Integrating the Healthcare Enterprise

IHE

IHE Quality, Research and Public Health Technical Framework Supplement

Retrieve Process for Execution (RPE)

Rev. 4.0 – Draft for Public Comment

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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 May 26, 2017 for public comment. Comments are invited and may be submitted at http://www.ihe.net/QRPH_Public_Comments. In order to be considered in

35   development of the trial implementation version of the supplement, comments must be received by June 25, 2017.

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

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

40   Where the amendment adds text, make the added text **<u>bold underline</u>**. 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.

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

50   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*
195 *process managemen*t involving three main actors:

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
200 activity defines a specific act, several of which define the entire process.

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
205 EHR. Interest has since grown to expand RPE to support processes from other domains
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
210 Execution and the new Retrieve *Process* for Execution to lessen the burden on users of the
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
215 Process Content (CRPC) Profile.

Open Issues and Questions

No open issues at this time.

Closed Issues

No closed issues at this time.

220

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:

225
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
230 the relevant transactions between them. Other actors that may be indirectly involved due to their participation in other profiles are not necessarily shown.
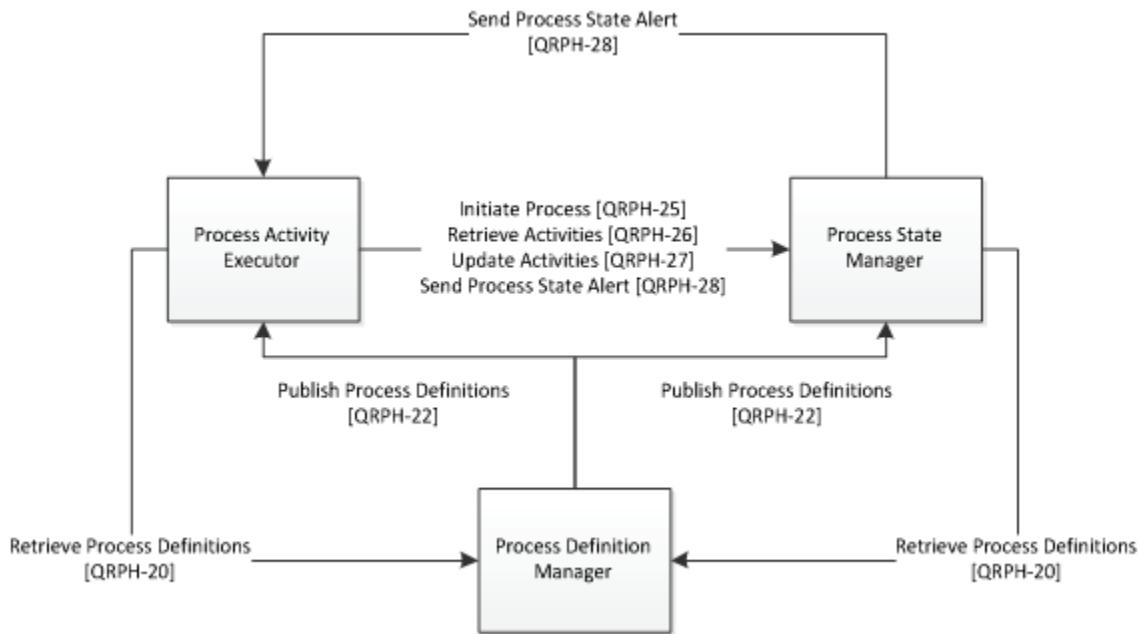
Figure X.1-1: RPE Actor Diagram

235 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.

240

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	QRPH TF-2: 3.20
	Publish Process Definitions [QRPH-22]	O	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]	R	QRPH TF-2: 3.20
	Publish Process Definitions [QRPH-22]	R	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

X.1.1 Actor Descriptions and Requirements

X.1.1.1 Process Definition Manager

245
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

250
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.

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 accordance with executable

255
guideline-based processes.

The states of a process from the perspective of RPE actors are indicated below:
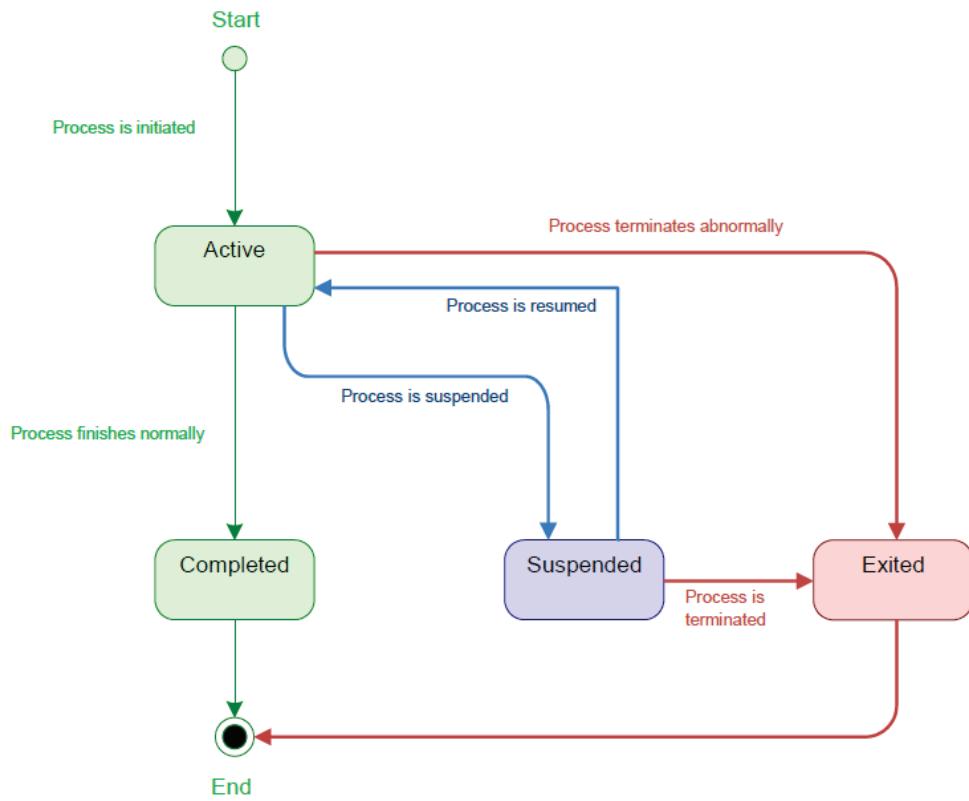
All state transitions above are managed by the Process State Manager which can then use the Send Process State Alert transaction to notify the Process Activity Executor.

X.1.1.3 Process Activity Executor

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.

An example would be an EHR performing activities as part of a clinical trial being managed by a research sponsor. Another example would be an EHR performing guideline-based care process activities.

The states of an activity from the perspective of RPE actors are indicated below:
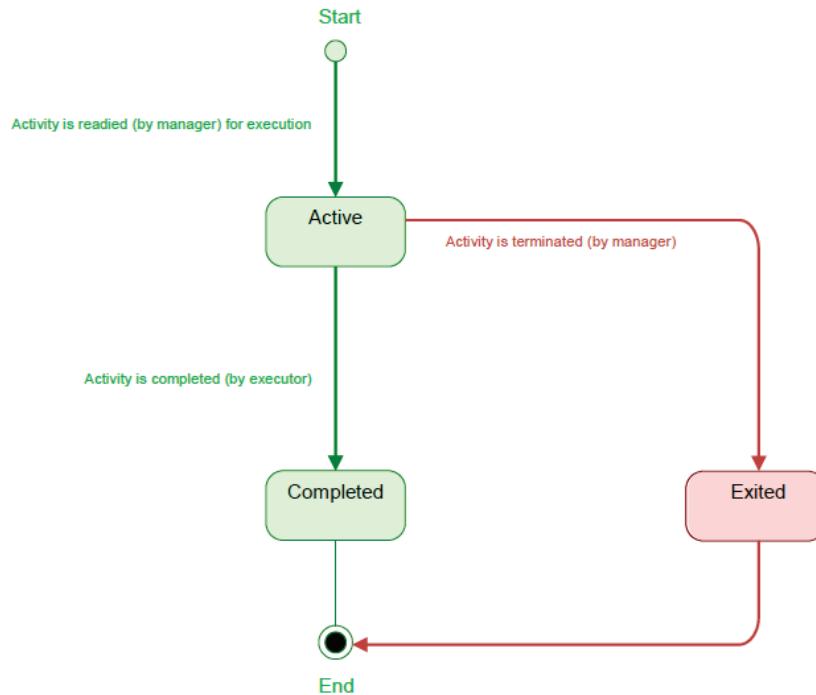
The Process State Manager is responsible for transitioning the activity into the "Active" state and possibly forcing it into a non-normal end state, i.e., "Exited" and using the Send Process State
275   Alert transaction to notify the Process Activity Executor.

The Process Activity Executor is responsible for marking the activity "Completed" and using the Update Activity transaction to update the Process State Manager with this change as well as any associated output data.

X.2 RPE Actor Options

280   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
Process State Manager	Update Activity	Section X.2.3
	Publish Process Definitions	Section X.2.4

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

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 to retrieve the process definition. A Process State Manager 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 State Manager or 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. A Process State Manager or Process Activity Executor 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. A Process Activity Executor that supports the Update Activity Option shall support the [QRPH-27] transaction.

X.2.4 Publish Process Definitions Option

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

X.3 Groupings

No groupings specified.

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.

- Scenario

310   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 pharmaceutical-sponsored clinical trials.

315   **Before RPE**

Preconditions

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

2. Fictitious provides support for clinical research activities in the form of a Research
320   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 activities.

325   **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 back to the sponsor, and agrees to participate. After being approved as a site for the Sponsor
330   #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 patient:

335   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 visits as pertaining to the trial #1234.

340   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.

Post conditions

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

After RPE

<u>Preconditions</u>

350
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 deploy, run and manage the execution of the clinical trial process.

355
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 Executor

360 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 Process State Manager the set of screening activities.

365
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.

370 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
375   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
380   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:
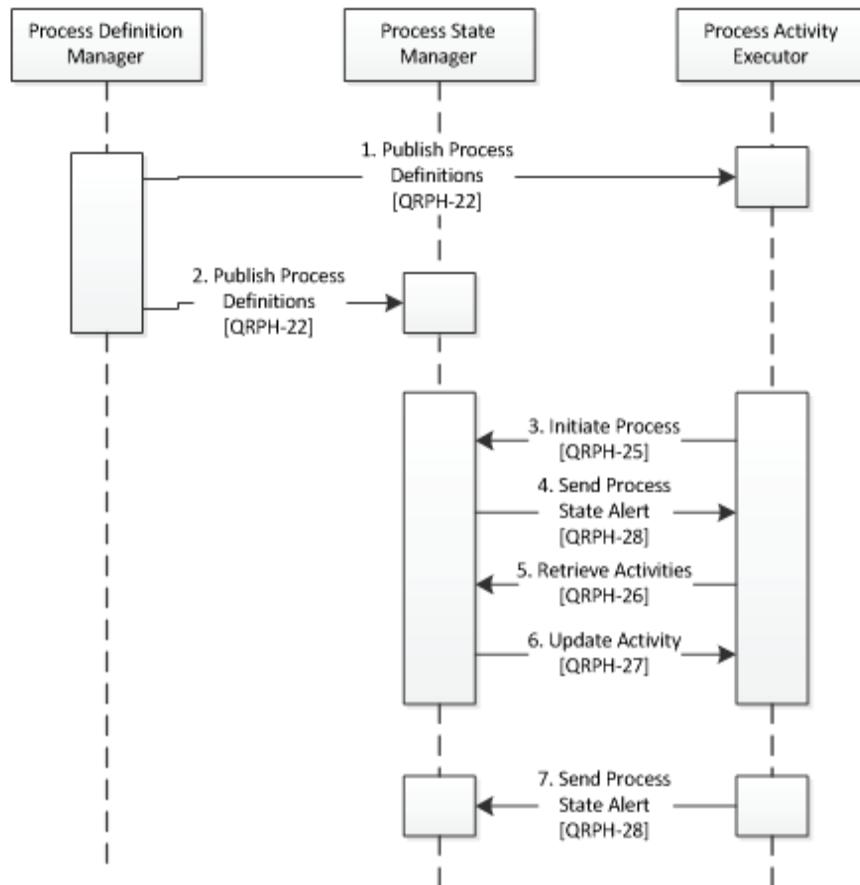
385   **Figure X.4.2-1: Basic Process Flow in RPE Profile**

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
390   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
395 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.

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

X.5 RPE Security Considerations

The risk analysis for RPE enumerates assets, threats, and mitigations. The complete risk data is stored and available from IHE[1].

405 The purpose of this risk assessment is to notify vendors of some of the risks that they are advised to consider when implementing RPE actors. For general IHE risks and threats, please see ITI TF-1: Appendix L. The vendor is also advised that many risks cannot be mitigated by the IHE profile and instead responsibility for mitigation is transferred to the vendor, and occasionally to the affinity domains, individual enterprises and implementers. In these instances, IHE fulfills its
410 responsibility to notify affected parties through the use of the following sections.

Table X.5-1: Risk Issues

Risk Scenario	Type of Impact	Probability
S1: Patient is misidentified during process initiation, activity retrieval initiation or update. Demographic or identification information is intermixed with that of another patient.	Loss of Data Integrity resulting in potentially incorrect diagnosis, treatment and/or data analysis, possibly resulting in loss of life or quality of life for the patient and/or errant analysis in the context of research, public health or quality processes.	M
S2: A malicious attacker may attempt to compromise the system to obtain wrongful access to patient identity, clinical, financial or insurance data.	Loss of Privacy, Legal Liability / Compensation, Loss / Decrease of Funding, Loss of Public Trust or Reputation for Patient, Provider, Agency, Institution or Organization, Accountable Employee Loses Job	M
S3: Accidental release of personal health information (PHI) protected by consent agreements, regulation or law.	Loss of Privacy, Legal Liability / Compensation, Loss / Decrease of Funding, Loss of Public Trust or Reputation for Patient, Provider, Agency, Institution or Organization, Accountable Employee Loses Job	M

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[1] The full risk analysis data may be found at:
ftp://ftp.ihe.net/Quality/2010_2011_YR_4/QRPH%20Technical%20Committee/Maintenance%20work/RPE/RPE Risk Analysis 2010-05-21.xls

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Risk Scenario	Type of Impact	Probability
S4: Activity results data with negative indications may be prematurely exposed to patient prior to direct communication.	Decreased Effectiveness of Provider, Agency, Institution or Organization in the conduct of its processes.	M
S5: Identify of certain profile actors needs to be kept secret during conduct of a process, e.g., a double-blind study.	Decreased Effectiveness of Provider, Agency, Institution or Organization in the conduct of its processes.	M
S6: In the event of inappropriate disclosure or other incident, auditing and investigation time becomes prohibitively long.	Increased Cost and Decreased Effectiveness of Provider, Agency, Institution or Organization in the conduct of its processes.	M

X.5.1 Recommendations

415   The high impact risks include:

- mismatch between patient and patient data

- malicious system attack

- inappropriate or premature disclosure of personal health information

- patient and organization identity protection

420   For risk mitigation, the following profiles from the ITI Technical Framework are referred:

- Audit Trail and Node Authentication (ATNA)

- Basic Patient Privacy Consents (BPPC)

- Cross-Enterprise User Assertion (XUA)

- Consistent Time (CT)

425   - Enterprise User Authentication (EUA)

- Document Digital Signature (DSG)

This profile includes the mitigations:

M1: Ensure additional demographics are available to verify patient identity (e.g., address, other identifiers)

430   **M2**: Identify actors, ensure secure login and access control to protected data, e.g., using XUA and grouping with EUA for protected applications.

M3: Use secured communication for any patient data e.g., as per ATNA.

M4: Audit access to PHI, e.g., as per ATNA.

M5: Obtain patient consent to release protected data, e.g., using BPPC and DSG.

435   **M6**: Use pseudonymized identifiers for organizations in transactions as supported by RPE.

These mitigations are transferred to vendors and clients:

T1: Verify demographics other than patient name, birth date and gender.

T2: Providers evaluate and review activity data before submission to ensure data is entered correctly for the correct patient. Providers are cautioned not to use RPE for unmediated treatment
440   or diagnosis, i.e., a doctor must always intervene prior to treatment or diagnosis to ensure that errors that may occur in submission are checked by a human prior to engaging in any treatment or diagnosis of a patient.

T3: Secure internal networks from unauthorized access.

T4: Ensure strong password use for applications with access to PHI.

445   **T5**: Employ a restrictive RBAC scheme for applications providing access to PHI.

T6: Obtain patient consents and ensure patient data requiring increased protection is clearly identified.

T7: Workflow processes should be designed to ensure provider to patient communication occurs prior to sharing results with negative implications.

450   **T8**: Assign pseudonymized identifiers in processes when it is required to shield real identities.

T9: Actors are advised to consider the usability of their logging and audit repository implementation.

X.6 RPE Version mapping

The following tables specify mappings from the original Retrieve *Protocol* for Execution to the
455   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

460

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

465   **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
470   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.

475   **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
480   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.

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.

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.

Glossary

500 | *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.

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,
505 typically as part of a process definition.

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

Volume 2 – Transactions

510

3 IHE Transactions

Add Sections 3.20, 3.25, 3.26, 3.27, and 3.28

3.20 Retrieve Process Definitions [QRPH-20]

515 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 or Process State Manager has one or more process definition identifiers obtained by means 520 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

525
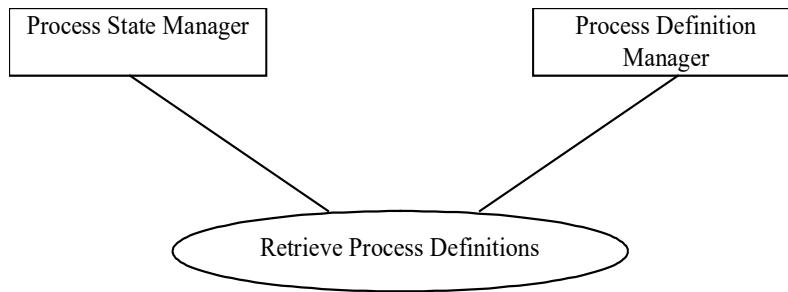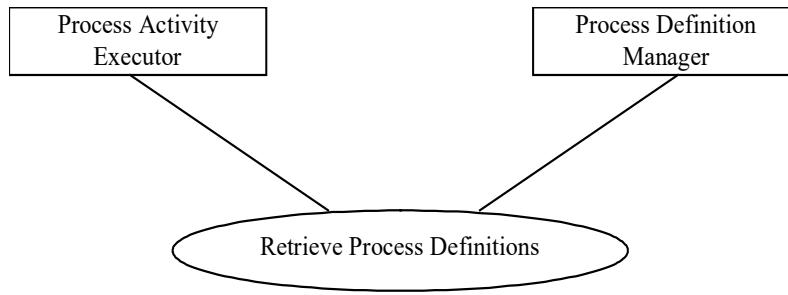
530

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.

535   **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

540   - 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
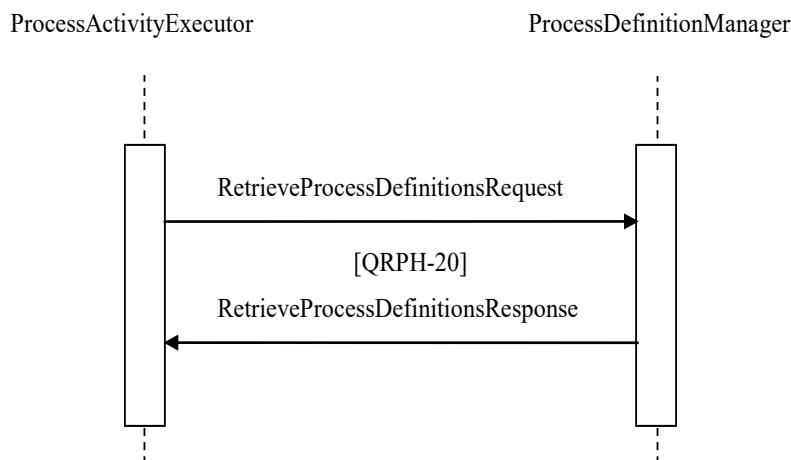
545
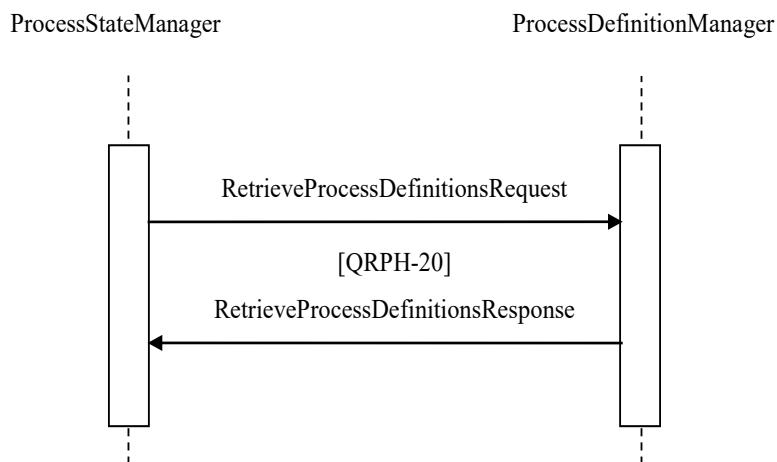
3.20.4.1 Retrieve Process Definitions Message

3.20.4.1.1 Trigger Events

550 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.

555 **Table 3.20.4.1.2-1: Retrieve Process Definitions Request Parameters**

Parameter Name	REQ	Description	Value
processDefinitionIdentifier (list)	R	An identifier (or list of identifiers) for the process definition(s) to be retrieved.	HL7 element of type InstanceIdentifier.
maxOccurs	O	If specified, the number of process definitions returned MUST NOT exceed this limit.	An XML element of simple type int.
startIndex	O	The startIndex can be used to perform multiple identical queries and iterate over result sets where the maxOccurs size exceeds the query limit.	An XML element of simple type int.

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

560 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
565 supplied identifiers.

Otherwise SOAP faults shall be generated accordingly.

3.20.4.2 Retrieve Process Definitions Response Message

3.20.4.2.1 Trigger Events

570 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

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

575

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 3.20.4.1.2-3.
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.
processErrorList	O	If errors were encountered in processing (see @status), error list is defined here.	See Table 3.20.4.1.2-4.

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.

Status	processErrorList element	Result
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.

580

Table 3.20.4.2.2-3: ProcessErrorList Structure

Attribute	Optionality	Value
@highestSeverity	R	The highest severity error that is included in the processErrorList. Table 3.20.4.1.2-3.
processError	R [1..*]	See Table 3.20.4.1.2-5.

Table 3.20.4.2.2-4: ProcessError Structure

Attribute	Optionality	Value
errorCode	R	Shall be taken from Table 3.20.4.1.2-6 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
severity	R	Indicates the severity of the error. Shall be one of: urn:ihe:qrph:rpe:2009:ResponseStatusType:Error urn:ihe:qrph:rpe:2009:ResponseStatusType: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.

28

errorCode	Discussion
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.

585

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

590   See QRPH TF-1:X.5.

3.20.6 Protocol Requirements

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.

595

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

These are the requirements for the Retrieve Process Definitions transaction presented in the order in which they would appear in the WSDL definition:

600   • 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 Request message shall be defined as: "ihe:RetrieveProcessDefinitionsRequest"

• The /definitions/message/part/@element attribute of the Retrieve Process Definitions
605   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 "urn:ihe:qrph:rpe:2009:RetrieveProcessDefinitions"

610

- 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 defined as "urn:ihe:qrph:rpe:2009:RetrieveProcessDefinitions"

These are the requirements that affect the wire format of the SOAP message. The other WSDL
615 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

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

Full WSDLs for the can be found on the IHE FTP site at:
ftp://ftp.ihe.net/Quality/2017_2018_YR_11/QPRH Technical/RPE

3.20.6.1.1 Sample Retrieve Process Definitions SOAP Request

625 *Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.*

```
<soap:Body>
  <rpe:RetrieveProcessDefinitionsRequest xmlns:rpe="urn:ihe:qrph:rpe:2009">
    <rpe:processDefinitionIdentifier root="1.2.3.4" extension="1006" />
  </rpe:RetrieveProcessDefinitionsRequest>
</soap:Body>
```
630

3.20.6.1.2 Sample Retrieve Process Definitions SOAP Response

635 *Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.*

```
<soap:Body>
  <rpe:RetrieveProcessDefinitionsResponse
      xmlns:rpe="urn:ihe:qrph:rpe:2009"
      status="urn:ihe:qrph:rpe:2009:ResponseStatusType:Success">
    <rpe:processDefinition processDefinitionLanguage="http://www.omg.org/spec/BPMN/2.0/">
      <definitions targetNamespace="http://www.examples.org"
      xmlns:tns="http://www.examples.org" xmlns="http://www.omg.org/spec/BPMN/20100524/MODEL"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation=http://www.omg.org/spec/BPMN/20100524/MODEL BPMN-20100501/BPMN20.xsd
      xmlns:di=http://www.omg.org/spec/DD/20100524/DI
      xmlns:bpmndi="http://www.omg.org/spec/BPMN/20100524/DI"
```
640
645

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```
650        xmlns:dc="http://www.omg.org/spec/DD/20100524/DC" xmlns:hl7="urn:hl7-org:v3"
           xmlns:rpe="urn:ihe:qrph:rpe:2009" id="_1312929184333">

               <!-- Import schemas and define RPE and HL7 element items for reference by process
           data object variables -->
655            <import importType="http://www.w3.org/2001/XMLSchema" location="RPE.xsd"
           namespace="urn:ihe:qrph:rpe:2009"/>
               <import importType="http://www.w3.org/2001/XMLSchema" location="HL7-
           SD/StudyDesign.xsd" namespace="urn:hl7-org:v3"/>
               <itemDefinition id="InitiateProcessRequestItem"
660        structureRef="rpe:InitiateProcessRequest"></itemDefinition>
               <itemDefinition id="RequestContextItem"
           structureRef="rpe:requestContext"></itemDefinition>
               <itemDefinition id="PatientDataItem"
           structureRef="rpe:patientData"></itemDefinition>
665            <itemDefinition id="EligibilityCriterionItem"
           structureRef="hl7:eligibilityCriterion"></itemDefinition>
               <itemDefinition id="ObservationItem"
           structureRef="hl7:observation"></itemDefinition>
               <itemDefinition id="SubstanceAdministrationItem"
670        structureRef="hl7:substanceAdministration"></itemDefinition>

               <message id="InitiateProcessRequest" itemRef="tns:InitiateProcessRequestItem"
           name="Initiate Process Request"/>

675            <process isExecutable="false" id="_6" name="IHE RPE Study Design" >
                   <documentation id="Title">IHE RPE Study Design</documentation>
                   <documentation id="Description">A simple single arm example consisting of
           Screen, Treatment and Followup epochs with 3 activities total:
                   a screening visit, a treatment visit and a followup visit 6 months
680        later.</documentation>
                   <ioSpecification>
                       <dataInput isCollection="true" name="Eligibility Criteria"
           id="EligibilityCriteria" itemSubjectRef="tns:EligibilityCriterionItem"/>
                       <dataInput name="Request Context" id="RequestContext"
685        itemSubjectRef="tns:RequestContextItem"/>
                       <dataInput name="Patient Data" id="PatientData"
           itemSubjectRef="tns:PatientDataItem"/>
                       <dataInput name="Substance Administration" id="SubstanceAdministration"
           itemSubjectRef="tns:SubstanceAdministrationItem"/>
690                    <dataOutput isCollection="true" name="Screening Observations"
           id="ScreeningObservations" itemSubjectRef="tns:ObservationItem"/>
                       <dataOutput isCollection="true" name="Treatment Observations"
           id="TreatmentObservations" itemSubjectRef="tns:ObservationItem"/>
                       <dataOutput isCollection="true" name="Follow-up Observations"
695        id="FollowUpObservations" itemSubjectRef="tns:ObservationItem"/>

                   ...
               </definitions>
           </rpe:processDefinition>
         </rpe:RetrieveProcessDefinitionsResponse>
700    </soap:Body>


       <soap:Body>
         <rpe:RetrieveProcessDefinitionsResponse
705          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>
710        </rpe:RetrieveProcessDefinitionsResponse>
       </soap:Body>
```

3.22 Publish Process Definitions [QRPH-22]

715

This section corresponds to transaction [QRPH-22] of the IHE QRPH Transaction Framework. [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.

720

3.22.2 Use Case Roles
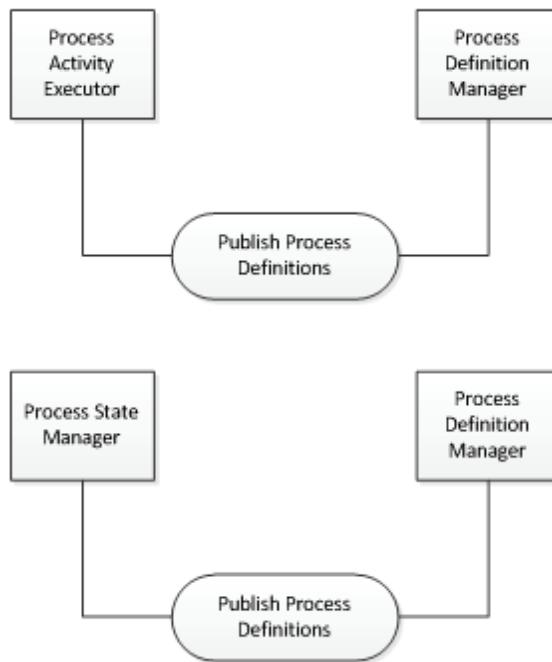
Actor: Process Activity Executor

725

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.

730 **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

735 **3.22.4 Interaction Diagram**

Copyright © 2017: IHE International, Inc.
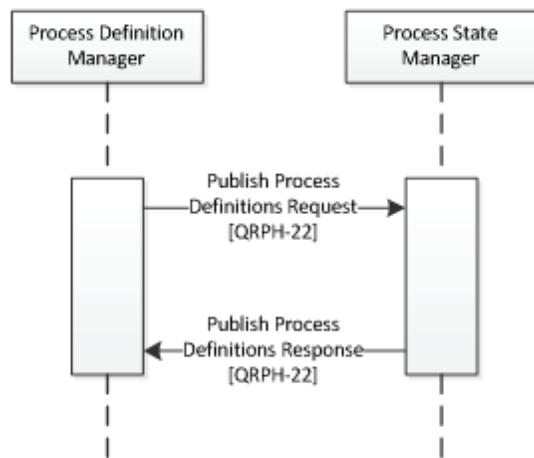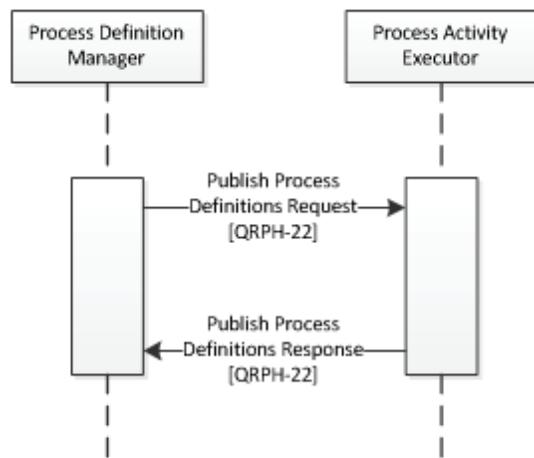
3.22.4.1 Publish Process Definitions Message

740 ### 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.

745 **Table 3.22.4.1.2-1: Publish Process Definitions Request Parameters**

Parameter Name	Optionality	Description	Value
@status	R	Indicates whether processing was successful	See Table 3.20.4.1.2-3.
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.
processErrorList	O	If errors were encountered in processing (see @status), error list is defined here.	See Table 3.20.4.1.2-4.

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

750 Upon receipt of the Publish Process Definitions Message, the Process Activity Executor or 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
755 supplied identifiers.

Otherwise SOAP faults shall be generated accordingly.

3.22.4.2 Publish Process Definitions Response Message

3.22.4.2.1 Trigger Events

760 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 definition is a well-formed XML document.

765

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 3.20.4.1.2-3.
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 3.20.4.1.2-4.

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

770   See QRPH TF-1:X.5.

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.

775

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:

780
- The following types shall be imported (xsd:import) in the /definitions/types section:
  - namespace="urn:ihe:qrph:rpe:2009", schema="RPE.xsd"

35

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

785

- 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"

790

- 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"

These are the requirements that affect the wire format of the SOAP message. The other WSDL

795 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 contained in a SOAP Body. *Note: the SOAP Header should be populated according to the IHE*

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

Full WSDLs for the can be found on the IHE FTP site at:
ftp://ftp.ihe.net/Quality/2017_2018_YR_11/QPRH Technical/RPE

3.22.6.1.1 Sample Publish Process Definitions SOAP Request

Note to the editor: please keep the following format for the sample text – courier new, 8pt, no

805 *spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.*

```
<soap:Body>
  <rpe:PublishProcessDefinitionsRequest xmlns:rpe="urn:ihe:qrph:rpe:2009">
    <rpe:processDefinition processDefinitionLanguage="http://www.omg.org/spec/BPMN/2.0/">
810     <definitions targetNamespace="http://www.examples.org"
      xmlns:tns="http://www.examples.org" xmlns="http://www.omg.org/spec/BPMN/20100524/MODEL"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="http://www.omg.org/spec/BPMN/20100524/MODEL BPMN-20100501/BPMN20.xsd
      xmlns:di=http://www.omg.org/spec/DD/20100524/DI
815     xmlns:bpmndi="http://www.omg.org/spec/BPMN/20100524/DI"
      xmlns:dc=http://www.omg.org/spec/DD/20100524/DC xmlns:hl7="urn:hl7-org:v3"
      xmlns:rpe="urn:ihe:qrph:rpe:2009" id="_1312929184333">

        <!-- Import schemas and define RPE and HL7 element items for reference by process
820     data object variables -->
        <import importType="http://www.w3.org/2001/XMLSchema" location="RPE.xsd"
      namespace="urn:ihe:qrph:rpe:2009"/>
        <import importType="http://www.w3.org/2001/XMLSchema" location="HL7-
      SD/StudyDesign.xsd" namespace="urn:hl7-org:v3"/>
825     <itemDefinition id="InitiateProcessRequestItem"
```

```
                    structureRef="rpe:InitiateProcessRequest"></itemDefinition>
                        <itemDefinition id="RequestContextItem"
                    structureRef="rpe:requestContext"></itemDefinition>
                        <itemDefinition id="PatientDataItem"
830                 structureRef="rpe:patientData"></itemDefinition>
                        <itemDefinition id="EligibilityCriterionItem"
                    structureRef="hl7:eligibilityCriterion"></itemDefinition>
                        <itemDefinition id="ObservationItem"
                    structureRef="hl7:observation"></itemDefinition>
835                     <itemDefinition id="SubstanceAdministrationItem"
                    structureRef="hl7:substanceAdministration"></itemDefinition>

                        <message id="InitiateProcessRequest" itemRef="tns:InitiateProcessRequestItem"
                    name="Initiate Process Request"/>
840
                        <process isExecutable="false" id="_6" name="IHE RPE Study Design" >
                            <documentation id="Title">IHE RPE Study Design</documentation>
                            <documentation id="Description">A simple single arm example consisting of
                    Screen, Treatment and Followup epochs with 3 activities total:
                            a screening visit, a treatment visit and a followup visit 6 months
845                 later.</documentation>
                            <ioSpecification>
                            <dataInput isCollection="true" name="Eligibility Criteria"
                    id="EligibilityCriteria" itemSubjectRef="tns:EligibilityCriterionItem"/>
850                         <dataInput name="Request Context" id="RequestContext"
                    itemSubjectRef="tns:RequestContextItem"/>
                            <dataInput name="Patient Data" id="PatientData"
                    itemSubjectRef="tns:PatientDataItem"/>
                            <dataInput name="Substance Administration" id="SubstanceAdministration"
855                 itemSubjectRef="tns:SubstanceAdministrationItem"/>
                            <dataOutput isCollection="true" name="Screening Observations"
                    id="ScreeningObservations" itemSubjectRef="tns:ObservationItem"/>
                            <dataOutput isCollection="true" name="Treatment Observations"
                    id="TreatmentObservations" itemSubjectRef="tns:ObservationItem"/>
860                         <dataOutput isCollection="true" name="Follow-up Observations"
                    id="FollowUpObservations" itemSubjectRef="tns:ObservationItem"/>

                            ...
                        </definitions>
                    </rpe:processDefinition>
865             </rpe:PublishProcessDefinitionsResponse>
            </soap:Body>


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

3.22.6.1.2 Sample Publish Process Definitions SOAP Response

> *Note to the editor: please keep the following format for the sample text – courier new, 8pt, no*
880 > *spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.*

```
            <soap:Body>
            <rpe:PublishProcessDefinitionsResponse
885             xmlns:rpe="urn:ihe:qrph:rpe:2009"
```

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

890

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.

3.25.1 Scope

895   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

- an organizational identifier

900   • a patient identifier

- an endpoint reference for callback notifications (alerts)

- other optional patient data (such as demographics)

3.25.2 Use Case Roles
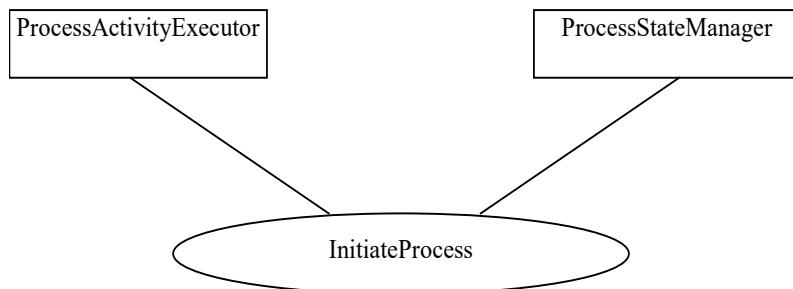
905

Actor: Process Activity Executor

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

Actor: Process State Manager

910   **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
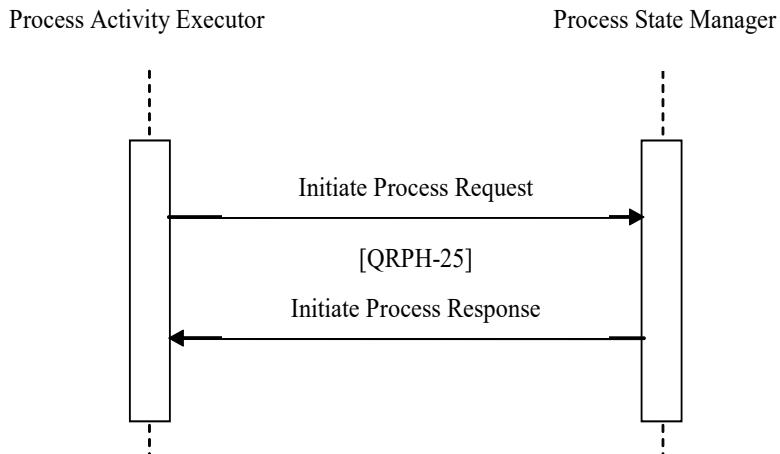
915

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
920 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, of type rpe:PatientType.
candidateID	R	List of patient identities.	HL7[®2] element of type InstanceIdentifier. HL7 patient name type
name	O	Patient name	HL7 address type
address	O	Patient address	HL7 datetime type
dob	O	Patient date of birth	
processDefinitionIdentifier	R	Identifier for the process definition to be initiated.	HL7 element of type InstanceIdentifier.

---

[2] 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.
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	Patient data, e.g., a CRD-conforming CCD®[3].	An XML element of complex type specified per patientDataLanguage attribute with default value (CCD): http://xreg2.nist.gov:8080/hitspValidation/ schema/cdar2c32/infrastructure/cda/C32_ CDA.xsd

925

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

3.25.4.1.3 Expected Actions

930 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

935 ### 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.

940

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 3.20.4.1.2-3.

---

[3] CCD is the registered trademark of Health Level Seven International.

Parameter Name	Optionality	Description	Value
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, of type rpe:PatientType.
processErrorList	O	If errors were encountered in processing (see @status), error list is defined here.	See Table 3.20.4.1.2-4.

3.25.4.2.3 Expected Actions

945 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.

3.25.5 Security Considerations

See QRPH TF-1:X.5.

3.25.6 Protocol Requirements

950 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

955

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"

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

41

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

965

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

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

970

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

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

975 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 ITI TF-2x: Appendix V: Web Services for IHE Transactions and in accord with Section 3.25.5 Security Considerations.

Full WSDLs for the can be found on the IHE FTP site at:

980 ftp://ftp.ihe.net/Quality/2017_2018_YR_11/QPRH Technical/RPE

3.25.6.1.1 Sample Initiate Process SOAP Request

Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.

985

```
<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>
          <rpe:candidateID root="" extension="" />
          <rpe:name>
              <hl7:given>John</hl7:given>
              <hl7:family>Smith</hl7:family>
          </rpe:name>
          <rpe:address />
          <rpe:dob value="19990101" />
      </rpe:patient>
      <rpe:processDefinitionIdentifier root="1.2.3.4" extension="1006" />
      <rpe:processState>INTERESTED</rpe:processState>
      <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:InitiateProcessRequest>
</soap:Body>
```

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3.25.6.1.2 Sample Initiate Process SOAP Response

> *Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.*

1010

```
<soap:Body>
<rpe:InitiateProcessResponse
  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>INTERESTED</rpe:processState>
  </rpe:InitiateProcessResponse>
</soap:Body>
```

1015

3.26 Retrieve Activities [QRPH-26]

1020

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.

1025

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

1030
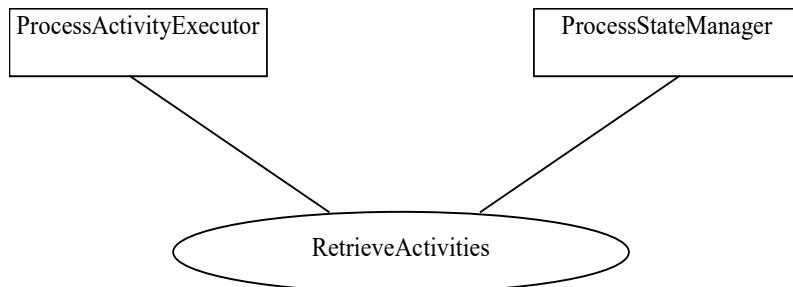
Actor: Process Activity Executor

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

1035

Actor: Process State Manager

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

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3.26.3 Referenced Standards

See Section 3.20.3.

3.26.4 Interaction Diagram

ProcessActivityExecutor   ProcessStateManager

RetrieveActivitiesRequest

[QRPH-26]

RetrieveActivitiesResponse
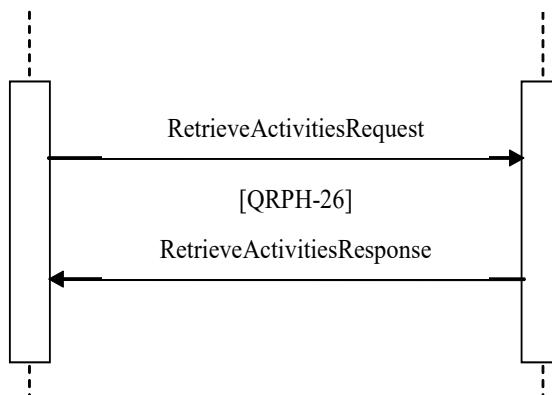
1040

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
1045   operation, wants to retrieve the current set of process activities it needs to perform from a
Process State Manager.

3.26.4.1.2 Message Semantics

The current process context (see Table 3.25.4.2.2-1) is the sole input.

Section 3.26.6 describes the Web Services protocol requirements and the format of the message
1050   in full detail.

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.
1055

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
1060 Request from a Process Activity Executor.

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.

1065 **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 3.20.4.1.2-3.
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	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, of type rpe:PatientType.
processErrorList	O	If errors were encountered in processing (see @status), error list is defined here.	See Table 3.20.4.1.2-4.

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.

1070 ### 3.26.5 Security Considerations

See QRPH TF-1:X.5.

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: "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 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 Considerations.*

Full WSDLs for the can be found on the IHE FTP site at:
ftp://ftp.ihe.net/Quality/2017_2018_YR_11/QPRH Technical/RPE

3.26.6.1.1 Sample Retrieve Activities SOAP Request

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> *Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.*

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

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3.26.6.1.2 Sample Retrieve Activities SOAP Response

> *Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.*

1130

```
<soap:Body>
<rpe:RetrieveActivitiesResponse
  xmlns:rpe="urn:ihe:qrph:rpe:2009"
  status="urn:ihe:qrph:rpe:2009:ResponseStatusType:Success">
    <rpe:activity activityLanguage="http://www.omg.org/spec/BPMN/2.0/">
        <userTask xmlns="http://www.omg.org/spec/BPMN/20100524/MODEL"
        implementation="##unspecified" name="Screening Activity" id="ScreeningActivity"/>
    </rpe:activity>
  </rpe:RetrieveActivitiesResponse>
</soap:Body>
```

1135

1140

```
<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]">
        [As Defined by Content Profile]
    </rpe:activity>
  </rpe:RetrieveActivitiesResponse>
</soap:Body>
```

1145

1150

3.27 Update Activity [QRPH-27]

This section corresponds to transaction [QRPH-27] of the IHE QRPH Transaction Framework. [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.

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
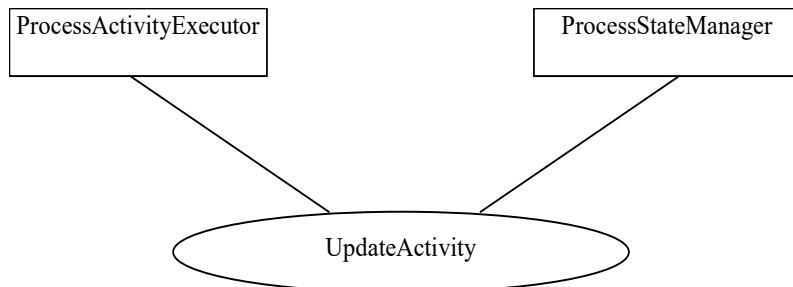
Actor: Process Activity Executor

**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.

1170 **3.27.4 Interaction Diagram**

ProcessActivityExecutor   ProcessStateManager

UpdateActivityRequest

[QRPH-27]

UpdateActivityResponse
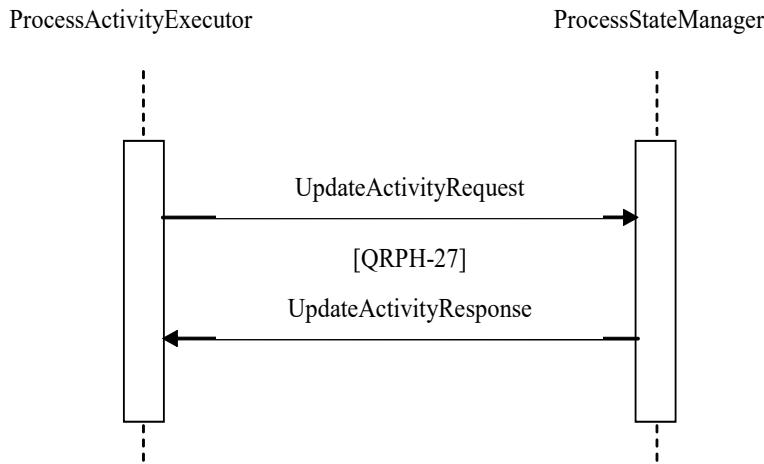
3.27.4.1 Update Activity Message

3.27.4.1.1 Trigger Events

1175 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.

1180

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	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.
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.

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

1185 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".

1190

Otherwise SOAP faults shall be generated accordingly.

3.27.4.2 Update Activity Response Message

3.27.4.2.1 Trigger Events

The message is triggered by a Process State Manager receiving an Update Activity request from
1195 a Process Activity Executor.

3.27.4.2.2 Message Semantics

A responseCode XML element of type string is returned which confirms successful update of the activity with a value of "ACTIVITY_UPDATED".

3.27.4.2.3 Expected Actions

1200 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.

3.27.5 Security Considerations

See Section QRPH TF-1:X.5

1205 ### 3.27.6 Protocol Requirements

The Update Activity 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.

1210 **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:

- 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"

- 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 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 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 Considerations.*

Full WSDLs for the can be found on the IHE FTP site at:
ftp://ftp.ihe.net/Quality/2017_2018_YR_11/QPRH Technical/RPE

3.27.6.1.1 Sample Update Activity SOAP Request

Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.

```
<soap:Body>
  <rpe:UpdateActivityRequest xmlns:rpe="urn:ihe:qrph:rpe:2009">
     <rpe:patient>
        <rpe:candidateID root="" extension="" />
        <rpe:name>
           <hl7:given>John</hl7:given>
           <hl7:family>Smith</hl7:family>
        </rpe:name>
        <rpe:address />
        <rpe:dob value="19990101 />
     </rpe:patient>
```

```
                <rpe:processIdentifier root="1.2.3.5" extension="1006-1" />
                <rpe:processDefinitionIdentifier root="1.2.3.4" extension="1006" />
                <rpe:processState>SCREENING</rpe:processState>
                <rpe:assignedOrganizationIdentifier root="1.2.3.5" extension="CIS_CE_CB" />
1255        <rpe:activity activityLanguage="http://www.omg.org/spec/BPMN/2.0/">
                <userTask xmlns="http://www.omg.org/spec/BPMN/20100524/MODEL"
                implementation="##unspecified" name="Screening Activity" id="ScreeningActivity">
                    <dataOutputAssociation id="ScreeningObservations_DataOutput">
                        <targetRef>ScreeningObservations</targetRef>
1260                    <assignment>
                            <from><![CDATA[
                                <hl7:observation xmlns:hl7="urn:hl7-org:v3" classCode="OBS"
                    moodCode="CRT">
1265                                <id root="1.2.5.2.3.4" extension="DBP"/>
                                    <code code="8462-4" codeSystem="2.16.840.1.113883.6.1"
                    codeSystemName="LOINC" displayName="BP Diastolic">
                                        <originalText>Diastolic Blood Pressure</originalText>
                                    </code>
                                    <statusCode code="active"/>
1270                                <value xsi:type="PQ" value="120" unit="mmHg"/>
                                </hl7:observation>
                            ]]>
                            </from>
                            <to>ScreeningObservations</to>
1275                    </assignment>
                    </dataOutputAssociation>
                </userTask>
            </rpe:activity>
        </rpe:UpdateActivityRequest>
1280 </soap:Body>

    <soap:Body>
      <rpe:UpdateActivityRequest xmlns:rpe="urn:ihe:qrph:rpe:2009" xmlns:hl7="urn:hl7-org:v3">
            <rpe:patient>
1285            <rpe:candidateID root="" extension="" />
                <rpe:name>
                    <hl7:given>John</hl7:given>
                    <hl7:family>Smith</hl7:family>
                </rpe:name>
1290            <rpe:address />
                <rpe:dob value="19990101 />
            </rpe:patient>
            <rpe:processIdentifier root="1.2.3.5" extension="1006-1" />
            <rpe:processDefinitionIdentifier root="1.2.3.4" extension="1006" />
1295        <rpe:processState>SCREENING</rpe:processState>
            <rpe:assignedOrganizationIdentifier root="1.2.3.5" extension="CIS_CE_CB" />
            <rpe:activity activityLanguage="[As Defined by Content Profile]">
                [Defined by Content Profile]
            </rpe:activity>
1300    </rpe:UpdateActivityRequest >
    </soap:Body>
```

3.27.6.1.2 Sample Update Activity SOAP Response

Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.

1305

```
    <soap:Body>
      <rpe:UpdateActivityRequestResponse
1310    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>
```

3.28 Send Process State Alert [QRPH-28]

1315 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:

- a Process Activity Executor alerting a Process State Manager of a change that affects the
1320 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
1325 3.25.4.2.2-1 and a process state value.

3.28.2 Use Case Roles
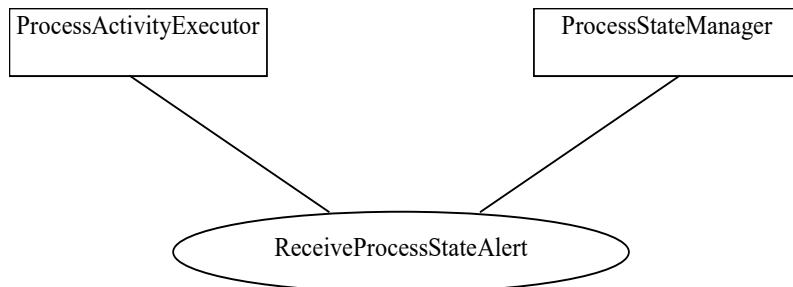
Actor: Process Activity Executor

1330 **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.

3.28.3 Referenced Standards

See Section 3.20.3.

1335 **3.28.4 Interaction Diagram**

ProcessActivityExecutor   ProcessStateManager

SendProcessStateAlertRequest

[QRPH-28]

SendProcessStateAlertResponse

OR

ProcessActivityExecutor   ProcessStateManager

SendProcessStateAlertRequest

[QRPH-28]
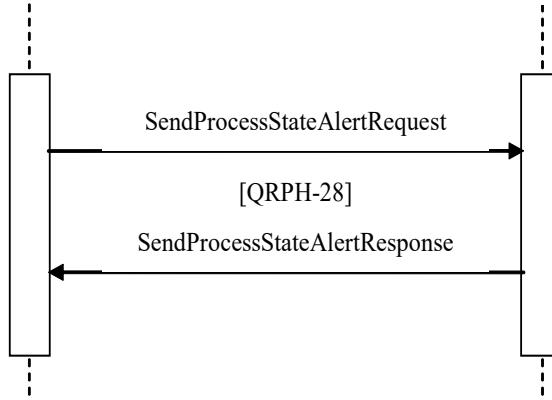
SendProcessStateAlertResponse
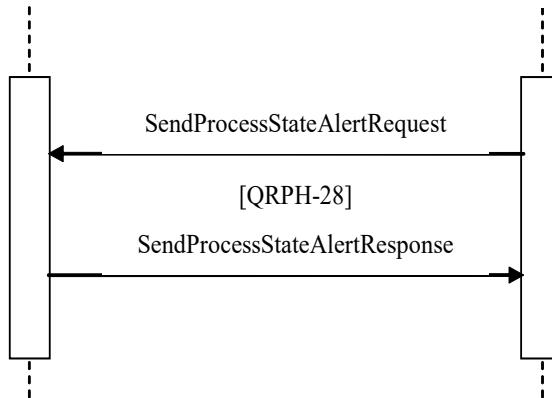
1340 **3.28.4.1 Send Process State Alert Message**

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
1345   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.

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.
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 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".

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

A responseCode XML element of type string is returned to confirm receipt of the alert with a value of "ALERT_RECEIVED".

3.28.4.2.3 Expected Actions

1370 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

See QRPH TF-1:X.5.

3.28.6 Protocol Requirements

1375 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

1380

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"

1385
- 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
1390 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"

1395
- 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 the Section 3.28.6.1 Sample SOAP Messages.

1400 **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 the IHE Appendix V: Web Services for IHE Transactions and in accord with Section 3.28.5 Security Considerations.*

1405 Full WSDLs for the can be found on the IHE FTP site at:
ftp://ftp.ihe.net/Quality/2017_2018_YR_11/QPRH Technical/RPE

3.28.6.1.1 Sample Send Process State Alert SOAP Request

Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.

1410

```
Process State Manager to Process Activity Executor (notification of patient enrollment):

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

1430

3.28.6.1.2 Sample Send Process State Alert SOAP Response

Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.

1435
```
<soap:Body>
  <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>
```