction to send the Process State Manager the screening results. (Note: if activities have associated RFD forms then Update Activity may be replaced by RFD form retrieval and submission.)

4. Process State Manager uses the Send Process State Alert transaction to notify the Process Activity Executor that the patient passed screening and has been enrolled in the trial.

Treatment:

1. Process Activity Executor uses the Retrieve Activities transaction again to obtain from the Process State Manager the next set of study activities for this patient.

2. Process Activity Executor uses the Update Activity transaction to send the Process State Manager updates of activities as they are performed. (Note: if activities have associated RFD forms then Update Activity may be replaced by RFD form retrieval and submission.)

3. Process Activity Executor can, at any time, use the Send Process State Alert transaction to notify the Process State Manager that the patient has withdrawn from the trial.

4. Process State Manager can at any time use the Send Process State Alert transaction to notify the Process Activity Executor that the trial has been placed on hold.

X.4.2 Process Flow

The basic process flow for RPE is shown below:
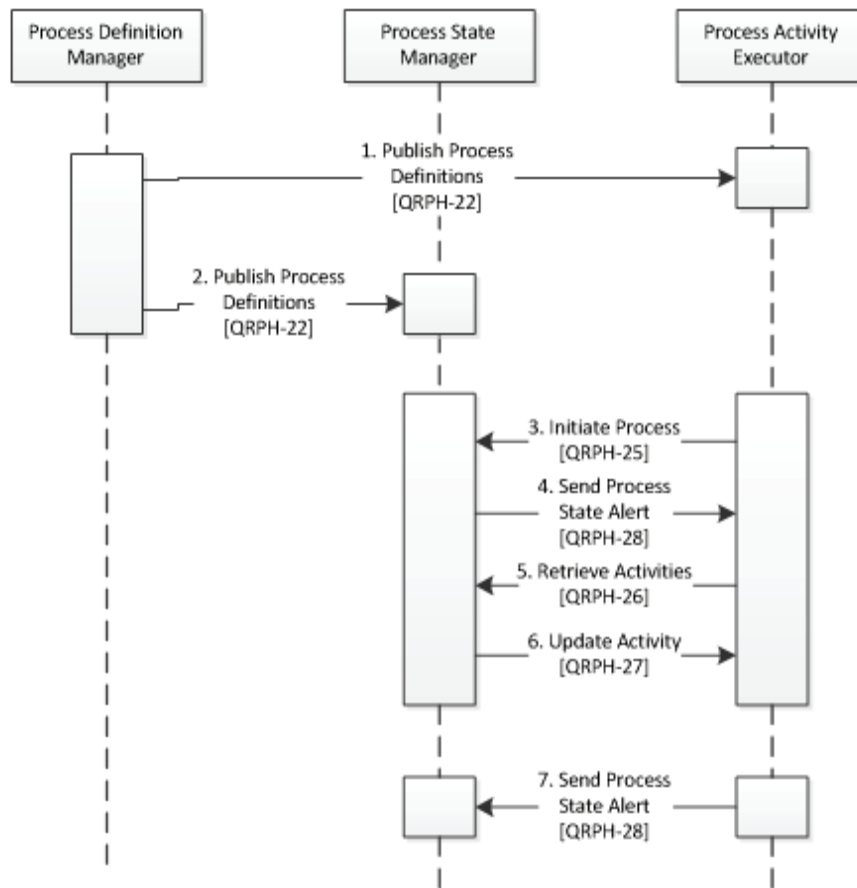
390

Figure X.4.2-1: Basic Process Flow in RPE Profile

1. The Process Definition Manager pushes process definitions of interest to the Process Activity Executor.

2. The Process Definition Manager pushes process definitions of interest to the Process
395   State Manager.

3. The Process Activity Executor requests process initiation by the Process State Manager forwarding a given process definition identifier as well as other required data, e.g., a patient identifier, demographics or eligibility criteria.

4. The Process State Manager notifies the Process Activity Executor that the process is
400   actively proceeding or otherwise, e.g., after initial screening of patient data.

5. The Process Activity Executor retrieves the current activity it has to perform.

6. After completion of an activity, the Process Activity Executor sends the Process State Manager the updated activity state and output data.

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7. The Process Activity Executor can always notify the Process State Manager of unscheduled events that may affect the process state, e.g., patient withdrawal from a clinical trial.

X.5 RPE Security Considerations

There are several high-impact risks associated with process exchange. These include:

- Mismatch between patient and patient data

410

- Malicious system attack

- Inappropriate or premature disclosure of personal health information

- Patient and organization identity protection

It is recommended that actors using this profile take steps to mitigate those risks where possible, including:

415

- Use the additional recommended profiles in Sections X.5.1 through X.5.4.

- Use pseudonimized identifiers for in processes when applicable to shield real identities.

- Verify patient identity using provided demographics.

- Allow providers to evaluate and review activity data before submission.

- Secure internal networks from unauthorized access.

420

- Ensure strong password use for applications with access to PHI.

- Employ a restrictive role based access control scheme for applications providing access to PHI.

- Obtain patient consents and ensure patient data requiring increased protection is clearly identified.

425 **X.5.1 Design workflow processes to ensure provider to patient communication occurs prior to sharing results with negative implications.X.5.1 Consistent Time (CT)**

In order to address identified security risks, all actors in RPE SHOULD be grouped with Consistent Time (CT) Profile - Time Client Actor. This grouping will assure that all systems

430 have a consistent time clock to assure a consistent timestamp for audit logging and form accuracy.

X.5.2 Audit Trail and Node Authentication (ATNA)

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RPE transactions may include clinical content related to the information subject. In those cases, it is anticipated that transfers of Personal Health Information (PHI) will be protected. The IHE ITI Audit Trail and Node Authentication (ATNA) Profile SHOULD be implemented to protect node-to-node communication and to produce an audit trail of the PHI related actions when they exchange messages.

X.5.3 User Authorization

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In order to address identified security risks actors in RPE MAY be grouped with Cross-Enterprise User Assertion (XUA) Profile or Enterprise User Authentication (EUA) actors.

X.5.4 Consent

In some jurisdictions, consent may be needed to provide this information to public health. For these cases, the IHE ITI BPPC or the IHE ITI APPC Integration Profile SHOULD be used to enable this consent management.

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X.6 RPE Version mapping

The following tables specify mappings from the original Retrieve *Protocol* for Execution to the new Retrieve *Process* for Execution to assist implementers in translating their original RPE actors, transactions, and parameters to the new actors, transactions, and parameters.

Table X.6-1: Actor Mapping

Retrieve *Protocol* for Execution Actor	Retrieve *Process* for Execution Actor
ProtocolDefManager	Process Definition Manager
ProtocolExecutor	Process Activity Executor
ProtocolStateManager	Process State Manager

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Table X.6-2: Transaction Mapping

Retrieve *Protocol* for Execution Transaction	Retrieve *Process* for Execution Transaction
RetrieveProtocolDef – Retired [QRPH-10]	Retrieve Process Definitions [QRPH-20]
EnterPatientRequest – Retired [QRPH-11]	Initiate Process [QRPH-25]
PatientScreeningVisitsScheduled – Retired [QRPH-12]	UpdateActivity [QRPH-27]
RecordPatientScreeningVisit – Retired [QRPH-13]	UpdateActivity [QRPH-27]
EnrollPatientRequest – Retired [QRPH-14]	Send Process State Alert [QRPH-28]
PatientStudyVisitsScheduled – Retired [QRPH-15]	UpdateActivity [QRPH-27]
RecordPatientStudyVisit – Retired [QRPH-16]	UpdateActivity [QRPH-27]
AmendProtocolDef – Retired [QRPH-17]	Publish Process Definitions [QRPH-22]
AlertProtocolState – Retired [QRPH-18]	Send Process State Alert [QRPH-28]

Table X.6-3: Parameter Mapping

Retrieve *Protocol* for Execution Parameter	Retrieve *Process* for Execution Parameter
query	processDefinitionIdentifier
ProtocolDefs	processDefinition
contentType	processDefinitionLanguage
study/id	processDefinitionIdentifier
subjectID	processIdentifier
schedule	activity
visit	activity

Appendix A – Actor Summary Definitions

Process Definition Manager – A system that manages access to a repository of process definitions allowing for search and retrieval. An example would be a research sponsor providing access to the clinical research processes it has developed. Another would be a provider of evidence-based clinical practice guidelines.

Process State Manager – A system that manages the initiation and state of runtime process instances. The Process State Manager typically also supports the initiation and lifecycle management of task activities associated with a process while providing the ability for task performers to retrieve and update activities. An example would be a research sponsor conducting clinical trials in conjunction with its EHR participants. Another would be an EHR performing clinical care in accord with executable guideline-based processes.

Process Activity Executor – A system that performs activities as prescribed by a running process being managed by a Process State Manager. The Process Activity Executor retrieves current activity or task lists, works its list, updating the Process State Manager on activity state until completion. This cycle is repeated until all process activities have been worked and the process itself completes. An example would be an EHR performing activities as part of a clinical trial being managed by a research sponsor. Another would be an EHR performing guideline-based care process activities.

Appendix B – Transaction Summary Definitions

Retrieve Process Definitions [QRPH-20] – enables access to one or more process definitions specified by an identifier or other query criteria. This transaction is implemented by the Process Definition Manager and used by both the Process State Manager – to deploy processes it wishes to manage – and the Process Activity Executor – to examine processes it may be interested in becoming an activity participant.

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Publish Process Definitions [QRPH-22] – enables one or more process definitions to be published from a Process Definition Manager to Process State Manager and Process Activity Executor Actors.

480 **Initiate Process [QRPH-25]** – enables a Process Activity Executor to initiate a new process to be managed by a Process State Manager, e.g., an EHR entering a new patient candidate in a clinical trial being managed by a research sponsor.

Retrieve Activities [QRPH-26] – enables a Process Activity Executor to retrieve the current set of activities it needs to execute as part of a process managed by a Process State Manager.

485 **Update Activity [QRPH-27]** – allows a Process Activity Executor to provide an update on activity's state or data to a Process State Manager for a process it is a participant in.

Send Process State Alert [QRPH-28] – provides the Process State Manager and Process Activity Executor the ability to notify each other of unscheduled events that affect the state of the process, e.g., an EHR patient withdrawing from a clinical trial or, a study being placed on hold.

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Glossary

Add the following terms to the Glossary:

Process Definition – A designed flow of activities involving one or more role-based activity performers, implemented in XML and deployable to a runtime process consumer.

495   **Process –** A specific instance of a process definition running in a process consumer.

Activity Definition – A designed task which is deployable to a runtime activity processor, typically as part of a process definition.

Activity – A specific instance of an activity definition created in, and available from, an activity processor.

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Volume 2 – Transactions

3 IHE Transactions

3.20 Retrieve Process Definitions [QRPH-20]

505   This section corresponds to transaction [QRPH-20] of the IHE QRPH Transaction Framework. [QRPH-20] is used by the Process Definition Manager and Process Activity Executor Actors.

3.20.1 Scope

This transaction involves a Process Activity Executor or Process State Manager requesting one or more process definitions from a Process Definition Manager. The Process Activity Executor
510   or Process State Manager has one or more process definition identifiers obtained by means outside the scope of this profile.

The Process Definition Manager returns either a list of matching process definitions or an error response.

3.20.2 Use Case Roles

515
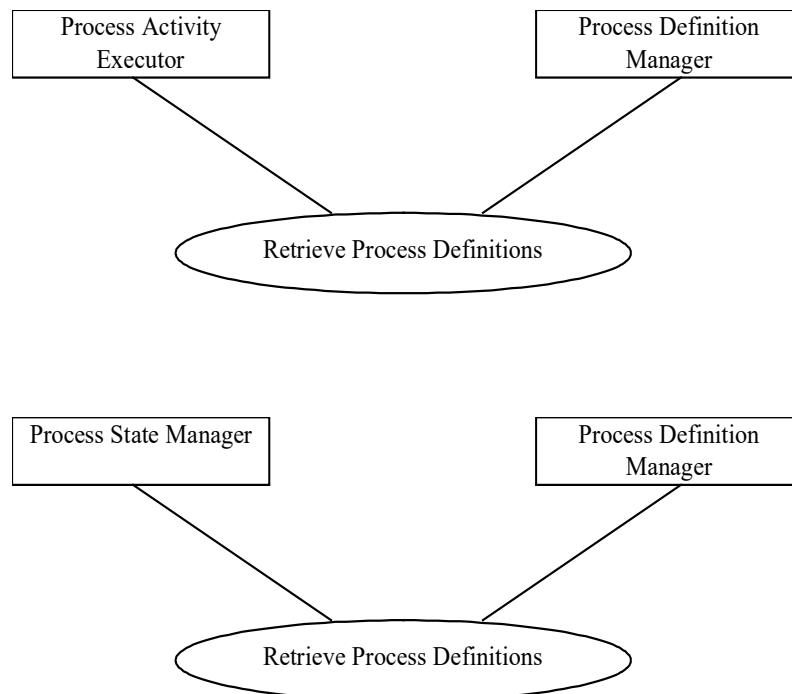
520

Actor: Process Activity Executor

Role: A system that knows how to execute activities that are part of a process.

Actor: Process State Manager

Role: A system that manages the runtime state of a process.

525 **Actor:** Process Definition Manager

Role: A system that provides a set of process definitions upon request.

3.20.3 Referenced Standards

Implementers of this transaction shall comply with all requirements described in:

- ITI TF-2x: Appendix V Web Services for IHE Transactions

530
- Extensible Markup Language (XML) 1.0 (Second Edition). W3C Recommendation 6 October 2000. http://www.w3.org/TR/REC-xml

3.20.4 Interaction Diagram

ProcessActivityExecutor   ProcessDefinitionManager

RetrieveProcessDefinitionsRequest

[QRPH-20]

RetrieveProcessDefinitionsResponse

ProcessStateManager   ProcessDefinitionManager

RetrieveProcessDefinitionsRequest

[QRPH-20]

RetrieveProcessDefinitionsResponse

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23
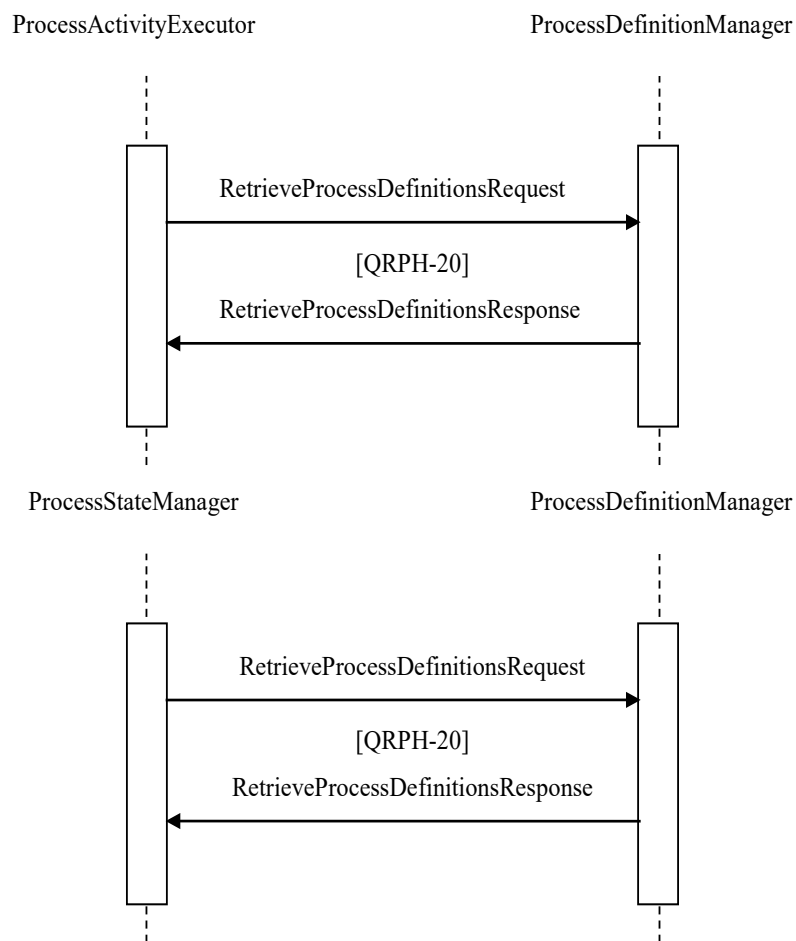
3.20.4.1 Retrieve Process Definitions Message

3.20.4.1.1 Trigger Events

540 The Process Activity Executor or Process State Manager, based on human decision or the application of a rule for automatic operation, wants to obtain from the Process Definition Manager one or more process definitions matching a set of previously supplied identifiers.

3.20.4.1.2 Message Semantics

The following parameters are specified for the body of this transaction.

Table 3.22.4.1.2-1: Publish Process Definitions Request Parameters

Parameter Name	Optionality	Description	Value
processDefinition	R	One process definition per process definition identifier requested.	A complex XML element of type specified per optional processDefinitionLanguage attribute
@processDefinitionLanguage	R	XML attribute	Defined by content profile.

545

Section 3.20.6 describes the Web Services protocol requirements and the format of the message in full detail.

3.20.4.1.3 Expected Actions

550 Upon receipt of the Retrieve Process Definitions Message, the Process Definition Manager shall parse the request and return the requested process definitions in the Retrieve Process Definitions Response message.

The successful response shall be one or more well-formed XML documents matching the supplied identifiers.

Otherwise SOAP faults shall be generated accordingly.

555 ### 3.20.4.2 Retrieve Process Definitions Response Message

3.20.4.2.1 Trigger Events

The delivery of a set of process definitions is triggered by a Process Definition Manager in response to a Retrieve Process Definitions message.

3.20.4.2.2 Message Semantics

560 A matching list of one or more process definitions is returned. The format of each process definition is a well-formed XML document.

Table 3.20.4.2.2-1: Retrieve Process Definitions Response Parameter

Parameter Name	Option ality	Description	Value
@status	R	Indicates whether processing was successful	See Table 3.20.4.2.2-2.
processDefinition	R	One process definition per process definition identifier requested.	A complex XML element of type specified per processDefinitionLanguage attribute
@processDefinitionLanguage	R	XML attribute	Defined by content profile.
processErrorList	O	If errors were encountered in processing (see @status), error list is defined here.	See Table 3.20.4.2.2-3.

Table 3.20.4.2.2-2: Process Response Status Codes

Status	processErrorList element	Result
urn:ihe:qrph:rpe:2009:ResponseStatusType:Success	May be present. If present, will contain one or more ProcessError elements with warning severity; none with error severity	Process will be processed.
urn:ihe:qrph:rpe:2009:ResponseStatusType:PartialSuccess	Present, contains one or more ProcessError elements. At least one has error severity; others may have warning severity.	Process will be processed.
urn:ihe:qrph:rpe:2009:ResponseStatusType:Failure	Present, contains one or more ProcessError elements. At least one has error severity; others may have warning severity.	Process will not be processed.

Table 3.20.4.2.2-3: ProcessErrorList Structure

Attribute	Optionality	Value
@highestSeverity	R	The highest severity error that is included in the processErrorList.
processError	R [1..*]	See Table 3.20.4.2.2-4.

565 **Table 3.20.4.2.2-4: ProcessError Structure**

Attribute	Optionality	Value
errorCode	R	Shall be taken from Table 3.20.4.2.2-5 when one of those codes is appropriate. All extensions to the list of error codes shall be unique.
codeContext	R	Supplies additional detail for the errorCode

25

| severity | R | Indicates the severity of the error. Shall be one of: urn:ihe:qrph:rpe:2009:ErrorSeverityType:Error urn:ihe:qrph:rpe:2009:ErrorSeverityType:Warning |
| location | O | Supplies the location of the error: module name and line number or stack trace if appropriate. |

Table 3.20.4.2.2-5: Error Codes

errorCode	Discussion
RPEInvalidProcessContent	The recipient has rejected this submission because it detected that the content did not match the processDefinitionLanguage provided.
RPEActivityExecutorError RPEDefinitionManagerError RPEStateManagerError	Internal Error These error codes shall be returned if and only if a more detailed code is not available for the condition being reported. If one of these error codes is returned, the attribute codeContext shall contain details of the error condition that may be implementation-specific.
RPEUnknownProcessContent	The recipient has rejected this submission because it detected that the content processDefinitionLanguage was not one that could be handled by that actor.
RPEUnknownCandidateId	Receiving system is unable to identify the patient from the provided Patient ID.
RPEInvalidCandidateDemographics	The patient demographics on file do not match the patient demographics received in the message.
RPEUnknownProcessDefinitionIdentifier	The requested process definition identifier is not known by the receiving system.
RPEUnknownProcessIdentifier	The requested process identifier is not known by the receiving system.
RPEUnknownOrganizationIdentifier	The organization included in the message is not known by the receiving system.
RPEUnknownActivityIdentifier	The requested activity identifier is not known by the receiving system.

3.20.4.2.3 Expected Actions

The Process Activity Executor shall consume the set of process definitions. If a SOAP fault is received then this fault should be handled based on the business rules of the system.

3.20.5 Security Considerations

This transaction should be considered a PHI-Export event, as defined in ITI TF-2a: Table 3.20.4.1.1.1-1.

3.20.6 Protocol Requirements

575   The Retrieve Process Definitions Request and Response shall be transmitted using Synchronous Web Services Exchange, according to the requirements specified in ITI TF-2x: Appendix V Web Services for IHE Transactions.

Table 3.20.6-1: WSDL Namespace Definitions

ihe	urn:ihe:qrph:rpe:2009
soap12	http://schemas.xmlsoap.org/wsdl/soap12/
wsaw	http://www.w3.org/2005/08/addressing
xsd	http://www.w3.org/2001/XMLSchema

580   These are the requirements for the Retrieve Process Definitions 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:qrph:rpe:2009", schema="RPE.xsd"

- The /definitions/message/part/@element attribute of the Retrieve Process Definitions
585   Request message shall be defined as: "ihe:RetrieveProcessDefinitionsRequest"

- The /definitions/message/part/@element attribute of the Retrieve Process Definitions Response message shall be defined as: "ihe:RetrieveProcessDefinitionsResponse"

- The /definitions/portType/operation/input/@wsaw:Action attribute for the Retrieve Process Definitions Request message shall be defined as
590   "urn:ihe:qrph:rpe:2009:RetrieveProcessDefinitions"

- The /definitions/portType/operation/output/@wsaw:Action attribute for the Retrieve Process Definitions response message shall be defined as: "urn:ihe:qrph:rpe:2009:RetrieveProcessDefinitionsResponse"

- The /definitions/binding/operation/soap12:operation/@soapAction attribute shall be
595   defined as "urn:ihe:qrph:rpe:2009:RetrieveProcessDefinitions"

These are the requirements that affect the wire format of the SOAP message. The other WSDL properties are only used within the WSDL definition and do not affect interoperability. Full sample request and response messages are in Section 3.20.6.1 Sample SOAP Messages.

3.20.6.1 Sample SOAP Messages

600   The samples in the following two sections show a typical request and corresponding response as contained in a SOAP Body. *Note: the SOAP Header should be populated according to ITI TF-2x: Appendix V: Web Services for IHE Transactions.*

Full WSDLs can be found on the IHE FTP site at:
ftp://ftp.ihe.net/TF_Implementation_Material/QRPH/RPE

605 **3.20.6.1.1 Sample Retrieve Process Definitions SOAP Request**

```
       <soap:Body>
              <rpe:RetrieveProcessDefinitionsRequest xmlns:rpe="urn:ihe:qrph:rpe:2009">
                     <rpe:processDefinitionIdentifier root=”1.2.3.4” extension=”1006” />
610                  <rpe:maxOccurs>1</rpe:maxOccurs>
                     <rpe:startIndex>1</rpe:startIndex>
              </rpe:RetrieveProcessDefinitionsRequest>
       </soap:Body>
```

615 **3.20.6.1.2 Sample Retrieve Process Definitions SOAP Response**

An example success may look like the below.

```
       <soap:Body>
620           <rpe:RetrieveProcessDefinitionsResponse xmlns:rpe="urn:ihe:qrph:rpe:2009"
              status=”urn:ihe:qrph:rpe:2009:ResponseStatusType:Success“>>
              <rpe:processDefinition processDefinitionLanguage=”[As Defined by Content Profile]”>
                     [As Defined by Content Profile]
              </rpe:processDefinition>
625    </rpe:RetrieveProcessDefinitionsResponse>
       </soap:Body>
```

An example with errors may look like the below.

```
630    <soap:Body>
              <rpe:RetrieveProcessDefinitionsResponse xmlns:rpe="urn:ihe:qrph:rpe:2009"
              status=”urn:ihe:qrph:rpe:2009:ResponseStatusType:Failure“>>
              <rpe:processDefinition processDefinitionLanguage=”[As Defined by Content Profile]”>
                     [As Defined by Content Profile]
635           </rpe:processDefinition>
              <rpe:processErrorList highestSeverity=”urn:ihe:wrph:rpe:2009:ResponseStatusType:Error”>
                     <rpe:processError>
                            <rpe:errorCode>RPEInvalidProcessContent</rpe:errorCode>
                            <rpe:codeContext>Unrecognized content</rpe:codeContext>
640                         <rpe:severity>urn:ihe:qrph:rpe:2009:ResponseStatusType:Error</rpe:severity>
                            <rpe:location>TestCodeLocation</rpe:location>
                     </rpe:processError>
                     <rpe:processError>
                            <rpe:errorCode>RPEUnknownOrganizationIdentifier</rpe:errorCode>
645                         <rpe:codeContext>Unrecognized organization</rpe:codeContext>
                            <rpe:severity>urn:ihe:qrph:rpe:2009:ResponseStatusType:Warning</rpe:severity>
                            <rpe:location>TestCodeLocation</rpe:location>
                     </rpe:processError>
              </rpe:processErrorList>
650    </rpe:RetrieveProcessDefinitionsResponse>
       </soap:Body>
```

3.22 Publish Process Definitions [QRPH-22]

This section corresponds to transaction [QRPH-22] of the IHE QRPH Transaction Framework.
655 [QRPH-22] is used by the Process Definition Manager, the Process Activity Executor and the Process State Manager Actors.

3.22.1 Scope

This transaction involves a Process Definition Manager publishing process definitions to a Process Activity Executor or Process State Manager.

660 ### 3.22.2 Use Case Roles
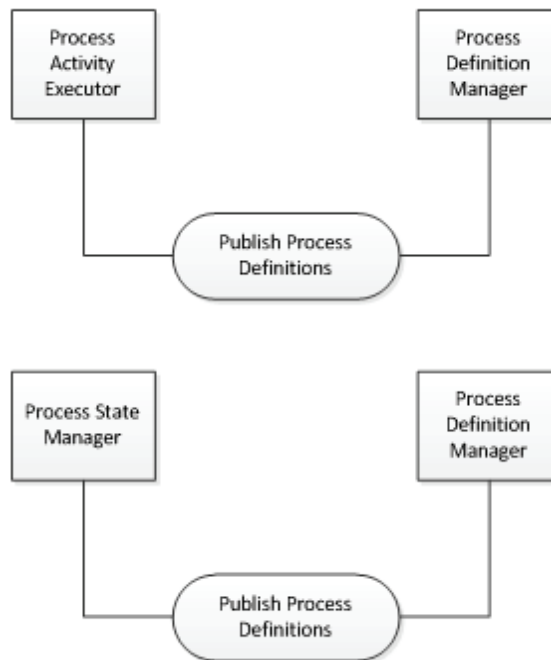
Actor: Process Activity Executor

665 **Role:** A system that knows how to execute activities that are part of a process.

Actor: Process State Manager

Role: A system that manages the runtime state of a process.

Actor: Process Definition Manager

Role: A system that provides a set of process definitions.

670 **3.22.3 Referenced Standards**

Implementers of this transaction shall comply with all requirements described in:

- ITI TF-2x: Appendix V Web Services for IHE Transactions

- Extensible Markup Language (XML) 1.0 (Second Edition). W3C Recommendation 6 October 2000. http://www.w3.org/TR/REC-xml

675 **3.22.4 Interaction Diagram**

Rev. 4.2 – 2018-09-07   Copyright © 2018: IHE International, Inc.
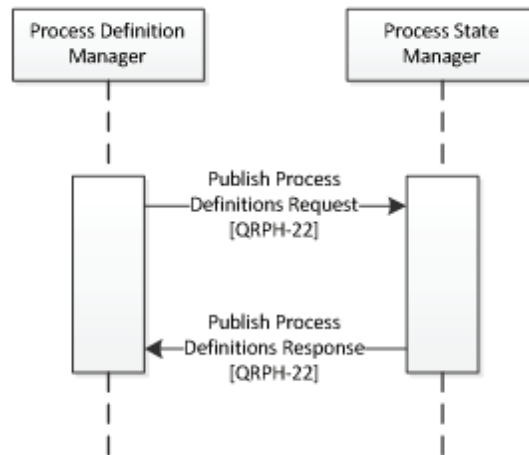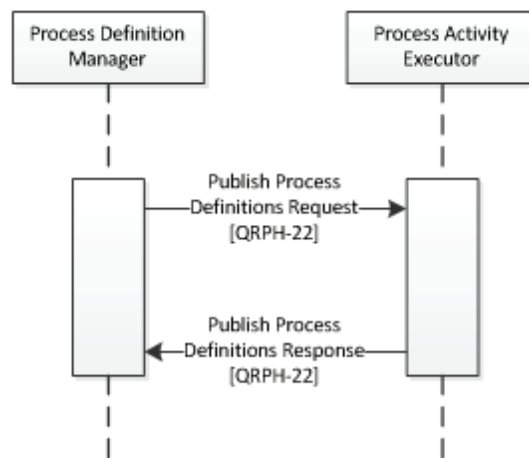
3.22.4.1 Publish Process Definitions Message

680 ### 3.22.4.1.1 Trigger Events

The Process Definition Manager defines a new process.

3.22.4.1.2 Message Semantics

The following parameters are specified for the body of this transaction.

Table 3.22.4.1.2-1: Publish Process Definitions Request Parameters

Parameter Name	Optional ity	Description	Value
processDefinition	R	One process definition per process definition identifier requested.	A complex XML element of type specified per optional processDefinitionLanguage attribute
processDefinitionLanguage	R	XML attribute	Defined by content profile.

685

Section 3.20.6 describes the Web Services protocol requirements and the format of the message in full detail.

3.22.4.1.3 Expected Actions

Upon receipt of the Publish Process Definitions Message, the Process Activity Executor or
690 Process State Manager SHALL respond with a message indicating that the process was received. That message is defined in Table 3.22.4.1.2-2.

The successful response shall be one or more well-formed XML documents matching the supplied identifiers.

Otherwise SOAP faults shall be generated accordingly.

695 ### 3.22.4.2 Publish Process Definitions Response Message

3.22.4.2.1 Trigger Events

This message occurs upon receipt of a Publish Process Definitions Request.

3.22.4.2.2 Message Semantics

A matching list of one or more process definitions is returned. The format of each process
700 definition is a well-formed XML document.

Table 3.22.4.1.2-2: Publish Process Definitions Response Parameters

Parameter Name	Option ality	Description	Value
@status	R	Indicates whether processing was successful	See Table 3.20.4.2.2-2.
responseCode	R	A code indicating successful receipt of the message.	PROCESS_RECEIVED
processErrorList	O	If errors were encountered in processing (see @status), error list is defined here.	See Table 3.20.4.2.2-3.

3.22.4.2.3 Expected Actions

The Process Activity Executor or Process State Manager consumes the received process information.

3.22.5 Security Considerations

This transaction should be considered a PHI-Export event, as defined in ITI TF-2a: Table 3.20.4.1.1.1-1.

3.22.6 Protocol Requirements

The Publish Process Definitions Request and Response shall be transmitted using Synchronous Web Services Exchange, according to the requirements specified in ITI TF-2x: Appendix V Web Services for IHE Transactions.

Table 3.22.6-1: WSDL Namespace Definitions

ihe	urn:ihe:qrph:rpe:2009
soap12	http://schemas.xmlsoap.org/wsdl/soap12/
wsaw	http://www.w3.org/2005/08/addressing
xsd	http://www.w3.org/2001/XMLSchema

These are the requirements for the Publish Process Definitions 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:qrph:rpe:2009", schema="RPE.xsd"

- The /definitions/message/part/@element attribute of the Publish Process Definitions Request message shall be defined as: "ihe:PublishProcessDefinitionsRequest"

- The /definitions/message/part/@element attribute of the Publish Process Definitions Response message shall be defined as: "ihe:PublishProcessDefinitionsResponse"

- The /definitions/portType/operation/input/@wsaw:Action attribute for the Publish Process Definitions Request message shall be defined as "urn:ihe:qrph:rpe:2009:PublishProcessDefinitions"

725
- The /definitions/portType/operation/output/@wsaw:Action attribute for the Publish Process Definitions response message shall be defined as: "urn:ihe:qrph:rpe:2009:PublishProcessDefinitionsResponse"

- The /definitions/binding/operation/soap12:operation/@soapAction attribute shall be defined as "urn:ihe:qrph:rpe:2009:PublishProcessDefinitions"

730 These are the requirements that affect the wire format of the SOAP message. The other WSDL properties are only used within the WSDL definition and do not affect interoperability. Full sample request and response messages are in Section 3.20.6.1 Sample SOAP Messages.

3.22.6.1 Sample SOAP Messages

The samples in the following two sections show a typical request and corresponding response as
735 contained in a SOAP Body. *Note: the SOAP Header should be populated according to ITI TF-2x: Appendix V: Web Services for IHE Transactions.*

Full WSDLs can be found on the IHE FTP site at:
ftp://ftp.ihe.net/TF_Implementation_Material/QRPH/RPE

3.22.6.1.1 Sample Publish Process Definitions SOAP Request

740
```
<soap:Body>
        <rpe:PublishProcessDefinitionsRequest xmlns:rpe="urn:ihe:qrph:rpe:2009">
                <rpe:processDefinition processDefinitionLanguage="[As Defined by Content Profile]">
                [As Defined by Content Profile]
745             </rpe:processDefinition>
        </rpe:PublishProcessDefinitionsRequest>
</soap:Body>
```

3.22.6.1.2 Sample Publish Process Definitions SOAP Response

750

An example success may look like the below.

```
<soap:Body>
        <rpe:PublishProcessDefinitionsResponse xmlns:rpe="urn:ihe:qrph:rpe:2009"
755     status="urn:ihe:qrph:rpe:2009:ResponseStatusType:Success">
                <rpe:responseCode>PROCESS_RECEIVED</rpe:responseCode>
        </rpe:PublishProcessDefinitionsResponse/>
</soap:Body>
```

760 An example with errors may look like the below.

```
<soap:Body>
```

```
                    <rpe:PublishProcessDefinitionsResponse xmlns:rpe="urn:ihe:qrph:rpe:2009"
                    status="urn:ihe:qrph:rpe:2009:ResponseStatusType:Success">
765                         <rpe:responseCode>PROCESS_RECEIVED</rpe:responseCode>
                        <rpe:processErrorList highestSeverity="urn:ihe:wrph:rpe:2009:ResponseStatusType:Warning">
                            <rpe:processError>
                                <rpe:errorCode>RPEUnknownOrganizationIdentifier</rpe:errorCode>
                                <rpe:codeContext>Unrecognized organization</rpe:codeContext>
770                             <rpe:severity>urn:ihe:qrph:rpe:2009:ResponseStatusType:Warning</rpe:severity>
                                <rpe:location>TestCodeLocation</rpe:location>
                            </rpe:processError>
                        </rpe:processErrorList>
                    </rpe:PublishProcessDefinitionsResponse/>
775 </soap:Body>
```

3.25 Initiate Process [QRPH-25]

This section corresponds to transaction [QRPH-25] of the IHE QRPH Transaction Framework. [QRPH-25] is used by the Process State Manager and Process Activity Executor Actors.

780 **3.25.1 Scope**

This transaction involves a Process Activity Executor requesting the initiation of a process with a Process State Manager.

In its request the Process Activity Executor supplies an initial context, including:

- an identifier for the process definition of interest

785 - an organizational identifier

- a patient identifier

- an endpoint reference for callback notifications (alerts)

- other optional patient data (such as demographics)

3.25.2 Use Case Roles

790
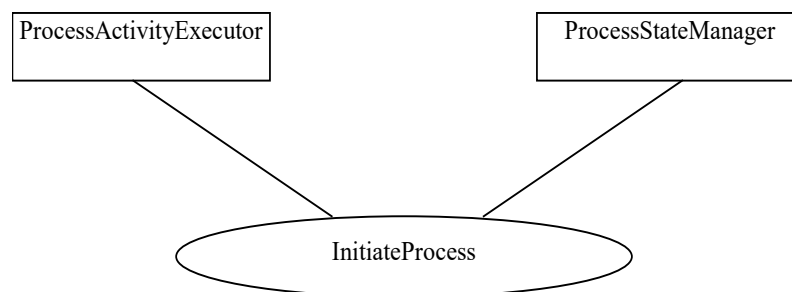
Actor: Process Activity Executor

Role: A system that knows how to execute activities that are part of a process.

795 **Actor:** Process State Manager

Role: A system that manages the runtime state of a process.

3.25.3 Referenced Standards

See Section 3.20.3.

3.25.4 Interaction Diagram

Process Activity Executor   Process State Manager

Initiate Process Request

[QRPH-25]

Initiate Process Response
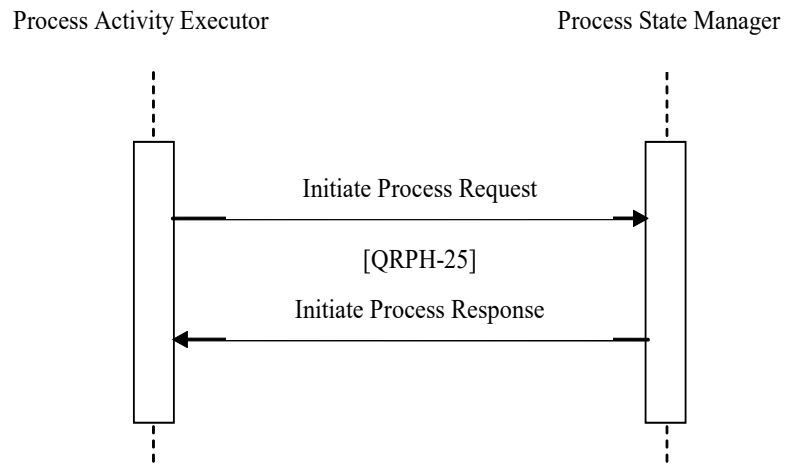
800

3.25.4.1 Initiate Process Message

3.25.4.1.1 Trigger Events

The Process Activity Executor, based on human decision or the application of a rule for
805 automatic operation, wants to initiate a process with a Process State Manager.

3.25.4.1.2 Message Semantics

The following parameters are specified for the body of this transaction.

Table 3.25.4.1.2-1: Initiate Process Request Parameters

Parameter Name	Optionality	Description	Value
patient	R	Basic demographics for the patient.	Simple patient definition. See Table 3.25.4.1.2-2
processDefinitionIdentifier	R	Identifier for the process definition to be initiated.	HL7[1] element of type InstanceIdentifier.

---

[1] HL7 is the registered trademark of Health Level Seven International.

Parameter Name	Optionality	Description	Value
processState	R	Initial state of the process	An XML element of type enumerated string. See 3.25.4.1.2 for recommended values.
organizationIdentifier	O	Identifier for the involved organization.	HL7 element of type InstanceIdentifier.
requestorReference	O	The Process Activity Executor callback endpoint for the Process State Manager to use in sending alerts.	WS Addressing EndpointReferenceType
patientData	O	Structured patient data	XML element of complex type specified per @patientDataLanguage
@patientDataLanguage	O	Structural description of the patientData element	XML attribute of type string

Table 3.25.4.1.2-2: Patient structure

Parameter Name	Optionality	Description	Value
candidateID	R	List of patient identities	HL7 element of type InstanceIdentifier
name	O	Patient name	HL7 patient name type
@given	O	Patient given name	XML element of type string
@family	O	Patient family name	XML element of type string
address	O	Patient address	HL7 address type
dob	O	Patient date of birth	HL7 datetime type

810

Section 3.25.6 describes the Web Services protocol requirements and the format of the message in full detail.

The enumerated value processState reflects the current state of the process. It may be selected from one of these standardized values or expanded to meet the needs of a given profile.

815
- ACTIVE
- COMPLETED
- SUSPENDED
- EXITED

3.25.4.1.3 Expected Actions

820   The Process State Manager parses the Initiate Process request and, if well-formed, initiates an instance of the given process and acknowledges the request with a returned process context to be used in subsequent transactions.

Otherwise SOAP faults shall be generated accordingly.

3.25.4.2 Initiate Process Response Message

825 #### 3.25.4.2.1 Trigger Events

The message is triggered by a Process State Manager receiving an Initiate Process request from a Process Activity Executor and after successful initiation of the process.

3.25.4.2.2 Message Semantics

The following output parameters are the body of the response.

830 **Table 3.25.4.2.2-1: Initiate Process Response Parameters**

Parameter Name	Optionality	Description	Value
@status	R	Indicates whether processing was successful	See Table 3.20.4.2.2-2.
processIdentifier	R	Identifier for process instance	HL7 element of type InstanceIdentifier.
processState	R	Initial state of the process	An XML element of type enumerated string. See 3.25.4.1.2 for recommended values.
assignedOrganizationIdentifier	O	Assigned identifier for organization.	HL7 element of type InstanceIdentifier.
patient	O	Provided if additional identifiers are assigned to the patient.	Simple patient definition, of type rpe:PatientType.
processErrorList	O	If errors were encountered in processing (see @status), error list is defined here.	See Table 3.20.4.2.2-3.

3.25.4.2.3 Expected Actions

The Process Activity Executor shall consume the response code based on the business rules of the system. If a SOAP fault is received then this fault should also be handled based on the
835 business rules of the system.

3.25.5 Security Considerations

This transaction should be considered a PHI-Export event, as defined in ITI TF-2a: Table 3.20.4.1.1.1-1.

3.25.6 Protocol Requirements

840 The Initiate Process request and response shall be transmitted using Synchronous Web Services Exchange, according to the requirements specified in ITI TF-2x: Appendix V Web Services for IHE Transactions.

___

Table 3.25.6-1: WSDL Namespace Definitions

ihe	urn:ihe:qrph:rpe:2009
soap12	http://schemas.xmlsoap.org/wsdl/soap12/
wsaw	http://www.w3.org/2005/08/addressing
xsd	http://www.w3.org/2001/XMLSchema

845 These are the requirements for the Initiate Process 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:qrph:rpe:2009", schema="RPE.xsd"

- The /definitions/message/part/@element attribute of the Initiate Process Request message
850 shall be defined as: "ihe:InitiateProcessRequest"

- The /definitions/message/part/@element attribute of the Initiate Process Response message shall be defined as: "ihe:InitiateProcessResponse"

- The /definitions/portType/operation/input/@wsaw:Action attribute for the Initiate Process request message shall be defined as "urn:ihe:qrph:rpe:2009:InitiateProcess"

855 - The /definitions/portType/operation/output/@wsaw:Action attribute for the Initiate Process response message shall be defined as: "urn:ihe:qrph:rpe:2009:InitiateProcessResponse"

- The /definitions/binding/operation/soap12:operation/@soapAction attribute shall be defined as "urn:ihe:qrph:rpe:2009:InitiateProcess"

860 These are the requirements that affect the wire format of the SOAP message. The other WSDL properties are only used within the WSDL definition and do not affect interoperability. Full sample request and response messages are in the Section 3.25.6.1 Sample SOAP Messages.

3.25.6.1 Sample SOAP Messages

The samples in the following two sections show a typical request and corresponding response as
865 contained in a SOAP Body. Note: the SOAP Header should be populated according to ITI TF-2x: Appendix V: Web Services for IHE Transactions and in accord with Section 3.25.5 Security Considerations.

Full WSDLs can be found on the IHE FTP site at:
ftp://ftp.ihe.net/TF_Implementation_Material/QRPH/RPE

870 ### 3.25.6.1.1 Sample Initiate Process SOAP Request

```
<soap:Body>
        <rpe:InitiateProcessRequest xmlns:rpe="urn:ihe:qrph:rpe:2009" xmlns:hl7="urn:hl7-org:v3"
        xmlns:wsa="http://schemas.xmlsoap.org/ws/2004/03/addressing">
                <rpe:patient>
```

```
875             <rpe:candidateID root="" extension="" />
                <rpe:name>
                        <hl7:given>John</hl7:given>
                        <hl7:family>Smith</hl7:family>
                </rpe:name>
880             <rpe:address />
                <rpe:dob value="19990101" />
            </rpe:patient>
            <rpe:processDefinitionIdentifier root="1.2.3.4" extension="1006" />
            <rpe:processState>ACTIVE</rpe:processState>
885         <rpe:organizationIdentifier root="1.2.3.5" extension="CIS_CE_CB" />
            <rpe:requestorReference>
                    <wsa:Address>http://example.com/fabrikam/acct</wsa:Address>
            </rpe:requestorReference>
            <rpe:patientData patientDataLanguage="[As Defined by Integration Needs]">
890         [As Defined by Integration Needs]
            </rpe:patientData>
        </rpe:InitiateProcessRequest>
</soap:Body>
```

3.25.6.1.2 Sample Initiate Process SOAP Response

895

An example success may look like the below.

```
<soap:Body>
        <rpe:InitiateProcessResponse xmlns:rpe="urn:ihe:qrph:rpe:2009"
900     status="urn:ihe:qrph:rpe:2009:ResponseStatusType:Success">
                <rpe:processIdentifier root="1.2.3.5" extension="1006-1" />
                <rpe:processState>ACTIVE</rpe:processState>
                <rpe:assignedOrganizationIdentifier root="" extension=""/>
                <rpe:patient>
905                     <rpe:candidateID root="" extension="" />
                        <rpe:name>
                                <hl7:given>John</hl7:given>
                                <hl7:family>Smith</hl7:family>
                        </rpe:name>
910                     <rpe:address />
                        <rpe:dob value="19990101" />
                </rpe:patient>
        </rpe:InitiateProcessResponse>
</soap:Body>
915

An example with errors may look like the below.

<soap:Body>
        <rpe:InitiateProcessResponse xmlns:rpe="urn:ihe:qrph:rpe:2009"
920     status="urn:ihe:qrph:rpe:2009:ResponseStatusType:Failure">
                <rpe:processIdentifier root="1.2.3.5" extension="1006-1" />
                <rpe:processState>ACTIVE</rpe:processState>
                <rpe:assignedOrganizationIdentifier root="" extension=""/>
                <rpe:patient>
925                     <rpe:candidateID root="" extension="" />
                        <rpe:name>
                                <hl7:given>John</hl7:given>
                                <hl7:family>Smith</hl7:family>
                        </rpe:name>
```

```
930                         <rpe:address />
                            <rpe:dob value="19990101" />
                    </rpe:patient>
                    <rpe:processErrorList highestSeverity="urn:ihe:wrph:rpe:2009:ResponseStatusType:Error">
                            <rpe:processError>
935                             <rpe:errorCode>RPEUnknownOrganizationIdentifier</rpe:errorCode>
                                <rpe:codeContext>Unrecognized organization</rpe:codeContext>
                                <rpe:severity>urn:ihe:qrph:rpe:2009:ResponseStatusType:Error</rpe:severity>
                                <rpe:location>TestCodeLocation</rpe:location>
                            </rpe:processError>
940                     </rpe:processErrorList>
            </rpe:InitiateProcessResponse/>
</soap:Body>
```

3.26 Retrieve Activities [QRPH-26]

This section corresponds to transaction [QRPH-26] of the IHE QRPH Transaction Framework. [QRPH-26] is used by the Process State Manager and Process Activity Executor Actors.

3.26.1 Scope

The Retrieve Activities transaction enables a Process Activity Executor to retrieve the current set of activities it needs to execute as part of processes in which it is a participant and which are managed by the given Process State Manager.

In its request, the Process Activity Executor supplies the current process context, per Table 3.25.4.2.2-1.

3.26.2 Use Case Roles
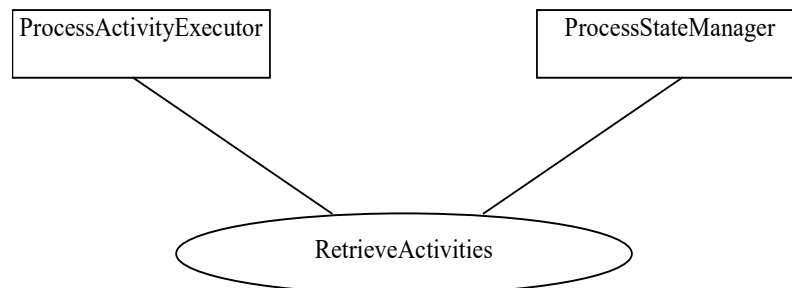
Actor: Process Activity Executor

Role: A system that knows how to execute activities that are part of a process.

Actor: Process State Manager

Role: A system that manages the runtime state of a process.

3.26.3 Referenced Standards

See Section 3.20.3.

3.26.4 Interaction Diagram

ProcessActivityExecutor   ProcessStateManager

RetrieveActivitiesRequest

[QRPH-26]

RetrieveActivitiesResponse
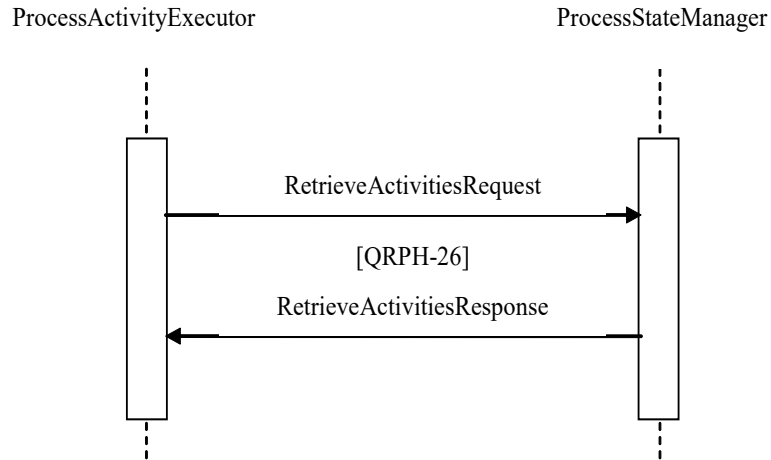
965

3.26.4.1 Retrieve Activities Message

3.26.4.1.1 Trigger Events

The Process Activity Executor, based upon human decision or application of a rule for automatic operation, wants to retrieve the current set of process activities it needs to perform from a
970   Process State Manager.

3.26.4.1.2 Message Semantics

The following parameters are specified for the body of this transaction.

Table 3.26.4.1.2-1: Retrieve Activities Request Parameters

Parameter Name	Optionality	Description	Value
@status	R	Indicates whether processing was successful	See Table 3.20.4.2.2-2.
processIdentifier	R	Identifier for process instance	HL7 element of type InstanceIdentifier.
processState	R	Initial state of the process	An XML element of type enumerated string. See 3.25.4.1.2 for recommended values.
assignedOrganizationIdentifier	O	Assigned identifier for organization.	HL7 element of type InstanceIdentifier.

Parameter Name	Optionality	Description	Value
patient	O	Provided if additional identifiers are assigned to the patient.	Simple patient definition, of type rpe:PatientType.
processErrorList	O	If errors were encountered in processing (see @status), error list is defined here.	See Table 3.20.4.2.2-3.

975

3.26.4.1.3 Expected Actions

The Process State Manager parses the Retrieve Activities Request message and, if well-formed, returns the current set of activities for the given organization and patient. If no activities are outstanding an empty response is returned.

980   Otherwise SOAP faults shall be generated accordingly.

3.26.4.2 Retrieve Activities Response Message

3.26.4.2.1 Trigger Events

The message is triggered by a Process State Manager in response to a Retrieve Activities Request from a Process Activity Executor.

985   ### 3.26.4.2.2 Message Semantics

A list of zero or more process activities is returned. The format of each activity is a well-formed XML document of the type supported by the process of which they are part.

Table 3.26.4.2.2-1: Retrieve Activities Response Parameters

Parameter Name	Optionality	Description	Value
@status	R	Indicates whether processing was successful	See Table 3.20.4.2.2-2.
activity	R	Current process activity	A complex XML element representing an activity within a process as specified per the @activityLanguage attribute
@activityLanguage	R	XML attribute defining the structure of the activity element	Defined by content profile.
processIdentifier	R	Identifier for process instance	HL7 element of type InstanceIdentifier.
processState	R	Initial state of the process	An XML element of type enumerated string.
assignedOrganizationIdentifier	O	Assigned identifier for organization.	HL7 element of type InstanceIdentifier.
patient	O	Provided if additional identifiers are assigned to the patient.	Simple patient definition. See Table 3.25.4.1.2-2.

processErrorList	O	If errors were encountered in processing (see @status), error list is defined here.	See Table 3.20.4.2.2-3.

3.26.4.2.3 Expected Actions

The Process Activity Executor shall consume the list of activities based on the business rules of the system. If a SOAP fault is received then this fault should also be handled based on the business rules of the system.

3.26.5 Security Considerations

This transaction should be considered a PHI-Export event, as defined in ITI TF-2a: Table 3.20.4.1.1.1-1.

3.26.6 Protocol Requirements

The Retrieve Activities Request and Response messages shall be transmitted using Synchronous Web Services Exchange, according to the requirements specified in ITI TF-2x: Appendix V Web Services for IHE Transactions.

Table 3.26.6-1: WSDL Namespace Definitions

ihe	urn:ihe:qrph:rpe:2009
soap12	http://schemas.xmlsoap.org/wsdl/soap12/
wsaw	http://www.w3.org/2005/08/addressing
xsd	http://www.w3.org/2001/XMLSchema

These are the requirements for the Retrieve Activities 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:qrph:rpe:2009", schema="RPE.xsd"

- The /definitions/message/part/@element attribute of the Retrieve Activities request message shall be defined as: "ihe:RetrieveActivitiesRequest"

- The /definitions/message/part/@element attribute of the Retrieve Activities response message shall be defined as: "ihe:RetrieveActivitiesResponse"

- The /definitions/portType/operation/input/@wsaw:Action attribute for the Retrieve Activities request message shall be defined as "urn:ihe:qrph:rpe:2009:RetrieveActivities"

- The /definitions/portType/operation/output/@wsaw:Action attribute for the Retrieve Activities response message shall be defined as:
1015 "urn:ihe:qrph:rpe:2009:RetrieveActivitiesResponse"

- The /definitions/binding/operation/soap12:operation/@soapAction attribute shall be defined as "urn:ihe:qrph:rpe:2009:RetrieveActivities"

These are the requirements that affect the wire format of the SOAP message. The other WSDL properties are only used within the WSDL definition and do not affect interoperability. Full 1020 sample request and response messages are in Section 3.26.6.1 Sample SOAP Messages.

3.26.6.1 Sample SOAP Messages

The samples in the following two sections show a typical request and corresponding response as contained in a SOAP Body. *Note: the SOAP Header should be populated according to the IHE Appendix V: Web Services for IHE Transactions and in accord with Section 3.26.5 Security* 1025 *Considerations.*

Full WSDLs can be found on the IHE FTP site at:
ftp://ftp.ihe.net/TF_Implementation_Material/QRPH/RPE

3.26.6.1.1 Sample Retrieve Activities SOAP Request

```
1030    <soap:Body>
                <rpe:RetrieveActivitiesRequest xmlns:rpe="urn:ihe:qrph:rpe:2009"
                Status="urn:ihe:qrph:rpe:2009:ResponseStatusType:Success">
                        <rpe:processIdentifier root="1.2.3.5" extension="1006-1" />
                        <rpe:processState>ACTIVE</rpe:processState>
1035                    <rpe:assignedOrganizationIdentifier root="" extension=""/>
                        <rpe:patient>
                                <rpe:candidateID root="" extension="" />
                                <rpe:name>
                                        <hl7:given>John</hl7:given>
1040                                    <hl7:family>Smith</hl7:family>
                                </rpe:name>
                                <rpe:address />
                                <rpe:dob value="19990101" />
                        </rpe:patient>
1045            </rpe:RetrieveActivitiesRequest>
        </soap:Body>
```

3.26.6.1.2 Sample Retrieve Activities SOAP Response

An example success may look like the below.

1050

```
<soap:Body>
        <rpe:RetrieveActivitiesResponse xmlns:rpe="urn:ihe:qrph:rpe:2009" xmlns:hl7="urn:hl7-org:v3"
        status="urn:ihe:qrph:rpe:2009:ResponseStatusType:Success">
                <rpe:activity activityLanguage="[As Defined by Content Profile]">
```

```
1055            [As Defined by Content Profile]
                </rpe:activity>
                <rpe:processIdentifier root="1.2.3.5" extension="1006-1" />
                <rpe:processState>ACTIVE</rpe:processState>
                <rpe:assignedOrganizationIdentifier root="" extension=""/>
1060            <rpe:patient>
                        <rpe:candidateID root="" extension="" />
                        <rpe:name>
                                <hl7:given>John</hl7:given>
                                <hl7:family>Smith</hl7:family>
1065            </rpe:name>
                        <rpe:address />
                        <rpe:dob value="19990101" />
                </rpe:patient>
        </rpe:RetrieveActivitiesResponse>
1070    </soap:Body>
```

An example with errors may look like the below.

```
        <soap:Body>
1075            <rpe:RetrieveActivitiesResponse xmlns:rpe="urn:ihe:qrph:rpe:2009" xmlns:hl7="urn:hl7-org:v3"
                status="urn:ihe:qrph:rpe:2009:ResponseStatusType:Failure">
                        <rpe:activity activityLanguage="[As Defined by Content Profile]">
                [As Defined by Content Profile]
                </rpe:activity>
1080            <rpe:processIdentifier root="1.2.3.5" extension="1006-1" />
                <rpe:processState>ACTIVE</rpe:processState>
                <rpe:assignedOrganizationIdentifier root="" extension=""/>
                <rpe:patient>
                        <rpe:candidateID root="" extension="" />
1085            <rpe:name>
                                <hl7:given>John</hl7:given>
                                <hl7:family>Smith</hl7:family>
                        </rpe:name>
                        <rpe:address />
1090            <rpe:dob value="19990101" />
                </rpe:patient>
                <rpe:processErrorList highestSeverity="urn:ihe:wrph:rpe:2009:ResponseStatusType:Error">
                        <rpe:processError>
                                <rpe:errorCode>RPEUnknownOrganizationIdentifier</rpe:errorCode>
1095            <rpe:codeContext>Unrecognized organization</rpe:codeContext>
                                <rpe:severity>urn:ihe:qrph:rpe:2009:ResponseStatusType:Error</rpe:severity>
                                <rpe:location>TestCodeLocation</rpe:location>
                        </rpe:processError>
                </rpe:processErrorList>
1100            </rpe:RetrieveActivitiesResponse>
        </soap:Body>
```

3.27 Update Activity [QRPH-27]

This section corresponds to transaction [QRPH-27] of the IHE QRPH Transaction Framework.
1105   [QRPH-27] is used by the Process State Manager and Process Activity Executor Actors.

3.27.1 Scope

Update Activity allows a Process Activity Executor to provide an update on an activity's state or data to a Process State Manager for a process in which it is a participant.

1110 In its request, the Process Activity Executor supplies the current process context, per Table 3.25.4.2.2-1, and the updated activity.

3.27.2 Use Case Roles
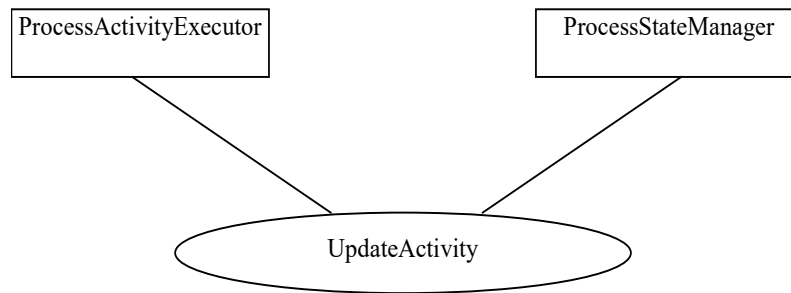
Actor: Process Activity Executor

1115 **Role:** A system that knows how to execute activities that are part of a process.

Actor: Process State Manager

Role: A system that manages the runtime state of a process.

3.27.3 Referenced Standards

See Section 3.20.3.

1120 ### 3.27.4 Interaction Diagram

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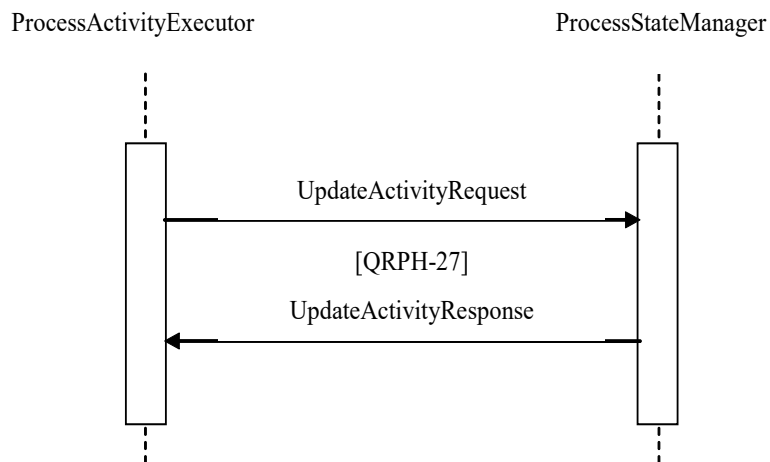
3.27.4.1 Update Activity Message

3.27.4.1.1 Trigger Events

1125 The Process Activity Executor, based upon human decision or application of a rule for automatic operation, wants to update the Process State Manager with the current state or data associated with an activity it is performing.

3.27.4.1.2 Message Semantics

The following parameters are specified for the body of this transaction.

1130 **Table 3.27.4.1.2-1: Update Activity Request Parameters**

Parameter Name	Optionality	Description	Value
activity	R	One or more process activities.	A complex XML element representing an activity within a process as specified per the @activityLanguage attribute
@activityLanguage	R	XML attribute defining the structure of the activity element	Defined by content profile.
processIdentifier	R	Identifier for process instance	HL7 element of type InstanceIdentifier.
processState	R	State of the process	An XML element of type enumerated string. See 3.25.4.1.2 for recommended values.
assignedOrganizationIdentifier	O	Assigned identifier for organization.	HL7 element of type InstanceIdentifier.
patient	O	Provided if additional identifiers are assigned to the patient.	Simple patient definition. See Table 3.25.4.1.2-2.

Section 3.27.6 describes the Web Services protocol requirements and the format of the message in full detail.

3.27.4.1.3 Expected Actions

1135 The Process State Manager parses the Update Activity request and if well-formed, updates the given activity for the state and/or data supplied.

If the activity is updated as a result of this transaction the Process State Manager acknowledges the request with a response code of "ACTIVITY_UPDATED".

Otherwise SOAP faults shall be generated accordingly.

3.27.4.2 Update Activity Response Message

1140   **3.27.4.2.1 Trigger Events**

The message is triggered by a Process State Manager receiving an Update Activity request from a Process Activity Executor.

3.27.4.2.2 Message Semantics

The following parameters are specified for the body of this transaction.

1145   **Table 3.27.4.2.2-1: Update Activity Request Response Parameters**

Parameter Name	Optionality	Description	Value
@status	R	Indicates whether processing was successful	See Table 3.20.4.2.2-2.
responseCode	R	Indicates that the activity was updated	ACTIVITY_UPDATED

3.27.4.2.3 Expected Actions

The Process Activity Executor shall consume the response code based on the business rules of the system. If a SOAP fault is received then this fault should also be handled based on the business rules of the system.

1150   **3.27.5 Security Considerations**

This transaction should be considered a PHI-Export event, as defined in ITI TF-2a: Table 3.20.4.1.1.1-1.

3.27.6 Protocol Requirements

The Update Activity request and response shall be transmitted using Synchronous Web Services
1155   Exchange, according to the requirements specified in ITI TF-2x: Appendix V Web Services for IHE Transactions.

Table 3.27.6-1: WSDL Namespace Definitions

ihe	urn:ihe:qrph:rpe:2009
soap12	http://schemas.xmlsoap.org/wsdl/soap12/
wsaw	http://www.w3.org/2005/08/addressing
xsd	http://www.w3.org/2001/XMLSchema

These are the requirements for the Update Activity transaction presented in the order in which they would appear in the WSDL definition:

1160   • The following types shall be imported (xds:import) in the /definitions/types section:

• namespace="urn:ihe:qrph:rpe:2009", schema="RPE.xsd"

- The /definitions/message/part/@element attribute of the Update Activity request message shall be defined as: "ihe:UpdateActivityRequest"

1165
- The /definitions/message/part/@element attribute of the Update Activity response message shall be defined as: "ihe:UpdateActivityResponse"

- The /definitions/portType/operation/input/@wsaw:Action attribute for the Update Activity request message shall be defined as "urn:ihe:qrph:rpe:2009:UpdateActivity"

- The /definitions/portType/operation/output/@wsaw:Action attribute for the Update
1170 Activity response message shall be defined as: "urn:ihe:qrph:rpe:2009:UpdateActivityResponse"

- The /definitions/binding/operation/soap12:operation/@soapAction attribute shall be defined as "urn:ihe:qrph:rpe:2009:UpdateActivity"

These are the requirements that affect the wire format of the SOAP message. The other WSDL properties are only used within the WSDL definition and do not affect interoperability. Full
1175 sample request and response messages are in the Section 3.27.6.1 Sample SOAP Messages.

3.27.6.1 Sample SOAP Messages

The samples in the following two sections show a typical request and corresponding response as contained in a SOAP Body. *Note the SOAP Header should be populated according to the IHE Appendix V: Web Services for IHE Transactions and in accord with Section 3.27.5 Security*
1180 *Considerations.*

Full WSDLs can be found on the IHE FTP site at:
ftp://ftp.ihe.net/TF_Implementation_Material/QRPH/RPE

3.27.6.1.1 Sample Update Activity SOAP Request

```
1185    <soap:Body>
            <rpe:UpdateActivityRequest xmlns:rpe="urn:ihe:qrph:rpe:2009" xmlns:hl7="urn:hl7-org:v3">
                <rpe:activity activityLanguage="[As Defined by Content Profile]">
                [Defined by Content Profile]
                </rpe:activity>
1190            <rpe:processIdentifier root="1.2.3.5" extension="1006-1" />
                <rpe:processState>ACTIVE</rpe:processState>
                <rpe:assignedOrganizationIdentifier root="1.2.3.5" extension="CIS_CE_CB" />
                <rpe:patient>
                    <rpe:candidateID root="" extension="" />
1195                <rpe:name>
                        <hl7:given>John</hl7:given>
                        <hl7:family>Smith</hl7:family>
                    </rpe:name>
                    <rpe:address />
1200                <rpe:dob value="19990101 />
                </rpe:patient>
            </rpe:UpdateActivityRequest >
        </soap:Body>
```

1205 **3.27.6.1.2 Sample Update Activity SOAP Response**

```
<soap:Body>
        <rpe:UpdateActivityRequestResponse xmlns:rpe="urn:ihe:qrph:rpe:2009"
        status="urn:ihe:qrph:rpe:2009:ResponseStatusType:Success">
                <rpe:responseCode>ACTIVITY_UPDATED</rpe:responseCode>
        </rpe:UpdateActivityRequestResponse>
</soap:Body>
```

1210

3.28 Send Process State Alert [QRPH-28]

1215   This section corresponds to transaction [QRPH-28] of the IHE QRPH Transaction Framework. [QRPH-28] is used by the Process State Manager and Process Activity Executor Actors.

3.28.1 Scope

This transaction involves either:

1220
- a Process Activity Executor alerting a Process State Manager of a change that affects the state of a process it initiated,

    OR

- a Process State Manager alerting a Process Activity Executor of a change associated with a process it initiated with the Process State Manager, in which case the alert contains.

In either case, the request passed by the actor supplies the current process context as per Table
1225   3.25.4.2.2-1 and a process state value.

3.28.2 Use Case Roles
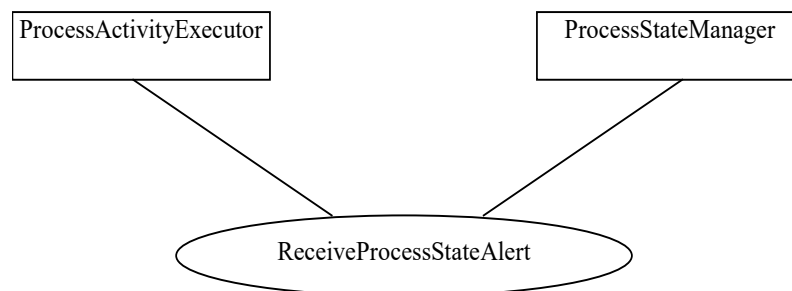
Actor: Process Activity Executor

1230   **Role:** A system that knows how to execute activities that are part of a process.

Actor: Process State Manager

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Role: A system that manages the runtime state of a process.

3.28.3 Referenced Standards

See Section 3.20.3.

1235 ### 3.28.4 Interaction Diagram

ProcessActivityExecutor   ProcessStateManager

SendProcessStateAlertRequest

[QRPH-28]

SendProcessStateAlertResponse

OR

ProcessActivityExecutor   ProcessStateManager

SendProcessStateAlertRequest

[QRPH-28]

SendProcessStateAlertResponse
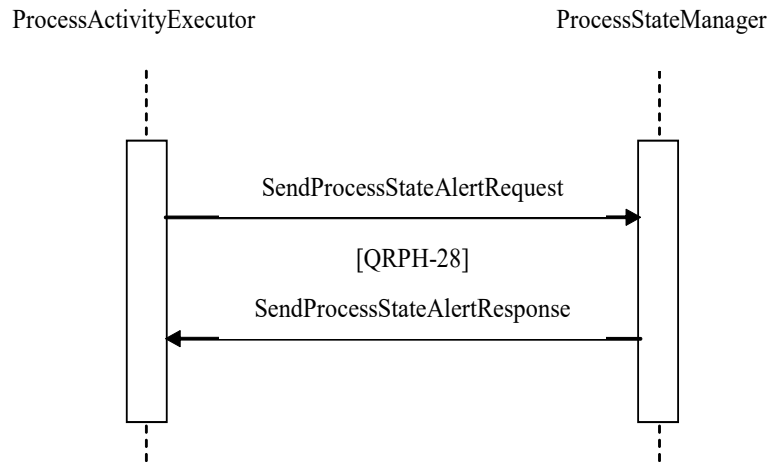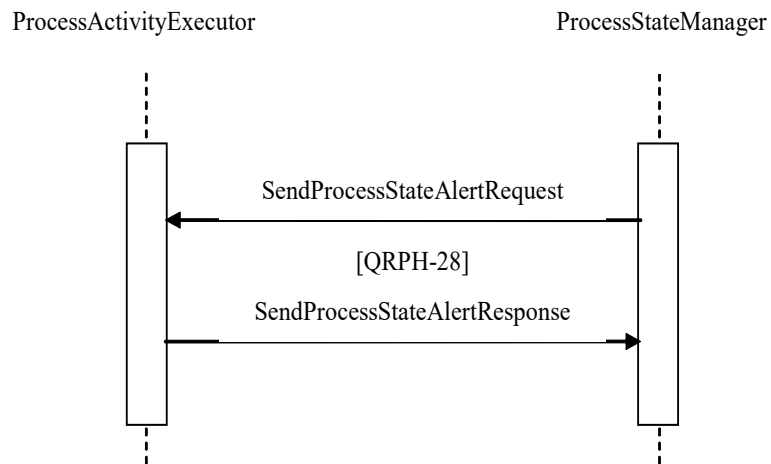
1240 ### 3.28.4.1 Send Process State Alert Message

3.28.4.1.1 Trigger Events

Either:

- the Process Activity Executor, based upon human decision or application of a rule for automatic operation, wants to alert the Process State Manager of a change that affects a
1245   process it initiated

    OR

- the Process State Manager, based upon human decision or application of a rule for automatic operation, wants to alert the Process Activity Executor of a change associated with a process it initiated with the Process State Manager.

1250 **3.28.4.1.2 Message Semantics**

The following parameters are specified for the body of this transaction.

Table 3.28.4.1.2-1: Send Process State Alert Request Parameters

Parameter Name	Optionality	Description	Value
patient	O	Basic demographics for the patient.	Simple patient definition, of type rpe:PatientType.
processDefinitionIdentifier	R	Identifier for the process definition to be initiated.	HL7 element of type InstanceIdentifier.
processIdentifier	R	Identifier for process instance	HL7 element of type InstanceIdentifier.
processState	R	The process state change being alerted.	An XML element of type enumerated string. See 3.25.4.1.2 for recommended values.
assignedOrganizationIdentifier	O	Assigned identifier for organization.	HL7 element of type InstanceIdentifier.

Section 3.28.6 describes the Web Services protocol requirements and the format of the message
1255 in full detail.

3.28.4.1.3 Expected Actions

The Process Activity Executor or Process State Manager parses the Send Process State Alert request and if well-formed acknowledges the request with a response code of "ALERT_RECEIVED".

1260 Otherwise SOAP faults shall be generated accordingly.

3.28.4.2 Send Process State Alert Response Message

3.28.4.2.1 Trigger Events

The message is triggered by a Process Activity Executor or Process State Manager receiving a well-formed Send Process State Alert request.

3.28.4.2.2 Message Semantics

The following parameters are specified for the body of this transaction.

Table 3.28.4.2.2-1: Send Process State Alert Response Parameters

Parameter Name	Optionality	Description	Value
@status	R	Indicates whether processing was successful	See Table 3.20.4.2.2-2.
responseCode	R	Indicates that the activity was updated	ALERT_RECEIVED

3.28.4.2.3 Expected Actions

The Process Activity Executor or Process State Manager shall consume the response code based on the business rules of the system. If a SOAP fault is received then this fault should also be handled based on the business rules of the system.

3.28.5 Security Considerations

This transaction should be considered a PHI-Export event, as defined in ITI TF-2a: Table 3.20.4.1.1.1-1.

3.28.6 Protocol Requirements

The Send Process State Alert request and response shall be transmitted using Synchronous Web Services Exchange, according to the requirements specified in ITI TF-2x: Appendix V Web Services for IHE Transactions.

Table 3.28.6-1: WSDL Namespace Definitions

ihe	urn:ihe:qrph:rpe:2009
soap12	http://schemas.xmlsoap.org/wsdl/soap12/
wsaw	http://www.w3.org/2005/08/addressing
xsd	http://www.w3.org/2001/XMLSchema

These are the requirements for the Send Process State Alert transaction presented in the order in which they would appear in the WSDL definition:

- The following types shall be imported (xds:import) in the /definitions/types section:

  - namespace="urn:ihe:qrph:rpe:2009", schema="RPE.xsd"

- The /definitions/message/part/@element attribute of the Send Process State Alert request message shall be defined as: "ihe:SendProcessStateAlertRequest"

- The /definitions/message/part/@element attribute of the Send Process State Alert response message shall be defined as: "ihe:SendProcessStateAlertResponse"

- The /definitions/portType/operation/input/@wsaw:Action attribute for the Send Process
1290   State Alert request message shall be defined as
   "urn:ihe:qrph:rpe:2009:SendProcessStateAlert"

- The /definitions/portType/operation/output/@wsaw:Action attribute for the Send Process
   State Alert response message shall be defined as:
   "urn:ihe:qrph:rpe:2009:SendProcessStateAlertResponse"

1295   - The /definitions/binding/operation/soap12:operation/@soapAction attribute shall be
   defined as "urn:ihe:qrph:rpe:2009:SendProcessStateAlert"

These are the requirements that affect the wire format of the SOAP message. The other WSDL properties are only used within the WSDL definition and do not affect interoperability. Full sample request and response messages are in Section 3.28.6.1 Sample SOAP Messages.

1300   **3.28.6.1 Sample SOAP Messages**

The samples in the following two sections show a typical request and corresponding response as contained in a SOAP Body.

Note: The SOAP Header should be populated according to ITI TF-2x: Appendix V Web Services for IHE Transactions and in accord with Section 3.28.5 Security Considerations.

1305   Full WSDLs can be found on the IHE FTP site at
ftp://ftp.ihe.net/TF_Implementation_Material/QRPH/RPE

3.28.6.1.1 Sample Send Process State Alert SOAP Request

```
      <soap:Body>
1310          <rpe:SendProcessStateAlertRequest xmlns:rpe="urn:ihe:qrph:rpe:2009">
                 <rpe:patient>
                    <rpe:candidateID root="" extension="" />
                    <rpe:name>
                       <hl7:given>John</hl7:given>
1315                   <hl7:family>Smith</hl7:family>
                    </rpe:name>
                    <rpe:address />
                    <rpe:dob value="19990101" />
                 </rpe:patient>
1320             <rpe:processDefinitionIdentifier root="1.2.3.4" extension="1006" />
                 <rpe:processIdentifier root="1.2.3.5" extension="1006-1" />
                 <rpe:processState>ACTIVE</rpe:processState>
                 <rpe:assignedOrganizationIdentifier root="1.2.3.5" extension="CIS_CE_CB" />
              </rpe:SendProcessStateAlertRequest>
1325   </soap:Body>
```

3.28.6.1.2 Sample Send Process State Alert SOAP Response

```
      <soap:Body>
```

1330
```
<rpe:SendProcessStateAlertResponse xmlns:rpe="urn:ihe:qrph:rpe:2009"
       status="urn:ihe:qrph:rpe:2009:ResponseStatusType:Success">
              <rpe:responseCode>ALERT_RECEIVED</rpe:responseCode>
       </rpe:SendProcessStateAlertResponse>
</soap:Body>
```
1335

5.Z3 Audit Record Considerations

5.Z3.1 Retrieve Process Definitions [QRPH-20] audit messages

5.Z3.1.1 Process Activity Executor or Process State Manager audit message

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110106, DCM, "Export")
	EventActionCode	M	"R" (Read)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("QRPH-20", "IHE Transactions", "RetrieveProcessDefinitions")
Source (Process Activity Executor or Process State Manager) (1)			
Human Requestor (0..n)			
Destination (Process Definition Manager) (1)			
Audit Source (Process Activity Executor or Process State Manager) (1)			
Subject (1)			

1340   Where:

	Field Name	Opt	Value Constraints
Source AuditMessage/ ActiveParticipant	UserID	M	Host system name
	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

	Field Name	Opt	Value Constraints
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

Audit Source AuditMessage/ AuditSourceIdentific ation	*AuditSourceID*	*U*	*not specialized*
	AuditEnterpriseSiteID	*U*	*not specialized*
	AuditSourceTypeCode	*U*	*not specialized*

Subject AuditMessage/ ParticipantObjectIdentification	ParticipantObjectTypeCode	M	"1" (Person)
	ParticipantObjectTypeCodeRole	M	"1" (Patient)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV(2, RFC-3881, "Subject Number")
	ParticipantObjectSensitivity	*U*	*not specialized*
	PARTICIPANTOBJECTID	M	The subject ID in HL7 CX format.
	ParticipantObjectName	*U*	*not specialized*
	PARTICIPANTOBJECTQUERY	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*

1345

5.Z3.1.2 Process Definition Manager audit message

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentificati on	EventID	M	EV(110107, DCM, "Import")
	EventActionCode	M	"C" (Create)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("QRPH-20", "IHE Transactions", "RetrieveProcessDefinitions")
Source (Process Activity Executor or Process State Manager) (1)			
Human Requestor (0..n)			
Destination (Process Definition Manager) (1)			
Audit Source (Process Activity Executor or Process State Manager) (1)			
Subject (1)			

Where:

1350 Source, Human Requestor, Destination and Audit Source are as defined in Section 5.Z3.1.1.

5.Z3.2 Publish Process Definitions [QRPH-22] audit messages

5.Z3.2.1 Process Activity Executor or Process State Manager audit messages

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentificati on	EventID	M	EV(110107, DCM, "Import")
	EventActionCode	M	"C" (Create)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("QRPH-22", "IHE Transactions", "PublishProcessDefinitions")
Source (Process Definition Manager) (1)			
Human Requestor (0..n)			
Destination (Process Activity Executor or Process State Manager) (1)			
Audit Source (Process Definition Manager) (1)			
Subject (1)			

1355 Where:

Source, Human Requestor, Destination and Audit Source are as defined in Section 5.Z3.1.1.

5.Z3.2.2 Process Definition Manager audit messages

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentificati on	EventID	M	EV(110106, DCM, "Export")
	EventActionCode	M	"R" (Read)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("QRPH-22", "IHE Transactions", "PublishProcessDefinitions")
Source (Process Activity Executor or Process State Manager) (1)			
Human Requestor (0..n)			
Destination (Process Definition Manager) (1)			
Audit Source (Process Activity Executor or Process State Manager) (1)			
Subject (1)			

1360 Where:

Source, Human Requestor, Destination and Audit Source are as defined in Section 5.Z3.1.1.

5.Z3.3 Initiate Process [QRPH-25] audit messages

5.Z3.3.1 Process Activity Executor audit message

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110106, DCM, "Export")
	EventActionCode	M	"R" (Read)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("QRPH-25", "IHE Transactions", "InitiateProcess")
Source (Process Activity Executor) (1)			
Human Requestor (0..n)			
Destination (Process State Manager) (1)			
Audit Source (Process Activity Executor) (1)			
Subject (1)			

1365

Where:

Source, Human Requestor, Destination and Audit Source are as defined in Section 5.Z3.1.1.

5.Z3.3.2 Process State Manager audit message

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110107, DCM, "Import")
	EventActionCode	M	"C" (Create)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("QRPH-25", "IHE Transactions", "InitiateProcess")
Source (Process State Manager) (1)			
Human Requestor (0..n)			
Destination (Process Activity Executor) (1)			
Audit Source (Process State Manager) (1)			
Subject (1)			

1370

Where:

Source, Human Requestor, Destination and Audit Source are as defined in Section 5.Z3.1.1.

5.Z3.4 Retrieve Activities [QRPH-26] audit messages

5.Z3.4.1 Process Activity Executor audit message

1375

Event	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110106, DCM, "Export")
	EventActionCode	M	"R" (Read)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("QRPH-26", "IHE Transactions", "RetrieveActivities")
Source (Process Activity Executor) (1)			
Human Requestor (0..n)			
Destination (Process State Manager) (1)			
Audit Source (Process Activity Executor) (1)			
Subject (1)			

Where:

Source, Human Requestor, Destination and Audit Source are as defined in Section 5.Z3.1.1.

5.Z3.4.2 Process State Manager audit message

1380

Event	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110107, DCM, "Import")
	EventActionCode	M	"C" (Create)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("QRPH-26", "IHE Transactions", "RetrieveActivities")
Source (Process State Manager) (1)			
Human Requestor (0..n)			
Destination (Process Activity Execcutor) (1)			
Audit Source (Process State Manager) (1)			
Subject (1)			

Where:

Source, Human Requestor, Destination and Audit Source are as defined in Section 5.Z3.1.1.

1385 **5.Z3.5 Update Activity [QRPH-27] audit messages**

5.Z3.5.1 Process Activity Executor audit message

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110106, DCM, "Export")
	EventActionCode	M	"R" (Read)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("QRPH-27", "IHE Transactions", "UpdateActivity")
Source (Process Activity Executor) (1)			
Human Requestor (0..n)			
Destination (Process State Manager) (1)			
Audit Source (Process Activity Executor) (1)			
Subject (1)			

Where:

Source, Human Requestor, Destination and Audit Source are as defined in Section 5.Z3.1.1.

1390

5.Z3.5.2 Process State Manager audit message

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110107, DCM, "Import")
	EventActionCode	M	"C" (Create)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("QRPH-27", "IHE Transactions", "UpdateActivity")
Source (Process State Manager) (1)			
Human Requestor (0..n)			
Destination (Process Activity Executor) (1)			
Audit Source (Process State Manager) (1)			
Subject (1)			

Where:

1395 Source, Human Requestor, Destination and Audit Source are as defined in Section 5.Z3.1.1.

5.Z3.6 Send Process State Alert [QRPH-28] audit messages

5.Z3.6.1 Process Activity Executor audit message

	Field Name	**Opt**	**Value Constraints**
Event AuditMessage/ EventIdentificati on	EventID	M	EV(110106, DCM, "Export")
	EventActionCode	M	"R" (Read)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("QRPH-28", "IHE Transactions", "SendProcessStateAlert")
Source (Process Activity Executor) (1)			
Human Requestor (0..n)			
Destination (Process State Manager) (1)			
Audit Source (Process Activity Executor) (1)			
Subject (1)			

1400

Where:

Source, Human Requestor, Destination and Audit Source are as defined in Section 5.Z3.1.1.

5.Z3.6.2 Process State Manager audit message

	Field Name	**Opt**	**Value Constraints**
Event AuditMessage/ EventIdentificati on	EventID	M	EV(110107, DCM, "import")
	EventActionCode	M	"C" (Create)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("QRPH-28", "IHE Transactions", "SendProcessStateAlert")
Source (Process State Manager) (1)			
Human Requestor (0..n)			
Destination (Process Activity Executor) (1)			
Audit Source (Process State Manager) (1)			
Subject (1)			

1405   Where:

Source, Human Requestor, Destination and Audit Source are as defined in Section 5.Z3.1.1.