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SR 816.11.n / Anhang 5 der Verordnung des EDI vom ... über das elektronische Patientendossier

Nationale Anpassungen der Integrationsprofile nach Artikel 5 Buchstabe b EPDV-EDI

National extensions to the IHE Technical Framework

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National Extensions

The national extensions documented in this section shall be used in conjunction with the definitions of integration profiles, actors and transactions provided in Volumes 1 through 3 of the IHE IT Infrastructure Technical Framework. This section includes extensions and restrictions to effectively support the regional practice of healthcare in Switzerland. It also translates a number of English terms to ensure correct interpretation of requirements of the IT Infrastructure Technical Framework.

This IT Infrastructure national extension document was authored under the supervision of the Federal Office of Public Health (FOPH), eHealth Suisse and IHE Suisse in order to fulfil the Swiss regulations. See also Ordinance to the Federal Act on the Electronic Health Record, published in the Official Compilation of Federal Legislation¹ (available in German, French and Italian).

¹ German: <https://www.admin.ch/opc/de/classified-compilation/20111795/index.html>
French: <https://www.admin.ch/opc/fr/classified-compilation/20111795/index.html>
Italian: <https://www.admin.ch/opc/it/classified-compilation/20111795/index.html>

1.1 Definitions of terms

1.1.1 Electronic patient dossier (EPD)

The object of the Federal Law on Electronic Health Records (FLEHR) is to define the conditions for processing data and documents relating to electronic health records. Using electronic health records, healthcare professionals can access data relevant to treatment of their patients that was compiled and decentrally recorded by healthcare professionals involved in the treatment process. Healthcare professionals may save this data if necessary in their practice and hospital information systems outside of the electronic health records. To access electronic health records, healthcare professionals must join a certified community, which is an association of healthcare professionals and their institutions, and their patients must grant them the necessary access rights. In addition, the electronic health record also allows patients to view their data, to make their own data accessible and to manage the allocation of access rights. Healthcare professionals may only process data in electronic health records with the consent of the patient. Patients have the option of granting individual and graded access rights.

Notation of this term in the following text: **EPD**

1.1.2 EPD circle of trust

From an organizational perspective and in terms of the FLEHR, communities are an association of healthcare professionals and their institutions. Communities who want to participate in the Swiss EPD must comply with the certification requirements as laid down in the implementing provisions for the FLEHR. Such communities and, in particular, their gateways will be listed in a community portal index provided by the FOPH and therefore form a circle of trust by mutual recognition of their conformity related to data protection and data privacy. Furthermore, all required central services are also part of this circle of trust.

Notation of this term in the following text: **EPD circle of trust**

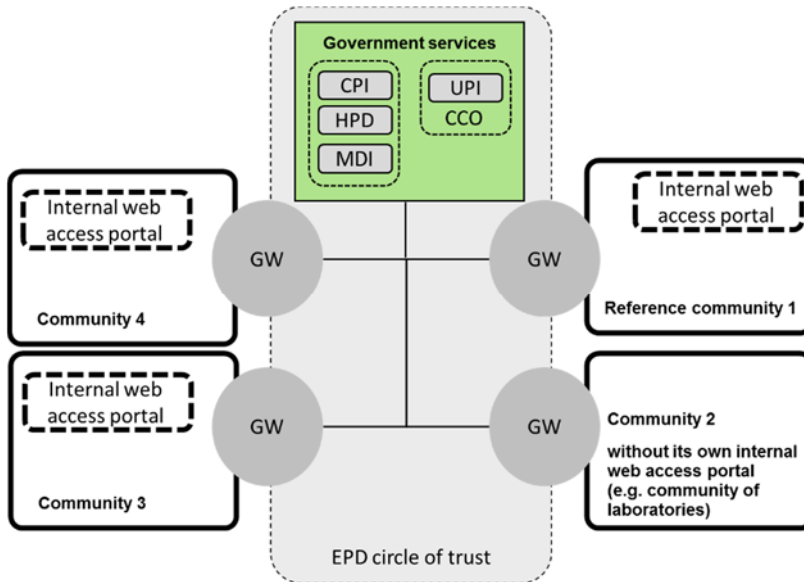


Figure 1: Swiss EPD circle of trust

Legend:

- GW: Gateway
- CPI: Community / Portal Index
- UPI: Unique Person Identification
- HPD: Healthcare Provider Directory
- MDI: Metadata Index-Service

1.1.3 Reference community

If a patient decides to open an EPD, she or he first chooses a community that manages all of his current consents and access right configurations to be used by other EPD users (in essence healthcare professionals) while accessing his personal EPD. Consents and access rights for one patient are managed by exactly one community in the EPD circle of trust.

Although the term home community is used by IHE in a slightly different way, the current specification states this consent and access right management community as reference community.

Cross-community accesses to documents within the EPD are only permitted when the initiating user gets permission by the access rights defined by the patient. Although cross-community accesses may occur between each community within the EPD circle of trust regardless whether it is the patient's reference community or not, the responding community must always apply the current access right settings managed by the reference community.

The patient may change his reference community at any time (for example, when moving to another residence).

Notation of this term in the following text: **referenceCommunity**

1.1.4 Patient Identifiers (EPD-PID, MPI-PID)

Communities in the EPD circle of trust use the national EPD patient identifier (EPD-PID) only for cross-community communication. The federal Central Compensation Office (CCO)² is the institution which issues EPD-PID's. CCO is the only institution which is allowed to correlate the Social Security Number (AVN13) with the EPD-PID. There is no correlation possible back from the EPD-PID to the Social Security Number. This is political intention in order to achieve highest possible patient privacy. Within a community patients are identified by a MPI-PID which is managed by a community Master Patient Index (MPI). Primary Systems may correlate their local patient identifier with the MPI-PID. For cross-community communication the gateways may correlate the MPI-ID to the EPD-PID.

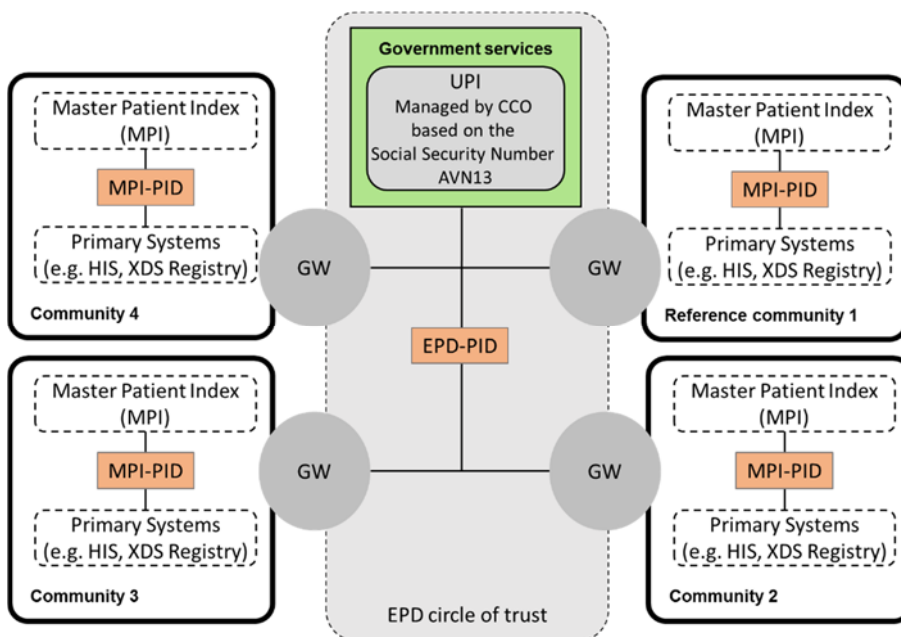


Figure 2 Swiss Patient Identifiers

1.2 IHE Suisse Scope of precisions

The extensions, restrictions and translations specified apply to the following IHE IT Infrastructure Integration profiles:

- IT Infrastructure: Consistent Time (CT)
- IT Infrastructure: Audit Trail and Node Authentication (ATNA)

² <http://www.zas.admin.ch/index.html>

- IT Infrastructure: Cross-Community Access (XCA)
- IT Infrastructure: Patient Identifier Cross-Reference HL7 V3 (PIXv3)
- IT Infrastructure: Patient Demographic Query HL7 V3 (PDQv3)
- IT Infrastructure Technical Framework Supplement: Cross-Community Patient Discovery (XCPD)
- IT Infrastructure Technical Framework Supplement: Healthcare Provider Directory (HPD)

1.3 Requirements on CT Profile for Swiss Time Service

ITI TF-1 does not specify any NTP Servers. The following Time Service MUST be used by all actors in the Swiss EPD circle of trust.

- Maintain Time [ITI-1]
ntp.metas.ch MUST be used as Time Service.

1.4 Requirements on ATNA, XDS.b and XCA Profiles for Audit Trail Consumption

1.4.1 Introduction

The FLEHR requires a patient access on the complete audit trail within the EPD circle of trust. The access to the audit trail will be provided by certified web access portals for patients.

The present national extension will use and precise the existing transactions and content profiles of the Audit Trail and Node Authentication (ATNA), Cross-Enterprise Document Sharing (XDS.b) and Cross-Community Access (XCA) integration profiles in order to achieve the Swiss regulation needs on the audit trail access by patients.

This figure shows all relevant actors and transactions for the present national extension:

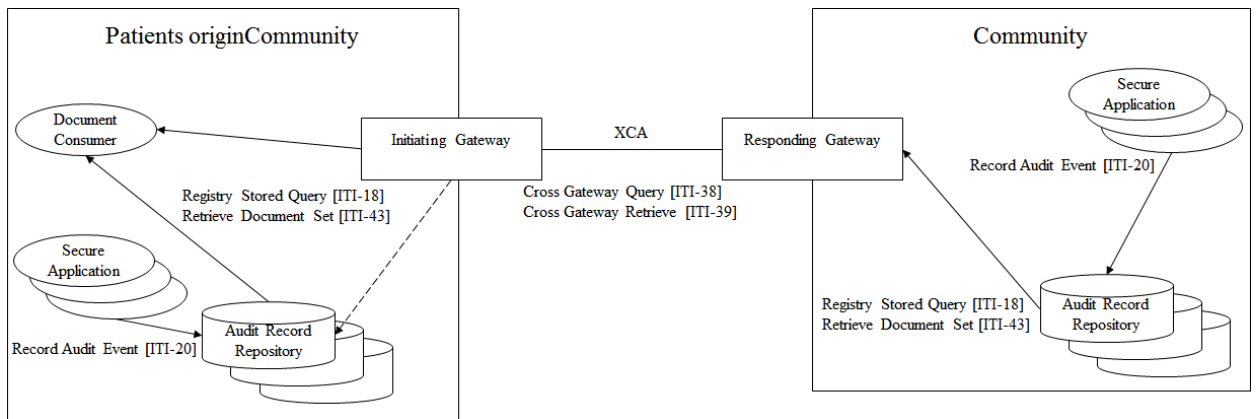


Figure 3: Big picture – actors and transactions

This figure shows all relevant content profiles for the present national extension:

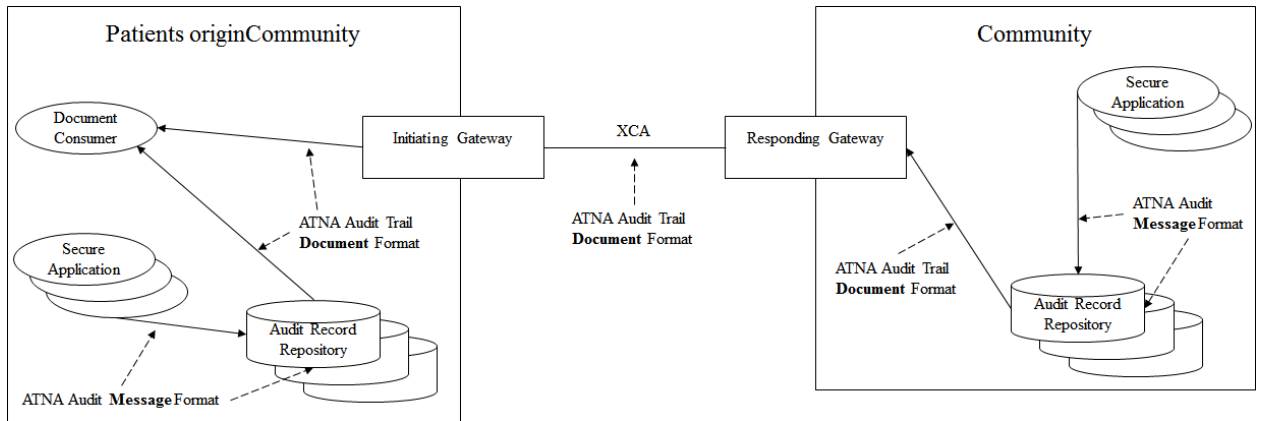


Figure 4: Big picture – content profiles

1.4.2 Actors

1.4.2.1 XDS.b Document Consumer

The following option **MUST** be implemented by all web access portal providers for patients in the Swiss EPD circle of trust:

- On-Demand Documents Option (see ITI TF-2a, 3.18.4.1.2.5)

These actors **MUST** ...

- combine all Audit Trail Message entries of all Audit Trail Document entries into one single document of type ATNA Audit Trail Document Format (see chapter 1.4.4.2 on page 23). Relevant transactions:
 - Registry Stored Query [ITI-18] transaction that uses the parameters described in chapter “1.4.3.1.1 Parameters for stored query FindDocuments” on page 10.
 - Retrieve Document Set [ITI-43] transaction performed against an Audit Record Repository using a document UUID received by a previously executed by a Registry Stored Query mentioned before.
- translate the coded information into the language preferred by the user when provide it to the user through the UI or other results like reports. Translations **MUST** fulfil the following requirements:
 - Translations in German, French and Italian **MUST** be supported. Other language translations are permitted but remain in the responsibility of the software vendor.
 - Translations for coded values from the Swiss Metadata Value-Set³ must match the translations provided in the Swiss Metadata Value-Set.
 - Translations for coded values mentioned in the present national extensions **MUST** be used.
 - No translation is required for narrative text.

1.4.2.2 XCA Initiating Gateway

The following option **MUST** be implemented by all community gateways in the Swiss EPD circle of trust:

- On-Demand Documents Option (see ITI TF-2a, 3.18.4.1.2.5)

These actors basically relay the XDS.b Registry Stored Query [ITI-18] and XDS.b Retrieve Document Set [ITI-43] transactions to XCA Cross Gateway Query [ITI-38] and XCA Cross Gateway Retrieve [ITI-39] as described in IHE ITI TF-2.

³ <TODO: Laid down in the Departmental Ordinance on the Electronic Health Record and published elsewhere>

If the `homeCommunityId` represents the local community and the parameter `$XDSDocumentEntryTypeCode` contains the value 60049 (Audit trail), these actors MUST initiate a Registry Stored Query to all local ATNA Audit Repositories.

See also chapter “1.4.3.1.1 Parameters for stored query FindDocuments” on page 10.

1.4.2.3 XCA Responding Gateway

The following option MUST be implemented by all community gateways in the Swiss EPD circle of trust:

- On-Demand Documents Option (see ITI TF-2a, 3.18.4.1.2.5)

These actors basically relay the XCA Cross Gateway Query [ITI-38] and XCA Cross Gateway Retrieve [ITI-39] to XDS.b Registry Stored Query [ITI-18] and XDS.b Retrieve Document Set [ITI-43] transactions as described in ITI TF-2.

If the parameter `$XDSDocumentEntryTypeCode` contains the value 60049 (Audit trail), these actors MUST initiate a Registry Stored Query to all local ATNA Audit Repositories.

See also chapter “1.4.3.1.1 Parameters for stored query FindDocuments” on page 10.

1.4.2.4 ATNA Secure Application

The following transactions are declared as optional in ITI TF-1 but are REQUIRED by the present national extension:

- Maintain Time [ITI-1]
See chapter “1.3 Requirements on ” on page 7.
- Record Audit Event [ITI-20]
The Audit Message Format described in chapter “1.4.4.1 ATNA Audit Message Format” on page 13 MUST be used.

This behaviour MUST be implemented by all applications in the Swiss EPD circle of trust that are requesting, consuming or producing health information of patients having an EPD.

1.4.2.4.1 Audit messages

All ATNA Secure Application actors are required to record the audit messages defined by the IHE actor they are grouped with as described in the IHE Technical Framework.

In case these audit messages do not fulfil the requirements described in chapter “1.4.4.1 ATNA Audit Message Format” on page 13, ATNA Secure Application actors within the Swiss EPD circle of trust MUST record an additional audit message as described in chapter “1.4.4.1 ATNA Audit Message Format” on page 13 for each transaction concerning a patient having an EPD.

1.4.2.5 ATNA Audit Record Repository

ATNA Audit Record Repository actors within the Swiss EPD circle of trust MUST ...

- support the following options and transactions:
(see chapter “1.4.3 Transactions” starting on page 10 for detailed descriptions)
 - On-Demand Documents Option (see ITI TF-2a, 3.18.4.1.2.5).
 - XDS.b Registry Stored Query [ITI-18].
 - XDS.b Retrieve Document Set [ITI-43].
- be able to receive and store audit messages of Audit Message Format described in chapter “1.4.4.1 ATNA Audit Message Format” on page 13 by the Record Audit Event [ITI-20] which is based on the preferred Audit Message Format by IHE ATNA (see ITI TF-2a, chapter 3.20.7.1).
- be able to perform the Retrieve Document Set transaction for all On-Demand documents specified by document and repository UUIDs created by a previously Registry Stored Query transaction.
- have assigned a unique repository ID within the community (similar to XDS.b Document Repository actors).

1.4.3 Transactions

1.4.3.1 Registry Stored Query [ITI-18]

See ITI TF-2a, chapter “3.18.4.1.2.3 Query Request Parameters – Coding Style”. The query parameters described in the following chapter MUST be used for Audit Trail Consumption.

1.4.3.1.1 Parameters for stored query FindDocuments

ITI TF-2a specifies the query parameters for a stored query “FindDocuments” (see ITI TF-2a 3.18.4.1.2.3.7.1). The stored query “FindDocuments” MUST be used using the following parameters in order to retrieve Audit Trails within the Swiss EPD circle of trust.

The mentioned Swiss Metadata Value-Set can be found in appendix 3 of the Departmental Ordinance on the Electronic Health Record.

Table 1: Parameters for stored query FindDocuments

Element Name Attribute	Card.	Original descriptions	Swiss National Extension
\$XDSDocumentEntryPatientId XDSDocumentEntry.patientId	[1..1]	The format of the patientId value is CX. See also ITI TF-3, 4.2.3.2.16	No further refinement.
\$XDSDocumentEntryClassCode XDSDocumentEntry.classCode	[0..*]	The code specifying the high-level use classification of the document type (e.g., Report, Summary, Images, Treatment Plan, Patient Preferences, Workflow). See also description 1 below and ITI TF-3, 4.2.3.2.3	This value MUST represent the following value from the Swiss Metadata Value-Set “epd_xds_classCode” (2.16.756.5.30.1.127.3.10.1.3): DTC90 (Other Composition)
\$XDSDocumentEntryTypeCode XDSDocumentEntry.typeCode	[0..*]	The code specifying the precise type of document from the user perspective. See also description 1 below and ITI TF-3, 4.2.3.2.25	This value MUST represent the following value from the Swiss Metadata Value-Set “epd_xds_typeCode” (2.16.756.5.30.1.127.3.10.1.27): 60049 (Audit Trail)
\$XDSDocumentEntryPracticeSettingCode XDSDocumentEntry.practiceSettingCode	[0..*]	The code specifying the clinical specialty where the act that resulted in the document was performed (e.g., Family Practice, Laboratory, Radiology). See also description 1 below and ITI TF-3, 4.2.3.2.17	When specified, this value MUST represent a value from the Swiss Metadata Value-Set “epd_xds_practiceSettingCode” (2.16.756.5.30.1.127.3.10.1.18)
\$XDSDocumentEntryCreationTimeFrom Lower value of XDSDocumentEntry.creationTime	[0..1]	creationTime represents the time the author created the document. See also description 6 below and ITI TF-3, 4.2.3.2.6	MUST NOT be specified ([0..0]).
\$XDSDocumentEntryCreationTimeTo Upper value of XDSDocumentEntry.creationTime	[0..1]		
\$XDSDocumentEntryServiceStartTimeFrom Lower value of	[0..1]	Represents the start time of the service	Used to specify the start time of the desired audit trail message to be returned.

Element Name Attribute	Card.	Original descriptions	Swiss National Extension
XDSDocumentEntry.serviceStartTime		being documented took place (clinically significant, but not necessarily when the document was produced or approved).	All audit trail messages having the @EventDateTime (AuditMessage/EventIdentification) equals or newer MUST be returned by the Audit Record Repository actor.
\$XDSDocumentEntryServiceStartTimeTo Upper value of XDSDocumentEntry.serviceStartTime	[0..1]	See also ITI TF-3, 4.2.3.2.19	MUST NOT be specified ([0..0]).
\$XDSDocumentEntryServiceStopTimeFrom Lower value of XDSDocumentEntry.serviceStopTime	[0..1]	Represents the stop time of the service being documented took place (clinically significant, but not necessarily when the document was produced or approved).	MUST NOT be specified ([0..0]).
\$XDSDocumentEntryServiceStopTimeTo Upper value of XDSDocumentEntry.serviceStopTime	[0..1]	See also ITI TF-3, 4.2.3.2.20	Used to specify the stop time of the desired audit trail message to be returned. All audit trail messages having the @EventDateTime (AuditMessage/EventIdentification) equals or older MUST be returned by the Audit Record Repository actor.

Element Name Attribute	Card.	Original descriptions	Swiss National Extension
\$XDSDocumentEntryHealthcareFacilityTypeCode XDSDocumentEntry.healthcareFacilityTypeCode	[0..*]	This code represents the type of organizational setting of the clinical encounter during which the documented act occurred. See also description 1 below and ITI TF-3, 4.2.3.2.11	When specified, this value MUST represent a value from the Swiss Metadata Value-Set "epd_xds_healthcareFacility-TypeCode" (2.16.756.5.30.1.127.3.10.1.11)
\$XDSDocumentEntryEventCodeList XDSDocumentEntry.eventCodeList	[0..*]	This list of codes represents the main clinical acts, such as a colonoscopy or an appendectomy being documented. See also description 1, 3 below and ITI TF-3, 4.2.3.2.8	No further refinement.
\$XDSDocumentEntryConfidentialityCode XDSDocumentEntry.confidentialityCode	[0..*]	The code specifying the security and privacy tags of the document. See also description 1 below and ITI TF-3, 4.2.3.2.5	This value MUST represent the following value from the Swiss Metadata Value-Set "epd_xds_confidentialityCode" (2.16.756.5.30.1.127.3.10.1.5): 30005 (very restricted)
\$XDSDocumentEntryAuthorPerson XDSDocumentEntry.author	[0..*]	Represents the humans and/or machines that authored the document. See also description 4 below and ITI TF-3, 4.2.3.2.1	No further refinement.
\$XDSDocumentEntryFormatCode XDSDocumentEntry.formatCode	[0..*]	The code specifying the detailed technical format of the document. See also description 1 below and ITI TF-3, 4.2.3.2.9	This value MUST represent the following value from the Swiss Metadata Value-Set "epd_xds_formatCode" (2.16.756.5.30.1.127.3.10.1.9): urn:che:epd:EPD_Basic_Document <TODO OID to be registered for the content profile. As soon as it is registered change the format code to urn:che:epd:urn:che:epd:2.16.756.5.30...>
\$XDSDocumentEntryStatus XDSDocumentEntry.status	[1..*]	Represents the status of the DocumentEntry. A DocumentEntry shall have one of two availability statuses: Approved: The document is available for patient care. Deprecated: The document is obsolete. See also ITI TF-3, 4.2.3.2.2	While audit trail entries may not be deprecated, the following value MUST be used: urn:oasis:names:tc:ebxml-regrep:StatusType:Approved
\$XDSDocumentEntryType XDSDocumentEntry.objectType	[0..*]	The objectType attribute reflects the type of DocumentEntry As described in Section 4.1.1, there are two	While queries to audit trails are On-Demand documents, the following value MUST be used: urn:uuid:34268e47-fdf5-41a6-ba33-82133c465248 (On-Demand)

Element Name Attribute	Card.	Original descriptions	Swiss National Extension
		DocumentEntry types: Stable Document Entry and On-Demand Document Entry. See also description 5 below and ITI TF-3, 4.2.3.2.30	

Descriptions from ITI TF-2a, 3.18.4.1.2.3.7.1:

1. Shall be coded according to specification in Section 3.18.4.1.2.3.4 Coding of Code/Code-Scheme.
2. Supports AND/OR semantics as specified in Section 3.18.4.1.2.3.5.
3. The value for this parameter is a pattern compatible with the SQL keyword LIKE which allows the use of the following wildcard characters: % to match any (or no) characters and _ to match a single character. The match shall be applied to the text contained in the Value elements of the authorPerson Slot on the author Classification (value strings of the authorPerson sub-attribute)
4. See Section 3.18.4.1.2.3.6.2
5. CreationTimeFrom and CreationTimeTo are ignored when evaluating an On-Demand Document Entry's selection for inclusion in the query response.

1.4.3.1.2 Response

ATNA Audit Record Repository actors within the Swiss EPD circle of trust MUST...

1. create a virtual document UUID and return it as one single document entry in the result (On-Demand Document) and
2. cache all audit messages matched by the filter parameters in order to provide them by the retrieve Document Set transaction using the corresponding document UUID in the ATNA Audit Trail Document Format. Caching is REQUIRED for 8 hours. Later accesses to the corresponding document UUID MUST fail.

1.4.3.2 Retrieve Document Set [ITI-43]

ATNA Audit Record Repository actors within the Swiss EPD circle of trust MUST return the audit messages matched by the filter parameters in the query of the corresponding document UUID. The contents of the document returned MUST exactly conform to the state at the point of time of the stored query FindDocuments execution.

1.4.3.3 Record Audit Event [ITI-20]

The ATNA Audit Message Format described in chapter 1.4.4.1 starting on page 13 MUST be used for all events for patients having an EPD.

1.4.4 Content profiles

1.4.4.1 ATNA Audit Message Format

IHE ITI TF-2a references to several Audit Message Formats (see ITI TF-2a, 3.20.7) and prefers use of the DICOM schema for audit records generated by all IHE actors (see ITI TF-2a, 3.20.7.1). ATNA Secure Application actors within the Swiss EPD circle of trust MUST record an audit message for each transaction concerning a patient having an EPD using the mentioned DICOM schema.

The schema can be found in the DICOM Standard, Part 15 Annex A.5 (available from:

http://dicom.nema.org/medical/dicom/current/output/chtml/part15/sect_A.5.html).

Detailed contents to be provided by all ATNA Secure Application actors within the Swiss EPD circle of

trust are described in the following chapter.

1.4.4.1.1 Detailed AuditMessage definitions

The detailed specifications for IHE actor audit message requirements specified within the IHE integration profiles MUST be used with the following specification.

Table 2: Detailed AuditMessage definitions

Element Name	Card.	Original descriptions	Swiss National Extension
AuditMessage [1..1] (root element)			
AuditMessage/EventIdentification [1..1] (type: EventIdentificationContents)			
@EventActionCode (type: xs:token)	[0..1]	Indicator for type of action performed during the event that generated the audit. C= Create R= Read U= Update D= Delete E= Execute	No further refinement.
@EventDateTime (type: xs:dateTime)	[1..1]	Universal coordinated time (UTC), i.e., a date/time specification that is unambiguous as to local time zones The time at which the audited event occurred. See Section A.5.2.5	Date and time format following ISO 8601 MUST be used. Indication of the time zone in Switzerland during the daylight-savings time (summer): UTC +2 hours and during normal time (winter): UTC +1 hour. Sample daylight-savings time: 2016-08-10T20:29:10+02:00 Sample normal time: 2016-02-10T20:29:10+01:00

Element Name	Card.	Original descriptions	Swiss National Extension
@EventOutcomeIndicator (type: xs:token)	[1..1]	Indicates whether the event succeeded or failed. When a particular event has some aspects that succeeded and some that failed, then one message shall be generated for successful actions and one message for the failed actions (i.e., not a single message with mixed results). 0= Nominal Success (use if status otherwise unknown or ambiguous) 4=Minor failure (per reporting application definition) 8=Serious failure (per reporting application definition) 12=Major failure (reporting application now unavailable)	No further refinement.
EventID (type: CodedValueType)	[1..1]	Identifier for a specific audited event ... The identifier for the family of event. E.g., "User Authentication"; Extended by DICOM using DCID (400)	No further refinement.
EventTypeCode (type: CodedValueType)	[0..*]	Identifier for the category of event. The specific type(s) within the family applicable to the event, e.g., "User Login". Note: DICOM/IHE defines and uses this differently than RFC-3881. Extended by DICOM using DCID (401).	No further refinement.
EventOutcomeDescription	[0..1]	N/A	No further refinement.
AuditMessage/ActiveParticipant [1..1] (type: ActiveParticipantContents)			
@UserID (type: text)	[1..1]	Unique identifier for the user actively participating in the event. If the participant is a person, then the User ID shall be the identifier used for that person on this particular system, in the form of loginName@domain-name. If the participant is an identifiable process, the UserID selected shall be one of the identifiers used in the internal system logs. See also A.5.2.1	No further refinement.
@AlternativeUserID (type: text)	[0..1]	Alternative unique identifier for the user. If the participant is a person, then Alternative User ID shall be the identifier used for that person within an enterprise for authentication purposes, for example, a Kerberos	No further refinement.

Element Name	Card.	Original descriptions	Swiss National Extension
		Username (user@realm). If the participant is a DICOM application, then Alternative User ID shall be one or more of the AE Titles that participated in the event. See also A.5.2.2	
@UserName (type: text)	[0..1]	A human readable identification of the participant. If the participant is a person, the person's name shall be used. If the participant is a process, then the process name shall be used. See also A.5.2.3	If the participant is a person, the person's name MUST be specified as follows: [<title>]<family name> <given name>
@UserIsRequestor (type: xs:Boolean)	[1..1]	Indicator that the user is or is not the requestor, or initiator, for the event being audited. Used to identify which of the participants initiated the transaction being audited. If the audit source cannot determine which of the participants is the requestor, then the field shall be present with the value FALSE in all participants. The system shall not identify multiple participants as UserIsRequestor. If there are several known requestors, the reporting system shall pick only one as UserIsRequestor.	No further refinement.
@NetworkAccessPointID (type: xs:token)	[0..1]	An identifier for the network access point of the user device This could be a device id, IP address, or some other identifier associated with a device. See also A.5.2.4	No further refinement.
@NetworkAccessPointTypeCode	[0..1]	An identifier for the type of network access point. 1= Machine Name, including DNS name 2= IP Address 3= Telephone Number 4= Email address 5= URI (user directory, HTTP-PUT, ftp, etc.) See also A.5.2.4	No further refinement.
RoleIDCode (type: CodedValueType)	[0..*]	Specification of the role(s) the user plays when performing the event, as assigned in role-based access control security Extended by DICOM using DCID (402) Usage of this field is refined in the individual message descriptions below. Other additional roles may also	When describing a human user's participation in an event, this value MUST represent a value from the Swiss Metadata Value-Set "epd_xds_authorRole" (2.16.756.5.30.1.127.3.10.1.1.3)

Element Name	Card.	Original descriptions	Swiss National Extension
		<p>be present, since this is a multi-valued field.</p> <p>ITI TF-2a, 3.20.7.7: RoleIDCode is a CodedValueType. When describing a human user's participation in an event, this value should represent the access control roles/permissions that authorized the event/trans. Use of standards based roles/permissions is preferable to site or application specific. As RFC3881 indicates Many security systems are unable to produce this data, hence it is optional. For example: at a site "St Fraser" they have defined a functional role code "NURSEA" for attending nurse. This can be represented as EV("NURSEA", "St Fraser", "Attending Nurse")</p> <p>Candidate standards based structural/functional role codes can be found at ISO, HL7, ASTM, and various other sources.</p>	
MediaIdentifier/MediaType (type: CodedValueType)	[0..1]	<p>When importing or exporting data, e.g., by means of media, the UserID field is used both to identify people and to identify the media itself.</p> <p>See also A.5.2.1</p>	<p>When importing or exporting data, this value MUST represent either a unique media identifier or at least a unique media type (e.g., DVD, paper, film).</p> <p>Currently there is no Swiss Metadata Value-Set available for media types, but as soon as there is one, it MUST be used when describing media types.</p>
AuditMessage/AuditSourceIdentification [1..1] (type: AuditSourceIdentificationContents)			
@code (type: xs:token)	[1..1]	<p>1= End-user display device, diagnostic device</p> <p>2= Data acquisition device or instrument</p> <p>3= Web Server process or thread</p> <p>4= Application Server process or thread</p> <p>5= Database Server process or thread</p> <p>6= Security server, e.g., a domain controller</p> <p>7= ISO level 1-3 network component</p> <p>8= ISO level 4-6 operating software</p> <p>9= other</p> <p>Other values are allowed if a codeSystemName is present.</p>	No further refinement.
other-csd-attributes	N/A	See descriptions for attribute group other-csd-attributes.	
@AuditEnterpriseSiteID	[0..1]	<p>Logical source location within the healthcare enterprise network, e.g., a hospital or other provider location within a multi-entity provider group.</p> <p>Serves to further qualify the Audit Source ID, since Audit Source ID is not required to be globally unique.</p>	<p>[1..1] The GLN of the audit source MUST be specified.</p> <p>Audit sources may apply for a GLN.</p> <p>When presenting to the user, the GLN details MUST be provided⁴.</p>

⁴ There exists a Webservice at the Refdata foundation which might be used:
<http://refdatabase.refdata.ch/Service/Partner.asmx?WSDL> (see also
http://www.refdata.ch/content/page_1.aspx?Nid=60&Aid=636&ID=296)

Element Name	Card.	Original descriptions	Swiss National Extension
@AuditSourceID (type: xs:token)	[1..1]	Identifier of the source. The identification of the system that detected the auditable event and created this audit message. Although often the audit source is one of the participants, it could also be an external system that is monitoring the activities of the participants (e.g., an add-on audit-generating device).	A meaningful description of the audit source, comprehensible for the patient / citizen must be specified.
AuditSourceTypeCode (type: xs:token)	[0..*]	Code specifying the type of source Used as defined in RFC 3881: 1= End-user display device, diagnostic display 2= Data acquisition device or instrument 3= Web server process 4= Application server process 5= Database server process 6= Security server, e.g., a domain controller 7= ISO level 1-3 network component 8= ISO level 4-6 operating software 9= External source, other or unknown type E.g., an acquisition device might use "2" (data acquisition device), a PACS/RIS system might use "4" (application server process).	No further refinement.
AuditMessage/ParticipantObjectIdentification [0..*] (type: ParticipantObjectIdentificationContents)			
@ParticipantObjectID (type: xs:token)	[1..1]	Describes the identifier that is contained in Participant Object ID. Values may be drawn from those listed in RFC 3881 and DCID (404), as specified in the individual message descriptions.	No further refinement. To be used as specified in the IHE actor audit message requirements specified within the IHE integration profiles.
@ParticipantObjectTypeCode (type: xs:token)	[0..1]	1= Person 2= System object 3= Organization 4= Other	No further refinement. To be used as specified in the IHE actor audit message requirements specified within the IHE integration profiles.

Element Name	Card.	Original descriptions	Swiss National Extension
@ParticipantObjectTypeCodeRole (type: xs:token)	[0..1]	1= Patient 2= Location 3= Report 4= Resource 5= Master File 6= User 7= List 8= Doctor 9= Subscriber 10= guarantor 11= Security User Entity 12= Security User Group 13= Security Resource 14= Security Granulativity Definition 15= Provider 16= Report Destination 17= Report Library 18= Schedule 19= Customer 20= Job 21= Job Stream 22= Table 23= Routing Criteria 24= Query	No further refinement. To be used as specified in the IHE actor audit message requirements specified within the IHE integration profiles.
@ParticipantObjectDataLifeCycle (type: xs:token)	[0..1]	1= Origination, Creation 2= Import/ Copy 3= Amendment 4= Verification 5= Translation 6= Access/Use 7= De-identification 8= Aggregation, summarization, derivation 9= Report 10= Export 11= Disclosure 12= Receipt of Disclosure 13= Archiving 14= Logical deletion 15= Permanent erasure, physical destruction	No further refinement. To be used as specified in the IHE actor audit message requirements specified within the IHE integration profiles.

Element Name	Card.	Original descriptions	Swiss National Extension
@ParticipantObjectSensitivity (type: xs:token)	[0..1]	Denotes policy-defined sensitivity for the Participant Object ID such as VIP, HIV status, mental health status, or similar topics. Used as defined in RFC 3881.	The current confidentiality code of the object MUST be specified when the object is a document in the EPD. This value MUST represent a value from the Swiss Metadata Value-Set "epd_xds_confidentialityCode" (2.16.756.5.30.1.127.3.10.1.5) in the HL7 CNE datatype format. The following sequences are required: CNE.1: Code national CNE.2: Text in ge, fr or it CNE.7: Publication date of the value-set in the format YYYYMMDD CNE.14: OID of the value-set Sample: 30003^medical data^~~~~ 20150702^~~~~~ 2.16.756.5.30.1.127.3.10.1.5
ParticipantObjectIDTypeCode (type: CodedValueType)	[1..1]	Describes the identifier that is contained in Participant Object ID. Values may be drawn from those listed in RFC 3881 and DCID (404), as specified in the individual message descriptions.	No further refinement. To be used as specified in the IHE actor audit message requirements specified within the IHE integration profiles.
ParticipantObjectName (type: xs:token) Or ParticipantObjectQuery (type: xs:base64Binary)	[1..1]	An instance-specific descriptor of the Participant Object ID audited, such as a person's name. Or The actual query for a query-type participant object. Usage refined by individual message descriptions	No further refinement. To be used as specified in the IHE actor audit message requirements specified within the IHE integration profiles.

Element Name	Card.	Original descriptions	Swiss National Extension
ParticipantObjectDetail (type: ValuePair)	[0..*]	Implementation-defined data about specific details of the object accessed or used. Used as defined in RFC 3881. Note 1: The value field is xs:base64Binary encoded, making this attribute suitable for conveying binary data. Note 2: optional details, these can be extensive and large.	No further refinement. To be used as specified in the IHE actor audit message requirements specified within the IHE integration profiles.
ParticipantObjectDescription (type: xs:token)	[0..*]	Optional descriptive text	No further refinement. When used, it MUST be specified in the preferred language by the patient / citizen (see also chapter 1.4.2.1 on page 8).
DICOMObjectDescriptionContents	[0..1]	These are extensions made by DICOM to RFC-3881 schema for use describing DICOM objects. See descriptions for group DICOMObjectDescriptionContents.	
CodedValueType			
@csd-code (type: xs:token)	[1..1]	N/A	The code MUST be unique within the OID specified with @codeSystemName.
other-csd-attributes	N/A	See descriptions for attribute group other-csd-attributes	
other-csd-attributes			
@codeSystemName (type: xs:token)	[1..1]	codeSystemName is either an OID or String. OID pattern="[0-2](\.\.0)(\.[1-9][0-9]*)**"	An OID MUST be used.
@displayName (type: xs:token)	[0..1]	N/A	The name of the code system specified by the OID must be specified in the patient's preferred language. It MUST be a valuable translation of the original OID description in the ISO/IEC 9834-1 registration authority.
@originalText (type: xs:token)	[0..1]	Note: this also corresponds to DICOM "Code Meaning"	The name of the element must be specified in the patient's preferred language. It MUST be a valuable translation of the element's original text.
DICOMObjectDescriptionContents			
MPPS	[0..*]	DICOM extension. An MPPS Instance UID(s) associated with this participant object.	No further refinement.
Accession	[0..*]	DICOM extension. An Accession Number(s) associated with this participant object.	No further refinement.
SOPClass	[1..1]	DICOM extension. The UIDs of SOP classes referred to in this participant object. Required if ParticipantObjectIDTypeCode is (110180, DCM, "Study Instance UID")	No further refinement.

Element Name	Card.	Original descriptions	Swiss National Extension
		and any of the optional fields (AccessionNumber, ContainsMPPS, NumberOfInstances, ContainsSOPInstances, Encrypted, Anonymized) are present in this Participant Object. May be present if ParticipantObjectIDTypeCode is (110180, DCM, "Study Instance UID") even though none of the optional fields are present.	
ParticipantObjectContainsStudy	[0..1]	DICOM extension. A Study Instance UID, which may be used when the ParticipantObjectIDTypeCode is not (110180, DCM, "Study Instance UID").	No further refinement.
Encrypted	[0..1]	DICOM extension. A single value of True or False indicating whether or not the data was encrypted. Note: If there was a mix of encrypted and non-encrypted data, then create two event reports.	No further refinement.

Element Name	Card.	Original descriptions	Swiss National Extension
Anonymized	[0..1]	DICOM extension. A single value of True or False indicating whether or not all patient identifying information was removed from the data.	No further refinement.

See also Appendix A – AuditMessage schema starting on page 45.

1.4.4.2 ATNA Audit Trail Document Format

Following the Swiss regulations, any patient has the right to access the audit trail of his own EPD. While the audit trails are stored in multiple Audit Record Repositories in multiple communities, the purpose of the ATNA Audit Trail Document Format is to combine all Audit Trail entries of all Documents returned by Registry Stored Queries [ITI-18] that used the parameters described in chapter “1.4.3.1.1 Parameters for stored query FindDocuments” on page 10 into one single document. Detailed contents to be provided by all ATNA Audit Record Repository actors within the Swiss EPD circle of trust are described in the following chapter.

1.4.4.2.1 Detailed AuditTrail definitions

Table 3: Detailed AuditTrail definitions

Element Name	Card.	Description
AuditTrail [1..1] (root element)		
AuditMessage	[1..*]	An AuditTrail consist of one to many AuditMessage elements. See chapter “1.4.4.1.1 Detailed AuditMessage definitions” starting on page 14.

See also Appendix B – AuditTrail schema on page 52.

1.4.5 Translations

This chapter specifies the translations in German, French and Italien. These translations **MUST** be while presenting the audit trail to the user. Other translations are optional (see also chapter 1.4.2.1 on page 8).

1.4.5.1 EventActionCode

Table 4: Translations for EventActionCode

Code	English	German	French	Italian
C	Create	Erstellen	<TODO>	<TODO>
R	Read	Lesen	<TODO>	<TODO>
U	Update	Aktualisieren	<TODO>	<TODO>
D	Delete	Löschen	<TODO>	<TODO>
E	Execute	Ausführen	<TODO>	<TODO>

1.4.5.2 EventOutcomeIndicator

Table 5: Translations for EventOutcomeIndicator

Code	English	German	French	Italian
0	Nominal Success	Erfolgreich	<TODO>	<TODO>
4	Minor failure	Fehlgeschlagen	<TODO>	<TODO>
8	Serious failure	Schwerwiegender Fehler	<TODO>	<TODO>
12	Major failure	Fataler Fehler	<TODO>	<TODO>

1.4.5.3 NetworkAccessPointTypeCode

Table 6: Translations for NetworkAccessPointTypeCode

Code	English	German	French	Italian
1	Machine Name	Gerätename	<TODO>	<TODO>
2	IP Address	IP-Adresse	<TODO>	<TODO>
3	Telephone Number	Telefonnummer	<TODO>	<TODO>
4	Email address	e-Mail Adresse	<TODO>	<TODO>
5	URI	URI	URI	URI

1.4.5.4 AuditSourceIdentification code

Table 7: Translations for AuditSourceIdentification code

Code	English	German	French	Italian
1	End-user display device, diagnostic device	<TODO>	<TODO>	<TODO>
2	Data acquisition device or instrument	<TODO>	<TODO>	<TODO>
3	Web Server process or thread	<TODO>	<TODO>	<TODO>
4	Application Server process or thread	<TODO>	<TODO>	<TODO>
5	Database Server process or thread	<TODO>	<TODO>	<TODO>
6	Security server, e.g., a domain controller	<TODO>	<TODO>	<TODO>
7	ISO level 1-3 network component	<TODO>	<TODO>	<TODO>
8	ISO level 4-6 operating software	<TODO>	<TODO>	<TODO>
9	Other	<TODO>	<TODO>	<TODO>

1.4.5.5 AuditSourceTypeCode

Table 8: Translations for AuditSourceTypeCode

Code	English	German	French	Italian
1	End-user display device, diagnostic display	<TODO>	<TODO>	<TODO>
2	Data acquisition device or instrument	<TODO>	<TODO>	<TODO>
3	Web server process	<TODO>	<TODO>	<TODO>
4	Application server process	<TODO>	<TODO>	<TODO>
5	Database server process	<TODO>	<TODO>	<TODO>
6	Security server, e.g.,	<TODO>	<TODO>	<TODO>
7	ISO level 1-3 network component	<TODO>	<TODO>	<TODO>
8	ISO level 4-6 operating software	<TODO>	<TODO>	<TODO>
9	External source, other or unknown type	<TODO>	<TODO>	<TODO>

1.4.5.6 ParticipantObjectTypeCode

Table 9: Translations for ParticipantObjectTypeCode

Code	English	German	French	Italian
1	Person	Person	<TODO>	<TODO>
2	System object	Systemobjekt		
3	Organization	Organisation		
4	Other	Andere		

1.4.5.7 ParticipantObjectTypeCodeRole

Table 10: Translations for ParticipantObjectTypeCodeRole

Code	English	German	French	Italian
1	Patient	<TODO>	<TODO>	<TODO>
2	Location	<TODO>	<TODO>	<TODO>
3	Report	<TODO>	<TODO>	<TODO>
4	Resource	<TODO>	<TODO>	<TODO>

5	Master File	<TODO>	<TODO>	<TODO>
6	User	<TODO>	<TODO>	<TODO>
7	List	<TODO>	<TODO>	<TODO>
8	Doctor	<TODO>	<TODO>	<TODO>
9	Subscriber	<TODO>	<TODO>	<TODO>
10	Guarantor	<TODO>	<TODO>	<TODO>
11	Security User Entity	<TODO>	<TODO>	<TODO>
12	Security User Group	<TODO>	<TODO>	<TODO>
13	Security Resource	<TODO>	<TODO>	<TODO>
14	Security Granulativity Definition	<TODO>	<TODO>	<TODO>
15	Provider	<TODO>	<TODO>	<TODO>
16	Report Destination	<TODO>	<TODO>	<TODO>
17	Report Library	<TODO>	<TODO>	<TODO>
18	Schedule	<TODO>	<TODO>	<TODO>
19	Customer	<TODO>	<TODO>	<TODO>
20	Job	<TODO>	<TODO>	<TODO>
21	Job Stream	<TODO>	<TODO>	<TODO>
22	Table	<TODO>	<TODO>	<TODO>
23	Routing Criteria	<TODO>	<TODO>	<TODO>
24	Query	<TODO>	<TODO>	<TODO>

1.4.5.8 ParticipantObjectDataLifeCycle

Table 11: Translations for ParticipantObjectDataLifeCycle

Code	English	German	French	Italian
1	Origination, Creation	<TODO>	<TODO>	<TODO>
2	Import/ Copy	<TODO>	<TODO>	<TODO>
3	Amendment	<TODO>	<TODO>	<TODO>
4	Verification	<TODO>	<TODO>	<TODO>
5	Translation	<TODO>	<TODO>	<TODO>
6	Access/Use	<TODO>	<TODO>	<TODO>
7	De-identification	<TODO>	<TODO>	<TODO>
8	Aggregation, summarization, derivation	<TODO>	<TODO>	<TODO>
9	Report	<TODO>	<TODO>	<TODO>
10	Export	<TODO>	<TODO>	<TODO>
11	Disclosure	<TODO>	<TODO>	<TODO>
12	Receipt of Disclosure	<TODO>	<TODO>	<TODO>
13	Archiving	<TODO>	<TODO>	<TODO>
14	Logical deletion	<TODO>	<TODO>	<TODO>
15	Permanent erasure, physical destruction	<TODO>	<TODO>	<TODO>

1.5 Requirements on PIXv3 for Patient Identity Feed

This section corresponds to the transaction Patient Identity Feed HL7 V3 [ITI-44] of the IHE IT Infrastructure Technical Framework. This transaction is used by the Patient Identity Source, Patient Identifier Cross-reference Manager and Document Registry Actors. With the PIXv3 Patient Identity Feed a primary system can register a local identifier within the MPI.

1.5.1 Message Semantics

1.5.1.1 Major Components of the Patient Registry Record Added/Revised Messages

PersonalRelationship

This is used for sending information pertaining to the mother's maiden name. See also IHE ITI TF-2b, chapter 3.44.4.1.2.1. In Switzerland the fathers and mothers name can be added here to.

Message Information Model

The Message Information Model for both the Patient Activate and Patient Revise messages, as it is described in IHE ITI TF-2b, Table 3.44.4.1.2-1 is further restricted for use in an MPI within the EPD on the following attributes:

Table 12 Patient Active and Revise Model Attributes

PRPA_HD201301IHE Patient Activate/Revise	This HMD extract defines the message used to report that a new patient record was added, or a patient record was updated. Derived from Figure 3.44.4.1.2-1 (PRPA_RM201301IHE)	Swiss National Extension
Patient	The primary record for the focal person in a Patient Identity Source.	
classCode [1..1] (M) Patient (CS) {CNE:PAT}	Structural attribute; this is a "patient" role.	No further refinement.
id [1..*] (M) Patient (SET<II>)	Identifiers designated by this patient identity source for the focal person.	No further refinement.
statusCode [1..1] Patient (CS) {CNE:active, fixed value= "active"}	A value specifying the state of this record in a patient registry (based on the RIM role class state-machine). This record is active.	No further refinement.
confidentialityCode [0..*] Patient (SET<CE>) {CWE:Confidentiality}	Value(s) that control the disclosure of information about this living subject as a patient.	No further refinement.
veryImportantPersonCode [0..1] Patient (CE) {CWE:PatientImportance}	A code specifying the patient's special status granted by the scoper organization, often resulting in preferred treatment and special considerations. Examples include board member, diplomat.	No further refinement.

PRPA_HD201301IHE Patient Activate/Revise	This HMD extract defines the message used to report that a new patient record was added, or a patient record was updated. Derived from Figure 3.44.4.1.2-1 (PRPA_RM201301IHE)	Swiss National Extension
Person	A subtype of LivingSubject representing a human being either Person.name or Patient.id must be non-null.	
classCode [1..1] (M) Person (CS) {CNE:PSN, fixed value= "PSN"}	Structural attribute; this is a "person" entity.	No further refinement.
determinerCode [1..1] (M) Person (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific person.	No further refinement.
name [1..*] Person (BAG<PN>)	Name(s) for this person.	The birth name is passed with the qualifier BR (HL7V3_Edition2012/infrastructure/datatypes_r2/datatypes_r2.html#dt-DSET).
telecom [0..*] Person (BAG<TEL>)	Telecommunication address(es) for communicating with this person.	No further refinement.
administrativeGenderCode [0..1] Person (CE) {CWE:AdministrativeGender}	A value representing the gender (sex) of this person. Note: this attribute does not include terms related to clinical gender which is a complex physiological, genetic and sociological concept that requires multiple observations in order to be comprehensively described.	No further refinement.
birthTime [0..1] Person (TS)	The date and time this person was born.	No further refinement.
deceasedInd [0..1] Person (BL)	An indication that this person is dead.	No further refinement.
deceasedTime [0..1] Person (TS)	The date and time this person died.	No further refinement.
multipleBirthInd [0..1] Person (BL)	An indication that this person was part of a multiple birth.	No further refinement.
multipleBirthOrderNumber [0..1] Person (INT)	The order in which this person was born if part of a multiple birth.	No further refinement.
addr [0..*] Person (BAG<AD>)	Address(es) for corresponding with this person.	No further refinement.
maritalStatusCode [0..1] Person (CE) {CWE:MaritalStatus}	A value representing the domestic partnership status of this person.	No further refinement.
religiousAffiliationCode [0..1] Person (CE) {CWE:ReligiousAffiliation}	A value representing the primary religious preference of this person.	MUST NOT be used.
raceCode [0..*] Person (SET<CE>) {CWE:Race}	A set of values representing the races of this person.	MUST NOT be used.
ethnicGroupCode [0..*] Person (SET<CE>) {CWE:Ethnicity}	A set of values representing the ethnic groups of this person.	MUST NOT be used.

PRPA_HD201301IHE Patient Activate/Revise	This HMD extract defines the message used to report that a new patient record was added, or a patient record was updated. Derived from Figure 3.44.4.1.2-1 (PRPA_RM201301IHE)	Swiss National Extension
OtherIDs	Used to capture additional identifiers for the person such as a Drivers' license or Social Security Number. Please see notes above in the Major Components section on the use of OtherIDs.	If patient is already registered in a community, the MPI-PID MUST be provided here. The EPD-PID MAY be added here.
classCode [1..1] (M) Role (CS) {CNE:ROL}	Structural attribute. This can be any specialization of "role" except for Citizen, or Employee.	No further refinement.
id [1..*] (M) Role (SET<II>)	One or more identifiers issued to the focal person by the associated scopingOrganization (e.g., a Driver's License number issued by a DMV).	No further refinement.
PersonalRelationship	A personal relationship between the focal living subject and another living subject.	
classCode [1..1] (M) Role (CS) {CNE:PRS, fixed value= "PRS"}	Structural attribute; this is a "personal relationship" role.	No further refinement.
id [0..*] Role (SET<II>)	Identifier(s) for this personal relationship.	No further refinement.
code [1..1] (M) Role (CE) {CWE:PersonalRelationshipRoleType}	A required value specifying the type of personal relationship between the relationshipHolder and the scoping living subject drawn from the PersonalRelationshipRoleType domain, for example, spouse, parent, unrelated friend.	No further refinement. Codes: FTH: Father MTH: Mother
statusCode [0..1] Role (CE) {CWE:RoleStatus}	A value specifying the state of this personal relationship (based on the RIM Role class state-machine), for example, following divorce a spouse relationship would be "terminated".	No further refinement.
effectiveTime [0..1] Role (IVL<TS>)	An interval of time specifying the period during which this personal relationship is in effect, if such time is applicable and known.	No further refinement.
Citizen	Used to capture person information relating to citizenship.	
classCode [1..1] (M) Role (CS) {CNE:CIT, fixed value= "CIT"}	Structural attribute; this is a "citizen" role.	No further refinement.
id [0..*] Role (SET<II>)	Identifier(s) for the focal person as a citizen of a nation.	No further refinement.
effectiveTime [0..1] Employee (IVL<TS>)	An interval of time specifying the period during which this employment relationship is in effect, if such time limit is applicable and known.	No further refinement.
Nation	A politically organized body of people bonded by territory and known as a nation.	
classCode [1..1] (M) Organization (CS) {CNE:NAT, fixed value= "NAT"}	Structural attribute; this is a 'nation' type of entity.	No further refinement.
determinerCode [1..1] (M) Organization (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific entity.	No further refinement.
code [1..1] (M) Organization (CD) {CWE:NationEntityType}	A value that identifies a nation state.	No further refinement.
name [0..1]	A non-unique textual identifier or moniker for this	No further refinement.

PRPA_HD201301IHE Patient Activate/Revise	This HMD extract defines the message used to report that a new patient record was added, or a patient record was updated. Derived from Figure 3.44.4.1.2-1 (PRPA_RM201301IHE)	Swiss National Extension
Organization (ON)	nation.	
Employee	A relationship of the focal person with an organization to receive wages or salary. The purpose of this class is to identify the type of relationship the employee has to the employer rather than the nature of the work actually performed. For example, it can be used to capture whether the person is a Military Veteran or not.	
classCode [1..1] (M) Employee (CS) {CNE:EMP}	Structural attribute; this is an "employee" role.	No further refinement.
statusCode [0..1] Employee (CS) {CNE:RoleStatus}	A value specifying the state of this employment relationship (based on the RIM Role class state-machine), for example, active, suspended, terminated.	No further refinement.
statusCode [0..1] Employee (CS) {CNE:RoleStatus}	A value specifying the state of this employment relationship (based on the RIM Role class state-machine), for example, active, suspended, terminated.	No further refinement.
effectiveTime [0..1] Employee (IVL<TS>)	An interval of time specifying the period during which this employment relationship is in effect, if such time limit is applicable and known.	No further refinement.
occupationCode [0..1] Employee (CE) {CWE:EmployeeOccupationCode}	A code qualifying the classification of kind-of-work based upon a recognized industry or jurisdictional standard. OccupationCode is used to convey the person's occupation as opposed to jobClassCode (not used in this transaction) which characterizes this particular job. For example, it can be used to capture whether the person is a Military Veteran or not.	No further refinement.
BirthPlace	The birthplace of the focal living subject.	
classCode [1..1] (M) Birthplace (CS) {CNE:BIRTHPL}	Structural attribute; this is a "birthplace" role.	No further refinement.
id [0..*] Birthplace (SET<II>)	A living subject's birth place represented by a unique identifier.	No further refinement.
addr [0..*] Patient (BAG<AD>)	A living subject's birth place represented as an address. Note: Either BirthPlace.addr or an associated Place.name must be valued.	No further refinement.
classCode [1..1] (M) Birthplace (CS) {CNE:BIRTHPL}	Structural attribute; this is a "birthplace" role	No further refinement.
LanguageCommunication	A language communication capability of the focal person	
languageCode [1..1] (M) LanguageCommunication (CE) {CWE:HumanLanguage}	A value representing a language for which the focal person has some level of proficiency for written or spoken communication. Examples: Spanish, Italian, German, English, American Sign.	No further refinement.
preferenceInd [0..1] LanguageCommunication (BL)	An indicator specifying whether or not this language is preferred by the focal person for the associated mode.	No further refinement.

1.6 Requirements on PIXv3 Profile for Patient Identifier Cross-reference Query

This section corresponds to transaction PIXv3 Query [ITI-45] of the IHE IT Infrastructure Technical Framework. This transaction is used by the Patient Identifier Cross-reference Consumer and Patient Identifier Cross-reference Manager Actors. With the PIXv3 Query a primary system can query with the local identifier the MPI and get the corresponding MPI-PID and the EPD-PID.

1.6.1 Message Semantics

1.6.1.1 Major Components of the Patient Registry Query by Identifier

DataSource Parameter

This parameter specifies the assigning authority/authorities of the Patient Identity Domain(s) whose identifiers need to be returned. The DataSource Parameter MUST be specified to the assigning authority/authorities of the MPI-PID in the affinity domain. See also ITI TF-2b, chapter 3.45.4.1.2.1

1.6.2 Return Corresponding Identifiers

1.1.1.1 Major Components of the Get Corresponding Identifiers Query Response

The otherId MUST contain the EPD-PID. See also ITI TF-2b, chapter 3.45.4.2.2.1

1.7 Requirements on PDQv3 Profile for Patient Demographics Query

This section corresponds to Patient Demographics Query HL7 V3 transaction [ITI-47] of the IHE Technical Framework. This transaction is used by the Patient Demographics Consumer and Patient Demographics Supplier Actors.

1.7.1 Message Semantics

1.7.1.1 Major Components of the Patient Registry Query by Demographics

The PatientTelecom Query Parameter MUST NOT be used.

1.7.1.1.1 Additional components for the Swiss National Extension

MothersName Parameter

This optional parameter specifies the name of the mother of the person whose information is being queried. For this parameter item, a single person name (PN) data item shall be specified in the Person.value attribute. Within the PN data type, the given name and family name may be specified. If the sender needs to indicate that the name parts specified are not limited to an exact match, then the use attribute of the value element shall be set to "SRCH".

FathersName Parameter

This optional parameter specifies the name of the father of the person whose information is being queried. For this parameter item, a single person name (PN) data item shall be specified in the Person.value attribute. Within the PN data type, the given name and family name may be specified. If the sender needs to indicate that the name parts specified are not limited to an exact match, then the use attribute of the value element shall be set to "SRCH".

1.7.1.2 Message Information Model

The Message Information Model for both the Patient Activate and Patient Revise messages is described in IHE ITI TF-2b, Table 3.47.4.1.2-1. Within the Swiss national extensions the following sections MAY additionally be included:

Table 13: Patient Demographics Query – Swiss national extension sections

PRPA_HD201306IHE Patient Registry Query by Demographics	This HMD extract defines the message used to query a patient registry for records matching a set of demographics information. Derived from Figure 3.47.4.1.2-1 (PRPA_RM201306IHE)	Swiss National Extension
MothersName	N/A	Design Comments: This query parameter is the name of a focal person's mother. It is included as a parameter because it is a common attribute for confirming the identity of persons in some registries. This parameter does not map to a single RIM attribute, instead, in RIM terms Mother's name is the person name part of "family" for the person who is the player in a PersonalRelationship of type of "mother" to the focal person.
value [1..1] ParameterItem (PN)	N/A	Design Comments: A person name. In this case it may consist of only the given name part, the family name part, or both.
semanticsText [1..1] ParameterItem (ST) {default= "Person.MotherName"}	N/A	These static values MUST be used.
FathersName	N/A	Design Comments: This query parameter is the name of a focal person's father. It is included as a parameter because it is a common attribute for confirming the identity of persons in some registries. This parameter does not map to a single RIM attribute, instead, in RIM terms Father's name is the person name part of "family" for the person who is the player in a PersonalRelationship of type of "father" to the focal person.
value [1..1] ParameterItem (PN)	N/A	Design Comments: A person name. In this case it may consist of only the given name part, the family name part, or both.
semanticsText [1..1] ParameterItem (ST){default= "Person.Father.Name"}	N/A	These static values MUST be used.

1.7.2 Patient Demographics Query Response

1.7.2.1 Expected Actions

The Patient Demographics Supplier shall perform the matching of patient data based on the query parameter values it receives. The information provided by the Patient Demographics Supplier to Patient Demographics Consumers is a list of possible matching patients from the patient information source associated with the value that the Consumer sent in the Device class of the transmission wrapper of the query message. See also IHE ITI TF-2b, chapter 3.47.4.2.3.

The Message Information Model for both the Patient Registry Find Candidates Response messages, as it is described in IHE ITI TF-2b, Table 3.47.4.2.2-8: is further restricted for use in an MPI within the EPD on the following attributes:

Table 14: Message Information Model for Patient Registry Find Candidates

PRPA_HD201310IHE Patient Registry Find Candidates Response	This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.47.4.2.2-1 (PRPA_RM201310IHE)	Swiss National Extension
Patient	The primary record for the focal person in a Patient Demographics Supplier.	
classCode [1..1] (M) Patient (CS) {CNE:PAT}	Structural attribute; this is a "patient" role.	No further refinement.
id [1..*] (M) Patient (SET<II>)	Patient identifiers. Patient Identifiers from different Identity Domains may be contained either here, or in the OtherIDs.id attributes, but not in both places. At least one Patient Identifier shall be present in this attribute.	No further refinement. Note: The EPD-PID should be added in OtherIDs.id.
statusCode [1..1] Patient (CS) {CNE:active, fixed value= "active"}	A value specifying the state of this record in a patient registry (based on the RIM role class state-machine). This record is active.	No further refinement.
confidentialityCode [0..*] Patient (SET<CE>) {CWE:Confidentiality}	Value(s) that control the disclosure of information about this living subject as a patient.	No further refinement.
veryImportantPersonCode [0..1] Patient (CE) {CWE:PatientImportance}	A code specifying the patient's special status granted by the scoper organization, often resulting in preferred treatment and special considerations. Examples include board member, diplomat.	No further refinement.
Person	A subtype of LivingSubject representing a human being either Person.name or Patient.id must be non-null.	
classCode [1..1] (M) Person (CS) {CNE:PSN, fixed value= "PSN"}	Structural attribute; this is a "person" entity.	No further refinement.
determinerCode [1..1] (M) Person (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific person.	No further refinement.
name [1..*] Person (BAG<PN>)	Name(s) for this person.	The birth name is passed with the qualifier BR (HL7V3_Edition2012/infrastructure/datatypes_r2/datatypes_r2.html#dt-DSET).
telecom [0..*] Person (BAG<TEL>)	Telecommunication address(es) for communicating with this person.	No further refinement.
administrativeGenderCode [0..1] Person (CE) {CWE:AdministrativeGender}	A value representing the gender (sex) of this person. Note: this attribute does not include terms related to clinical gender which is a complex physiological, genetic and sociological concept that requires multiple observations in order to be comprehensively described.	No further refinement.
birthTime [0..1] Person (TS)	The date and time this person was born.	No further refinement.
deceasedInd [0..1] Person (BL)	An indication that this person is dead.	No further refinement.
deceasedTime [0..1] Person (TS)	The date and time this person died.	No further refinement.
multipleBirthInd [0..1] Person (BL)	An indication that this person was part of a multiple birth.	No further refinement.
multipleBirthOrderNumber [0..1] Person (INT)	The order in which this person was born if part of a multiple birth.	No further refinement.
addr [0..*] Person (BAG<AD>)	Address(es) for corresponding with this person.	No further refinement.
maritalStatusCode [0..1] Person (CE) {CWE:MaritalStatus}	A value representing the domestic partnership status of this person.	No further refinement.
religiousAffiliationCode [0..1] Person (CE) {CWE:ReligiousAffiliation}	A value representing the primary religious preference of this person.	MUST NOT be used.

PRPA_HD201310IHE Patient Registry Find Candidates Response	This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.47.4.2.2-1 (PRPA_RM201310IHE)	Swiss National Extension
raceCode [0..*] Person (SET<CE>) {CWE:Race}	A set of values representing the races of this person.	MUST NOT be used.
ethnicGroupCode [0..*] Person (SET<CE>) {CWE:Ethnicity}	A set of values representing the ethnic groups of this person.	MUST NOT be used.
OtherIDs	Used to capture additional identifiers for the person such as a Drivers' license or Social Security Number.	The EPD-PID MAY be added here.
classCode [1..1] (M) Role (CS) {CNE:ROL}	Structural attribute. This can be any specialization of "role" except for Citizen, or Employee.	No further refinement.
id [1..*] (M) Role (SET<II>)	One or more identifiers issued to the focal person by the associated scopingOrganization (e.g., identifiers from a different Patient Identity Domain).	No further refinement.
PersonalRelationship	A personal relationship between the focal living subject and another living subject.	
classCode [1..1] (M) Role (CS) {CNE:PRS, fixed value= "PRS"}	Structural attribute; this is a "personal relationship" role.	No further refinement.
id [0..*] Role (SET<II>)	Identifier(s) for this personal relationship.	No further refinement.
code [1..1] (M) Role (CE) {CWE:PersonalRelationshipRoleType}	A required value specifying the type of personal relationship between the relationshipHolder and the scoping living subject drawn from the PersonalRelationshipRoleType domain, for example, spouse, parent, unrelated friend.	No further refinement. Codes: FTH: Father MTH: Mother
Citizen	Used to capture person information relating to citizenship.	
classCode [1..1] (M) Role (CS) {CNE:CIT, fixed value= "CIT"}	Structural attribute; this is a "citizen" role.	No further refinement.
id [0..*] Role (SET<II>)	Identifier(s) for the focal person as a citizen of a nation.	No further refinement.
Nation	A politically organized body of people bonded by territory and known as a nation.	
classCode [1..1] (M) Organization (CS) {CNE:NAT, fixed value= "NAT"}	Structural attribute; this is a 'nation' type of entity.	No further refinement.
determinerCode [1..1] (M) Organization (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific entity.	No further refinement.
code [1..1] (M) Organization (CD) {CWE:NationEntityType}	A value that identifies a nation state.	No further refinement.
name [0..1] Organization (ON)	A non-unique textual identifier or moniker for this nation.	No further refinement.

PRPA_HD201310IHE Patient Registry Find Candidates Response	This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.47.4.2.2-1 (PRPA_RM201310IHE)	Swiss National Extension
Employee	A relationship of the focal person with an organization to receive wages or salary. The purpose of this class is to identify the type of relationship the employee has to the employer rather than the nature of the work actually performed. For example, it can be used to capture whether the person is a Military Veteran or not.	
classCode [1..1] (M) Employee (CS) {CNE:EMP}	Structural attribute; this is an "employee" role.	No further refinement.
statusCode [0..1] Employee (CS) {CNE:RoleStatus}	A value specifying the state of this employment relationship (based on the RIM Role class state-machine), for example, active, suspended, terminated.	No further refinement.
occupationCode [0..1] Employee (CE) {CWE:EmployeeOccupationCode}	A code qualifying the classification of kind-of-work based upon a recognized industry or jurisdictional standard. OccupationCode is used to convey the person's occupation as opposed to jobClassCode (not used in this transaction) which characterizes this particular job. For example, it can be used to capture whether the person is a Military Veteran or not.	No further refinement.
LanguageCommunication	A language communication capability of the focal person.	
languageCode [1..1] (M) LanguageCommunication (CE) {CWE:HumanLanguage}	A value representing a language for which the focal person has some level of proficiency for written or spoken communication. Examples: Spanish, Italian, German, English, American Sign.	No further refinement.
preferenceInd [0..1] LanguageCommunication (BL)	An indicator specifying whether or not this language is preferred by the focal person for the associated mode.	No further refinement.
QueryMatchObservation	Used to convey information about the quality of the match for each record.	
classCode [1..1] (M) Observation (CS) {CNE: http://hl7.org/v3ballot2007may/html/infrastructure/vocabulary/ActClass.htm - ActClass , default= "OBS"}	Structural attribute – this is an observation.	No further refinement.
moodCode [1..1] (M) Observation (CS) {CNE: http://hl7.org/v3ballot2007may/html/infrastructure/vocabulary/ActMood.htm - ActMood , default= "EVN"}	Structural attribute – this is an event.	No further refinement.
code [1..1] (M) Observation (CD) {CWE:QueryMatchObservationType}	A code, identifying this observation as a query match observation.	No further refinement.
value [1..1] (M) QueryMatchObservation (INT)	A numeric value indicating the quality of match for this record. It shall correspond to the MinimumDegreeMatch.value attribute of the original query, and it shall have the same meaning (e.g., percentage, indicating confidence in the match).	No further refinement.

1.7.2.1.1 Special handling for more attributes requested

If there are more than 5 matches zero matches a special handling like in the XCPD transaction (see IHE ITI TF-2b, chapter 3.55.4.2.2.6) is necessary.

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

greater assurance of the match and thus be able to return the match information.

To indicate this situation in its response the Responding Gateway codes a DetectedIssueEvent within the controlActProcess element, where the code in the actOrderRequired element references one of the coded elements described in Table 15 . There may be as many triggerFor elements, each of them containing an ActOrderRequired element, as needed to code the attributes which would increase the assurance of the match. The codeSystem for these code elements is *<TODO oid to be registered>* instead of 1.3.6.1.4.1.19376.1.2.27.1 as described in IHE ITI TF-2b, Table 3.55.4.4.2-4.

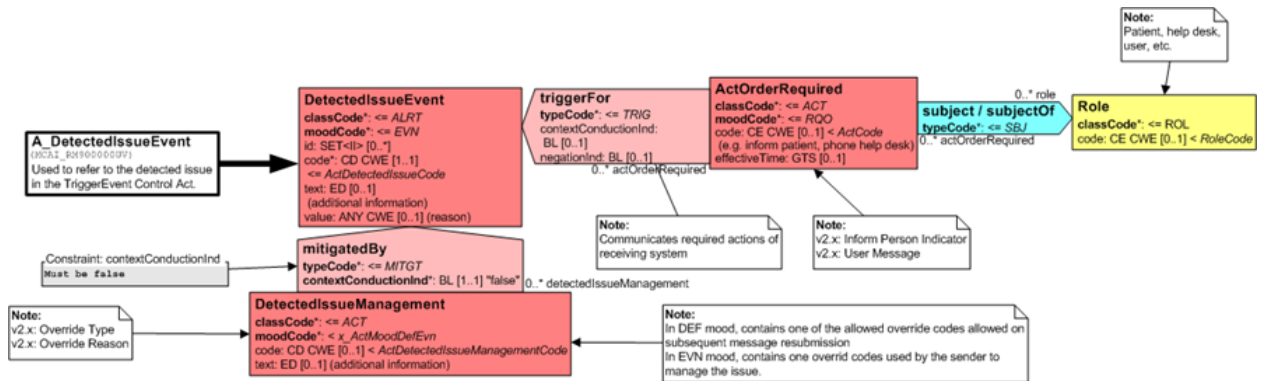


Figure 5: XCPD – RMIM for DetectedIssueEvent

Table 15: Coded Values for actOrderRequired code (codeSystem=<TODO oid to be registered>)

Value for code	Meaning of code
LivingSubjectAdministrativeGenderRequested	Requests the LivingSubjectAdministrativeGender attribute be specified
PatientAddressRequested	Requests the PatientAddress attribute be specified
LivingSubjectBirthPlaceNameRequested	Requests the LivingSubjectBirthPlaceName attribute be specified
BirthNameRequested	Requests the Birth Name attribute be specified
MothersNameRequested	Requests the Mothers Name attribute be specified
FahthersNameRequested	Requests the Fathers Name attribute be specified

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

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

The different return cases should be handled equivalent to the XCPD cases in IHE ITI TF-2b, chapter 3.55.4.2.3 Expected Actions.

1.8 Requirements on XCPD Profile for Cross-Community Patient Discovery

XCPD is used in Switzerland for resolving the national patient identifier (EPD-PID) into the community identifiers (MPI-PID) in another affinity domain/community. The Query can either return an exact match or no match.

1.8.1 Modes and Options

The Cross Gateway Patient Discovery transaction [ITI-55] has several modes. For the EPD only the Shared/National Patient Identifier Query mode **MUST** be used. Other modes as defined in this transaction (see also IHE ITI TF-2b, chapter 3.55.1) **MUST NOT** be used.

The Health Data Locator and Revoke Option of the Patient Location Query transaction [ITI-56] **MUST NOT** be used.⁵

1.8.2 Cross Gateway Patient Discovery Request

Caching

The Initiating Gateway may specify a duration value in the SOAP Header element of the request. This value suggests to the Responding Gateway a length of time that the Initiating Gateway recommends caching any correlation resulting from the interaction. This values **MUST NOT** exceed 3 days. See also IHE ITI TF-2b, chapter 3.55.4.1.

1.8.2.1 Major Components of the Patient Registry Query by Demographics

LivingSubjectId Parameter is the only allowed query Parameter. All other parameter in IHE ITI TF-2b, chapter 3.55.4.1.2.1 **MUST NOT** be used.

The LivingSubjectId Parameter **MUST** contain the EPD-PID.

Reverse Cross-Gateway Queries

Reverse Cross-Gateway Queries **MUST NOT** be used (see IHE ITI TF-2b, chapter 3.55.4.1.2.4).

1.8.3 Cross Gateway Patient Discovery Response

Caching

The Responding Gateway may specify a duration value in the SOAP Header element of the response. This value suggests to the Initiating Gateway a length of time that the Responding Gateway recommends caching any correlation resulting from the interaction. This values **MUST NOT** exceed 3 days. See also IHE ITI TF-2b, chapter 3.55.4.2.

1.8.3.1 Major Components of the Patient Registry Find Candidates Response Message

The QueryMatchObservation class is used to convey information about the quality of the match for the record returned by the query response. This value **MUST** state 100 for an exact match.

The Message Information Model for the Patient Registry Find Candidates Response message is further restricted within the EPD:

Table 16: Message Information Model for Patient Registry Find Candidates

⁵ http://www.ihe.net/uploadedFiles/Documents/ITI/IHE_ITI_Suppl_XCPD_HDL_Revoke_Option.pdf

PRPA_HD201310IHE Patient Registry Find Candidates Response	This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.55.4.2.2-1 (PRPA_RM201310IHE)	Swiss National Extension
Patient	The primary record for the focal person.	
classCode [1..1] (M) Patient (CS) {CNE:PAT}	Structural attribute; this is a "patient" role.	No further refinement.
id [1..1] (M) Patient (SET<II>)	The Patient Identifier to be used in subsequent XCA Cross Gateway Query transactions related to this patient when sent to the Responding Gateway sending the response. All other patient identifiers shall be specified in the OtherIDs.id attribute.	The MPI-PID MUST be returned if there is a match from the EPD-PID.
statusCode [1..1] Patient (CS) {CNE:active, fixed value="active"}	A value specifying the state of this record in a patient registry (based on the RIM role class state-machine). This record is active.	No further refinement.
confidentialityCode [0] Patient (SET<CE>) {CWE:Confidentiality}	Value(s) that control the disclosure of information about this living subject as a patient.	MUST NOT be used.
veryImportantPersonCode [0] Patient (CE) {CWE:PatientImportance}	A code specifying the patient's special status granted by the scoper organization, often resulting in preferred treatment and special considerations. Examples include board member, diplomat.	MUST NOT be used.
Person	A subtype of LivingSubject representing a human being either Person.name or Patient.id must be non-null.	
classCode [1..1] (M) Person (CS) {CNE:PSN, fixed value="PSN"}	Structural attribute; this is a "person" entity.	No further refinement.
determinerCode [1..1] (M) Person (CS) {CNE:INSTANCE, fixed value="INSTANCE"}	Structural attribute; this is a specific person.	No further refinement.
name [1] Person (BAG<PN>) {null, fixed value nullFlavor="NA"}	Name(s) for this person. Fixed to be null, <name nullFlavor="NA"/>, request contains only a patient identifier and no demographic data.	No further refinement.
telecom [0] Person (BAG<TEL>)	Telecommunication address(es) for communicating with this person.	MUST NOT be used.
administrativeGenderCode [0] Person (CE) {CWE:AdministrativeGender}	A value representing the gender (sex) of this person. Note: this attribute does not include terms related to clinical gender which is a complex physiological, genetic and sociological concept that requires multiple observations in order to be comprehensively described.	MUST NOT be used.
birthTime [0] Person (TS)	The date and time this person was born.	MUST NOT be used.
deceasedInd [0] Person (BL)	An indication that this person is dead.	MUST NOT be used.
deceasedTime [0] Person (TS)	The date and time this person died.	MUST NOT be used.

PRPA_HD201310IHE Patient Registry Find Candidates Response	This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.55.4.2.2-1 (PRPA_RM201310IHE)	Swiss National Extension
multipleBirthInd [0] Person (BL)	An indication that this person was part of a multiple birth.	MUST NOT be used.
multipleBirthOrderNumber [0] Person (INT)	The order in which this person was born if part of a multiple birth.	MUST NOT be used.
addr [0] Person (BAG<AD>)	Address(es) for corresponding with this person.	MUST NOT be used.
maritalStatusCode [0] Person (CE) {CWE:MaritalStatus}	A value representing the domestic partnership status of this person.	MUST NOT be used.
religiousAffiliationCode [0] Person (CE) {CWE:ReligiousAffiliation}	A value representing the primary religious preference of this person.	MUST NOT be used.
raceCode [0] Person (SET<CE>) {CWE:Race}	A set of values representing the races of this person.	MUST NOT be used.
ethnicGroupCode [0] Person (SET<CE>) {CWE:Ethnicity}	A set of values representing the ethnic groups of this person.	MUST NOT be used.
OtherIDs	Used to capture additional identifiers for the person such as a Drivers' license or Social Security Number.	
classCode [1..1] (M) Role (CS) {CNE:ROL}	Structural attribute. This can be any specialization of "role" except for Citizen, or Employee.	MUST NOT be used
id [1] (M) Role (SET<II>)	One or more identifiers issued to the focal person by the associated scopingOrganization (e.g., identifiers from a different Patient Identity Domain).	MUST NOT be used.
PersonalRelationship	A personal relationship between the focal living subject and another living subject.	
classCode [1..1] (M) Role (CS) {CNE:PRS, fixed value= "PRS"}	Structural attribute; this is a "personal relationship" role.	MUST NOT be used.
id [0..*] Role (SET<II>)	Identifier(s) for this personal relationship.	MUST NOT be used.
code [1..1] (M) Role (CE) {CWE:PersonalRelationshipRoleType}	A required value specifying the type of personal relationship between the relationshipHolder and the scoping living subject drawn from the PersonalRelationshipRoleType domain, for example, spouse, parent, unrelated friend.	MUST NOT be used.
Citizen	Used to capture person information relating to citizenship.	
classCode [1..1] (M) Role (CS) {CNE:CIT, fixed value= "CIT"}	Structural attribute; this is a "citizen" role.	MUST NOT be used.
id [0..*] Role (SET<II>)	Identifier(s) for the focal person as a citizen of a nation.	MUST NOT be used.
Nation	A politically organized body of people bonded by territory and known as a nation.	
classCode [1..1] (M) Organization (CS) {CNE:NAT, fixed value= "NAT"}	Structural attribute; this is a 'nation' type of entity.	MUST NOT be used.
determinerCode [1..1] (M) Organization (CS) {CNE:INSTANCE, fixed value= "INSTANCE"}	Structural attribute; this is a specific entity.	MUST NOT be used.

PRPA_HD201310IHE Patient Registry Find Candidates Response	This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.55.4.2.2-1 (PRPA_RM201310IHE)	Swiss National Extension
code [1..1] (M) Organization (CD) {CWE:NationEntityType}	A value that identifies a nation state.	MUST NOT be used.
name [0..1] Organization (ON)	A non-unique textual identifier or moniker for this nation.	MUST NOT be used.
Employee	A relationship of the focal person with an organization to receive wages or salary. The purpose of this class is to identify the type of relationship the employee has to the employer rather than the nature of the work actually performed. For example, it can be used to capture whether the person is a Military Veteran or not.	
classCode [1..1] (M) Employee (CS) {CNE:EMP}	Structural attribute; this is an "employee" role.	MUST NOT be used.
statusCode [0..1] Employee (CS) {CNE:RoleStatus}	A value specifying the state of this employment relationship (based on the RIM Role class state-machine), for example, active, suspended, terminated.	MUST NOT be used.
occupationCode [0..1] Employee (CE) {CWE:EmployeeOccupationCode}	A code qualifying the classification of kind-of-work based upon a recognized industry or jurisdictional standard. OccupationCode is used to convey the person's occupation as opposed to jobClassCode (not used in this transaction) which characterizes this particular job. For example, it can be used to capture whether the person is a Military Veteran or not.	MUST NOT be used.
LanguageCommunication	A language communication capability of the focal person.	
languageCode [1..1] (M) LanguageCommunication (CE) {CWE:HumanLanguage}	A value representing a language for which the focal person has some level of proficiency for written or spoken communication. Examples: Spanish, Italian, German, English, American Sign.	MUST NOT be used.
preferenceInd [0..1] LanguageCommunication (BL)	An indicator specifying whether or not this language is preferred by the local person for the associated mode.	MUST NOT be used.
QueryMatchObservation	Used to convey information about the quality of the match for each record.	
classCode [1..1] (M) Observation (CS) {CNE: http://hl7.org/v3ballot2007may/html/infraclass/vocabul/ActClass.htm - ActClass, default= "OBS"}	Structural attribute – this is an observation.	No further refinement.

PRPA_HD201310IHE Patient Registry Find Candidates Response	This HMD extract defines the message used to return records from a patient registry in response to a Find Candidates Query. Derived from Figure 3.55.4.2.2-1 (PRPA_RM201310IHE)	Swiss National Extension
moodCode [1..1] (M) Observation (CS) {CNE: http://hl7.org/v3ballot2007may/html/infrastucture/vocabulary/ActMood.htm - ActMood, default= "EVN"}	Structural attribute – this is an event.	No further refinement.
code [1..1] (M) Observation (CD) {CWE:QueryMatchObservationType}	A code, identifying this observation as a query match observation.	No further refinement.
value [1..1] (M) QueryMatchObservation (INT)	A numeric value indicating the quality of match for this record. It shall correspond to the MinimumDegreeMatch.value attribute of the original query, and it shall have the same meaning (e.g., percentage, indicating confidence in the match).	This value MUST state 100 for a match, 0 otherwise.

1.9 Requirements on HPD Profile for Replication

1.9.1 Introduction

The Healthcare Provider Directory (HPD) profile is extended to support the incremental replication of the entire directory or part of it to a second directory (across organizational boundaries). This extension will support the integration of multiple Swiss organizations with a single national HPD service, providing them with the support for the asynchronous synchronization of the directory content, without scarifying their operational independence.

This extension also defines some content profiles to ease the integration between communities, by limiting the value-set of several attributes, e.g. identifiers, organization types, provider types, etc.

1.9.2 Use-case: Provider information replication

Table 17: Use-case: Provider information replication

Scenario	A <i>Provider Information Consumer</i> is used to feed a second directory based on changes applied to <i>Provider Information Directory</i> .
Triggering event	A new provider is published to the <i>Provider Information Directory</i> .
Involved actors	<i>Provider Information Directory</i> , <i>Provider Information Consumer</i> .
Short description	The <i>Provider Information Consumer</i> issues a <i>Provider Information Delta Download</i> transaction to retrieve valid mutations from the <i>Provider Information Directory</i> .
Pre-conditions	The actor is authenticated and authorized to communicate with the <i>Provider Information Directory</i> .
Post-conditions	The content of the <i>Provider Information Directory</i> is unchanged and the replication at the <i>Provider Information Consumer</i> is updated.
Activities flow	<ol style="list-style-type: none"> Based on a timer (or on a notification), the <i>Provider Information Consumer</i> issues a <i>Provider Information Delta Download</i> transaction to download all delta changes since the last successful transaction; Optionally, some filtering criteria are processed.

1.9.3 Actors / Transactions

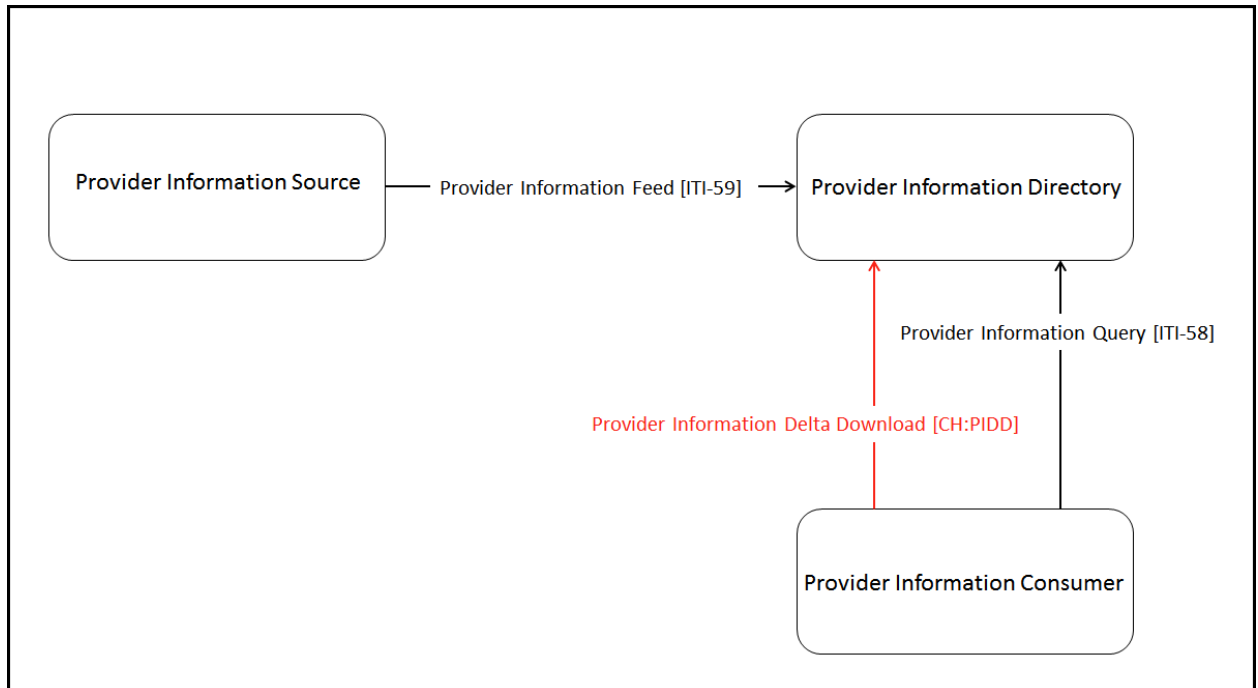


Figure 6: Swiss extended HPD Actors / Transactions

1.9.3.1 Provider Information Directory

The Provider Information Directory is extended with the following option:

- Provider Information Delta Download Option

This option requires the implementation of the Swiss Provider Information Delta Download [CH:PIDD] transaction.

1.9.3.2 Provider Information Consumer

The Provider Information Consumer is extended with the following option:

- Provider Information Delta Download Option

This option requires the implementation of the Swiss Provider Information Delta Download [CH:PIDD] transaction.

1.9.4 Transactions

1.9.4.1 Provider Information Delta Download (CH:PIDD)

This transaction schema extends the DSMLv2 interface by supporting an additional SOAP schema (see Appendix C – Provider Information Delta Download schema on page 53) and an additional wsdl operation:

```
<operation name="ProviderInformationDownloadRequest">
  <soap:operation soapAction="urn:ihe:iti:hpd:2010:ProviderInformationDownloadRequest" />
  <input>
    <soap:body use="literal" />
  </input>
  <output>
    <soap:body use="literal" />
  </output>
</operation>
```

1.9.4.1.1 Interaction Diagram

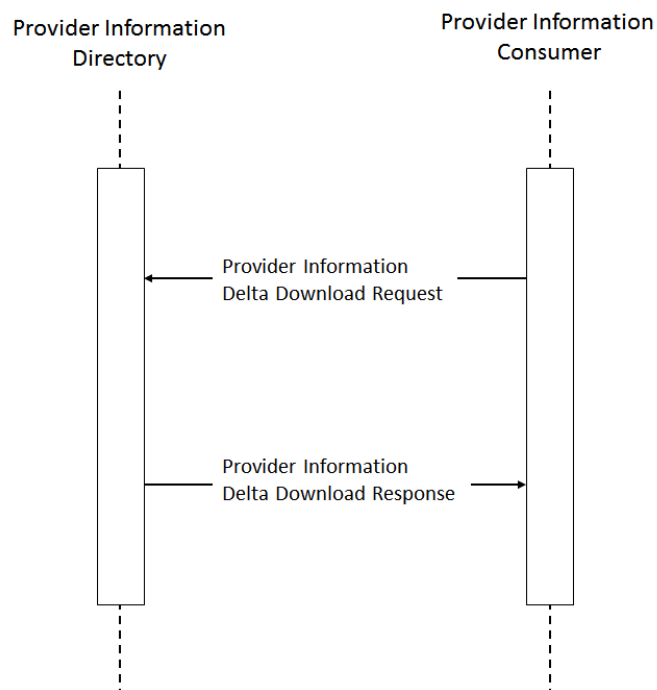


Figure 7: Provider Information Delta Download (CH:PIDD) interaction diagram

1.9.4.1.2 Provider Information Delta Download Request

Provider Information Consumer initiates a Provider Information Delta Download Request to the Provider Information Directory. This request includes:

- A required **fromDate** parameter to define the inclusive range starting date of the requested transactions sequence;
- An optional **toDate** parameter to define the inclusive range ending date of the requested transactions sequence (default: now);
- An optional **filterMyTransactions** boolean parameter to manage the the server side filtering of the author issued transactions (default: true);

1.9.4.1.3 Provider Information Delta Download Response

The response message contains a sequence of DSMLv2 batchRequest elements.

1.9.5 Message Semantics

1.9.5.1 HPD Schema Content

1.9.5.1.1 Identifiers

Organizational (e.g. hospitals) and Individual (health professionals) providers are identified by a Global Location Number (GLN).

A GLN number is a GTIN-13 digits unique number distributed by GS1 (<http://www.gs1.ch/>), where the first 12 digits are identifying the entity and the 13th is a check digit that can be used to validate manual inputs. In Switzerland GLN's can be obtained from the Refdata foundation⁶ at no costs.

The format to persist identifiers for both organizational and individual providers is:

`Issuing Authority:Type:ID:Status`

Example (for an individual provider):

`GS1:GLN:9085632587458:active`

⁶ http://www.refdata.ch/content/partner_d.aspx?Nid=6&Aid=908&ID=412

1.9.5.1.2 Attributes

Some additional restrictions apply to the Swiss national extension of the IHE ITI HPD Profile to ensure a better quality of the data. The following sections report the list of attributes supported, together with some indications on the deviations from the original HPD profile and ISO standard for both organizational and individual providers.

Conventions:

Optionality column (?): O=optional, R=required, R2=required if available;

Cardinality column (#): S=Single-valued, M=Multi-valued;

Deviations from the HPD profile are **highlighted**.

Table 18: Swiss refined HPD Organizational provider attributes

HPD profile [1]			Swiss National Extension		
Attribute name	?	#	?	#	Notes
Unique Entity Identifier	R	S	R	S	<i>Auto-generated</i>
Org Identifiers	R	M	R	S	GLN
Org Names	R	M	R	M	Legal name(s)
Org Known Names	R2	M	R2	M	Other name(s)
Org Type	O	M	R	M	HealthCareFacilityCode value [App. A-1]
Org Type description	O	M	O	M	HealthCareFacilityCode display name [App. A-1]
Org Status	O	S	O	S	Possible values: <i>Active, Inactive</i>
Org Supported Lang.	O	M	O	M	Encoded using ISO-639-1
Org Specialty	O	M	R2	M	PracticeSettingCode value [App. A-2]
Org Relationships	O	M	R	M	Reference to community or parent org.

NOTE: HPD profile or ISO standard format restrictions are not reported here; more information on these restrictions and on additional attributes are available in the IHE ITI TF-2b, Table 3.58.4.1.2.2.3-1: Organizational Provider Mapping applies.

Table 19: Swiss refined HPD Individual provider attributes

HPD profile [1]			Swiss National Extension		
Attribute name	?	#	?	#	Notes
Unique Entity Identifier	R	S	R	S	<i>Auto-generated</i>
Provider Identifiers	R	M	R	S	GLN
Provider Type	R	M	R	M	IndProviderTypeCode value [App. A-3]
Provider Type descript.	R	M	R	M	IndProviderTypeCode display name [App. A-3]
Provider Status	O	S	O	S	Possible values: <i>Active, Inactive</i>
Provider Primary Name	R	S	R	S	i.e. provider display name
Provider First Name	R2	M	R	M	Actual first name
Provider Last Name	R	M	R	S	Actual last name
Provider Known Names	R	M	R	M	Composed name string (e.g. title, first name,...)
Provider Supported Lang.	O	M	O	M	Encoded using ISO-639-1
Provider Gender	O	S	O	S	RFC 2985
Provider Specialty	O	M	O	M	AuthorSpecialtyCode value [App. A-4]
Provider Relationships	O	M	R	M	Reference to community or parent org.

NOTE: HPD profile or ISO standard format restrictions are not reported here; more information on these restrictions and on additional attributes are available in the IHE ITI TF-2b, Table 3.58.4.1.2.2.2-1: Individual Provider Mapping applies.


```
        <xs:enumeration value="8"/>
        <xs:enumeration value="12"/>
    </xs:restriction>
</xs:simpleType>
</xs:attribute>
</xs:complexType>

<xs:attributeGroup name="other-csd-attributes">
    <xs:attribute name="codeSystemName" use="required" type="xs:token"/>
    <xs:attribute name="displayName" type="xs:token"/>
    <xs:attribute name="originalText" use="required" type="xs:token"/>
</xs:attributeGroup>

<xs:attributeGroup name="CodedValueType">
    <xs:attribute name="csd-code" use="required" type="xs:token"/>
    <xs:attributeGroup ref="other-csd-attributes"/>
</xs:attributeGroup>

<xs:element name="EventID">
    <xs:complexType>
        <xs:attributeGroup ref="CodedValueType"/>
    </xs:complexType>
</xs:element>

<xs:element name="EventTypeCode">
    <xs:complexType>
        <xs:attributeGroup ref="CodedValueType"/>
    </xs:complexType>
</xs:element>

<xs:element name="EventOutcomeDescription" type="xs:string"/>

<xs:complexType name="AuditSourceIdentificationContents">
    <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" ref="AuditSourceTypeCode"/>
    </xs:sequence>
    <xs:attribute name="code" use="required">
        <xs:simpleType>
            <xs:union memberTypes="xs:token">
                <xs:simpleType>
                    <xs:restriction base="xs:token">
                        <xs:enumeration value="1"/>
                    </xs:restriction>
                </xs:simpleType>
                <xs:simpleType>
                    <xs:restriction base="xs:token">
                        <xs:enumeration value="2"/>
                    </xs:restriction>
                </xs:simpleType>
                <xs:simpleType>
                    <xs:restriction base="xs:token">
                        <xs:enumeration value="3"/>
                    </xs:restriction>
                </xs:simpleType>
                <xs:simpleType>
                    <xs:restriction base="xs:token">
                        <xs:enumeration value="4"/>
                    </xs:restriction>
                </xs:simpleType>
            </xs:union>
        </xs:attribute>
    </xs:complexType>
</xs:complexType>
```

```

        <xs:restriction base="xs:token">
          <xs:enumeration value="5"/>
        </xs:restriction>
      </xs:simpleType>
    <xs:simpleType>
      <xs:restriction base="xs:token">
        <xs:enumeration value="6"/>
      </xs:restriction>
    </xs:simpleType>
    <xs:simpleType>
      <xs:restriction base="xs:token">
        <xs:enumeration value="7"/>
      </xs:restriction>
    </xs:simpleType>
    <xs:simpleType>
      <xs:restriction base="xs:token">
        <xs:enumeration value="8"/>
      </xs:restriction>
    </xs:simpleType>
    <xs:simpleType>
      <xs:restriction base="xs:token">
        <xs:enumeration value="9"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:union>
</xs:simpleType>
</xs:attribute>
<xs:attribute name="codeSystemName" type="xs:token"/>
<xs:attributeGroup ref="other-csd-attributes"/>
<xs:attribute name="AuditEnterpriseSiteID" type="xs:token"/>
<xs:attribute name="AuditSourceID" use="required" type="xs:token"/>
</xs:complexType>

<xs:element name="AuditSourceTypeCode" type="xs:token"/>

<xs:complexType name="ActiveParticipantContents">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" ref="RoleIDCode"/>
    <xs:element minOccurs="0" ref="MediaIdentifier"/>
  </xs:sequence>
  <xs:attribute name="UserID" use="required"/>
  <xs:attribute name="AlternativeUserID"/>
  <xs:attribute name="UserName"/>
  <xs:attribute name="UserIsRequestor" use="required" type="xs:boolean"/>
  <xs:attribute name="NetworkAccessPointID" type="xs:token"/>
  <xs:attribute name="NetworkAccessPointTypeCode">
    <xs:simpleType>
      <xs:restriction base="xs:token">
        <xs:enumeration value="1"/>
        <xs:enumeration value="2">
          <xs:annotation>
            <xs:documentation>Machine Name, including DNS name</xs:documentation>
          </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="3">
          <xs:annotation>
            <xs:documentation>IP Address</xs:documentation>
          </xs:annotation>
        </xs:enumeration>
        <xs:enumeration value="4">

```

```
        <xs:annotation>
          <xs:documentation>Telephone Number</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
    <xs:enumeration value="5">
      <xs:annotation>
        <xs:documentation>Email address</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
  </xs:restriction>
</xs:simpleType>
</xs:attribute>
</xs:complexType>

<xs:element name="RoleIDCode">
  <xs:complexType>
    <xs:attributeGroup ref="CodedValueType"/>
  </xs:complexType>
</xs:element>

<xs:element name="MediaIdentifier">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="MediaType"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="MediaType">
  <xs:complexType>
    <xs:attributeGroup ref="CodedValueType"/>
  </xs:complexType>
</xs:element>

<xs:attributeGroup name="ValuePair">
  <xs:annotation>
    <xs:documentation>URI (user directory, HTTP-PUT, ftp, etc.)</xs:documentation>
  </xs:annotation>
  <xs:attribute name="type" use="required" type="xs:token"/>
  <xs:attribute name="value" use="required" type="xs:base64Binary"/>
</xs:attributeGroup>

<xs:group name="DICOMObjectDescriptionContents">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" ref="MPPS"/>
    <xs:element minOccurs="0" maxOccurs="unbounded" ref="Accession"/>
    <xs:element ref="SOPClass"/>
    <xs:element ref="ParticipantObjectContainsStudy"/>
    <xs:element minOccurs="0" ref="Encrypted"/>
    <xs:element minOccurs="0" ref="Anonymized"/>
  </xs:sequence>
</xs:group>

<xs:element name="MPPS">
  <xs:complexType>
    <xs:attribute name="UID" use="required" type="xs:token"/>
  </xs:complexType>
</xs:element>

<xs:element name="Accession">
```



```
<xs:complexType>
  <xs:attribute name="Number" use="required" type="xs:token"/>
</xs:complexType>
</xs:element>

<xs:element name="SOPClass">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" ref="Instance"/>
    </xs:sequence>
    <xs:attribute name="UID" type="xs:token"/>
    <xs:attribute name="NumberOfInstances" use="required" type="xs:integer"/>
  </xs:complexType>
</xs:element>

<xs:element name="Instance">
  <xs:complexType>
    <xs:attribute name="UID" use="required" type="xs:token"/>
  </xs:complexType>
</xs:element>

<xs:element name="ParticipantObjectContainsStudy">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" ref="StudyIDs"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

<xs:element name="StudyIDs">
  <xs:complexType>
    <xs:attribute name="UID" use="required" type="xs:token"/>
  </xs:complexType>
</xs:element>

<xs:element name="Encrypted" type="xs:boolean"/>

<xs:element name="Anonymized" type="xs:boolean"/>

<xs:complexType name="ParticipantObjectIdentificationContents">
  <xs:sequence>
    <xs:element ref="ParticipantObjectTypeCode"/>
    <xs:choice>
      <xs:element ref="ParticipantObjectName"/>
      <xs:element ref="ParticipantObjectQuery"/>
    </xs:choice>
    <xs:element minOccurs="0" maxOccurs="unbounded" ref="ParticipantObjectDetail"/>
    <xs:element minOccurs="0" maxOccurs="unbounded" ref="ParticipantObjectDescription"/>
    <xs:group ref="DICOMObjectDescriptionContents"/>
  </xs:sequence>
  <xs:attribute name="ParticipantObjectID" use="required" type="xs:token"/>
  <xs:attribute name="ParticipantObjectTypeCode">
    <xs:simpleType>
      <xs:restriction base="xs:token">
        <xs:enumeration value="1"/>
        <xs:enumeration value="2"/>
        <xs:enumeration value="3"/>
        <xs:enumeration value="4"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:attribute>
</xs:complexType>
```

```
</xs:attribute>
<xs:attribute name="ParticipantObjectTypeCodeRole">
  <xs:simpleType>
    <xs:restriction base="xs:token">
      <xs:enumeration value="1"/>
      <xs:enumeration value="2"/>
      <xs:enumeration value="3"/>
      <xs:enumeration value="4"/>
      <xs:enumeration value="5"/>
      <xs:enumeration value="6"/>
      <xs:enumeration value="7"/>
      <xs:enumeration value="8"/>
      <xs:enumeration value="9"/>
      <xs:enumeration value="10"/>
      <xs:enumeration value="11"/>
      <xs:enumeration value="12"/>
      <xs:enumeration value="13"/>
      <xs:enumeration value="14"/>
      <xs:enumeration value="15"/>
      <xs:enumeration value="16"/>
      <xs:enumeration value="17"/>
      <xs:enumeration value="18"/>
      <xs:enumeration value="19"/>
      <xs:enumeration value="20"/>
      <xs:enumeration value="21"/>
      <xs:enumeration value="22"/>
      <xs:enumeration value="23"/>
      <xs:enumeration value="24"/>
    </xs:restriction>
  </xs:simpleType>
</xs:attribute>
<xs:attribute name="ParticipantObjectDataLifeCycle">
  <xs:simpleType>
    <xs:restriction base="xs:token">
      <xs:enumeration value="1"/>
      <xs:enumeration value="2"/>
      <xs:enumeration value="3"/>
      <xs:enumeration value="4"/>
      <xs:enumeration value="5"/>
      <xs:enumeration value="6"/>
      <xs:enumeration value="7"/>
      <xs:enumeration value="8"/>
      <xs:enumeration value="9"/>
      <xs:enumeration value="10"/>
      <xs:enumeration value="11"/>
      <xs:enumeration value="12"/>
      <xs:enumeration value="13"/>
      <xs:enumeration value="14"/>
      <xs:enumeration value="15"/>
    </xs:restriction>
  </xs:simpleType>
</xs:attribute>
<!-- spelling correction!!
ParticipantObjectSensistity seems to be wrong.
Using ParticipantObjectSensitivity instead
-->
<xs:attribute name="ParticipantObjectSensitivity" type="xs:token"/>
</xs:complexType>

<xs:element name="ParticipantObjectIDTypeCode">
```

```
<xs:complexType>
  <xs:attributeGroup ref="CodedValueType"/>
</xs:complexType>
</xs:element>

<xs:element name="ParticipantObjectName" type="xs:token"/>

<xs:element name="ParticipantObjectQuery" type="xs:base64Binary"/>

<xs:element name="ParticipantObjectDetail">
  <xs:complexType>
    <xs:attributeGroup ref="ValuePair"/>
  </xs:complexType>
</xs:element>

<xs:element name="ParticipantObjectDescription" type="xs:token"/>

</xs:schema>
```

Appendix B – AuditTrail schema (AuditTrail.xsd)

Includes the AuditMessage schema, introduced in chapter “1.4.4.1.1 Detailed AuditMessage definitions” starting on page 14.

See also Appendix A – AuditMessage schema starting on page 45.

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified">

  <xs:include schemaLocation="AuditMessage.xsd"/>

  <xs:element name="AuditTrail">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="1" maxOccurs="unbounded" ref="AuditMessage"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>

</xs:schema>
```

Appendix C – Provider Information Delta Download schema (PIDD.xsd)

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema targetNamespace="urn:ehealth-suisse:names:tc:CS:1" xmlns="urn:ehealth-
suisse:names:tc:CS:1" elementFormDefault="qualified">
  <xsd:element name="downloadRequest" type="DownloadRequest" />
  <xsd:element name="downloadResponse" type="DownloadResponse" />

  <!-- **** Download Request **** -->
  <xsd:complexType name="DownloadRequest">
    <xsd:sequence>
      <xsd:element name="authRequest" type="dsml:AuthRequest" minOccurs="0" maxOccurs="1" />
    </xsd:sequence>
    <xsd:attribute name="requestID" type="xsd:string" use="optional" />
    <xsd:attribute name="fromDate" use="required">
      <xsd:simpleType>
        <xsd:restriction base="xsd:dateTime" />
      </xsd:simpleType>
    </xsd:attribute>
    <xsd:attribute name="toDate" use="optional">
      <xsd:simpleType>
        <xsd:restriction base="xsd:dateTime" />
      </xsd:simpleType>
    </xsd:attribute>
    <xsd:attribute name="filterMyTransactions" use="optional" default="true">
      <xsd:simpleType>
        <xsd:restriction base="xsd:boolean" />
      </xsd:simpleType>
    </xsd:attribute>
  </xsd:complexType>

  <!-- **** Download Response **** -->
  <xsd:complexType name="DownloadResponse">
    <xsd:sequence>
      <xsd:element ref="dsml:batchRequest" maxOccurs="unbounded" minOccurs="0" />
    </xsd:sequence>
    <xsd:attribute name="requestID" type="xsd:string" use="optional" />
  </xsd:complexType>

</xsd:schema>
```

Glossary

The IHE Glossary can be found as an appendix to the [IHE Technical Frameworks General Introduction](#).

See also chapter “1.1 Definitions of terms” on page 5.

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