Revisionsentwurf zur Ergänzung 2 zu Anhang 5 der Verordnung des EDI vom 22. März 2017 über das elektronische Patientendossier

Nationale Integrationsprofile nach Artikel 5 Absatz 1 Buchstabe c EPDV-EDI

Authorization Decision Request (CH:ADR) and Privacy Policy Query (CH:PPQ)

Änderungsnachweis seit Inkrafttreten 15. April 2017

Die Anpassungen der Anhänge zur EPDV-EDI werden durch das BAG laufend vorgenommen und die Zwischenstände durch eHealth Suisse der Öffentlichkeit zugänglich gemacht. Der Nachweis ermöglicht eine Vorschau auf eine mögliche künftige Version der normativen Spezifikationen.
Bis zur Inkraftsetzung der revidierten Verordnung gilt formell die Ausgabe, welche am 15. April 2017 in Kraft getreten ist.

Die XDS Metadaten gemäss Anhang 3 EPDV-EDI werden in ART-DECOR gepflegt und regelmässig in die Verordnung übernommen. Aktuell gilt die Version 201704.3-beta der Value Sets im Status final, abrufbar unter: http://art-decor.org/art-decor/decor-project--ch-epr-

Die von eHealth Suisse publizierte Programmierhilfe enthält die aktuellen Verweise auf die Stable/Beta-Versionen im JSON Format: https://www.e-health-suisse.ch/fileadmin/user_upload/Dokumente/2017/D/180131_Anleitung_Zugang_Metadaten_und_Synonymen_v1.2_d.pdf

Version: 1.6.1
Datum: 14. Dezember 2018

Profile: **ADR, PPQ**

Changes:

Version	Chapter	Ticket	Comments to changes
1.1	Complete Document		Complete rework of the document by mandatee. Delivery: 31.12.2017 Changes: • Creation and support of ADR and PPQ WSDL and schemas; • Elaboration of a solution for cross-domain administration of document metadata (specifically document confidentiality code) through the EPR owner; • Extension and rework of the profiles ADR, PPQ and XUA in consideration of diverse implementaion projects during 2017; Elaboration of a solution for assistants of healthcare professionals being able to access the EPR of their patients as well in consideration of actual implementation projects in the field;
1.5	1		Write out of the expression PAP -> Policy Administration Point in Introduction section.
1.3	2.2		Mandate XUA: Moved chapter 2.2. EPR XUA requirements for XDS and PPQ to Extension 1 of Annex 5.
1.1	2.2.2		Text replacement of the chapter according to mandatee. Received: 16.01.2018
1.2	2.2, 4.4.1.2	EPD-157	OID corrected.
1.4	2.3.2	EPD-28	Corrected two typos: *referenceCommunity* to *reference **c**ommunity* and *Two new actors* to ***Three** new actors*.
1.4	2.3.2	EPD-28	Added paragraph in the end for the initial bootstrap of the policy repository.
1.2	3.1.4, 3.3.8, 3.3.10, 3.4.7	EPD-148	Reference to chapters in TF-1.
1.3	3.1.4, 3.1.6		ADR Consumer assures that the SAML Assertion and XDS.b transaction reference the same patient.
1.5	3.1.5		Typo: Changed transactions [PID-1] and [PID-2] to [PPQ-1] and [PPQ-2].
1.3	3.1.6.1		Mandate XUA: Role TCU enforces “write only” access on functional users.
1.5	3.1.6.1	EPD-224	Removed last paragraph: “~~To enforce “write-only” authorization for technical users the Authorization Decision Provider MUST always return a “deny” result if the supplied XUA token carries the role “TCU” and the action in the ADR request is an ITI-18 transaction.~~”
1.5	3.1.6.2	EPD-224	Replaced last paragraph according to comment in ticket.
1.2	3.1.6.3	EPD-14	DataType no more Coded Value “DataType=”urn:hl7-org:v3#CV”. New: “DataType=http://www.w3.org/2001/XMLSchema#anyURI (see “policies:exclusion-list” as well)

Version	Chapter	Ticket	Comments to changes
1.5	3.1.6.3		Changed “guardian” to the correct role “representative” according to the value set EprActor. Done in chapter 3.1.6.4 and in <Subject>-section of chapter 3.1.6.5.
1.5	3.1.6.4	EPD-207	Added new paragraph according to ticket.
1.5	3.1.6.5		Clarified sencence: “WS-Addressing **<wsa:To> element in the** header”.
1.5	3.1.6.5	EPD-207	Added bold text: “<Ressource> identifies the object (ADR due to PPQ) or class of objects (ADR due to XDS **or ADR due to CH:ATC**) an Authorization Decision is requested for.”
1.5	3.1.6.5	EPD-207	Replaced text according to ticket.
1.5	3.1.6.5	EPD-207	Added example XACMLAuthzDecisionQuery request payload of ADR due to CH:ATC (see ticket for details)
1.5	3.1.6.5	EPD-207	Added attribute value “*urn:e-health-suisse:2015:patient-audit-administration:RetrieveAtnaAudit for ADR due to CH:ATC ITI-81*” to Action (see ticket for details)
1.5	3.1.10	EPD-207	Added an example of a Response to an ADR due to CH:ATC message (see ticket for details).
1.5	3.1.11	EPD-207	Added required points at in the sections (see ticket for details)
1.3	3.1.12	EPD-82	Typo: *Document Source* changed to *Document Consumer*.
1.4	3.3.10.2	EPD-28	Corrected typo in table: *“Privacy Policy Query Feed”* to *“Privacy Policy Feed”.*
1.4	3.4.7.2	EPD-28	Corrected typo in table: *“Privacy Policy Query Retrieve”* to *“Privacy Policy Retrieve”.*
~~*1.3*~~	~~*4.4.1.2*~~	~~*EPD-224*~~	~~*In table 19 roles harmonized with Extension 1 of Annex 5: Old: ASST = Assistant and DELG = Delegate New: ASS = Assistant and REP = Representativew*~~
1.6		EPD-224	Roles updated. For details: see EPD-224 or value set EprActor in Art Decor.
1.6	3.1.6.6	EPD-262, EPD-274	Extended ADR Action for IHE RMU and XDS-MU transactions.
1.6	4.1	EPD-291	Added new roles and a matrix for permissions on transactions
1.6	3.1.6.2	EPD-358	Authorization Decsision Consumer MUST, in addition to the result from the Authorization Decision Query, validate that the resource-id from the SAML Assertion identifies the same patient as the MPI-PID supplied in the Registry Stored Query transaction.
1.6	4.1.1.1	EPD-364	Link to published policy stack files added
1.6		EPD-381	New: 104-base-policyset-access-restricted-with-delegation.xml

1 Introduction

Das elektronische Patientendossier (EPD) basiert auf einem System mit mehreren IHE XDS-Gemeinschaften, in welchem die Patientin oder der Patient nicht nur die Zustimmung zur Erstellung und Verwendung ihres oder seines Dossiers gibt, sondern auch explizit Zugangsregeln durch ein Zugangsportal für Patientinnen und Patienten festlegt.

Die Datenschutz-Einstellungen der Patientin oder des Patienten (bezüglich des Zugangs zu ihrem oder seinem elektronischen Dossier) wird von der Stammgemeinschaft gespeichert und muss von allen teilnehmenden Systemen beachtet werden. Es wurde spezifiziert, dass die Dokumentenverzeichnisse als Policy Enforcing Service Provider in Form eines XACML PEP (Policy Enforcement Point) agieren. Da jedoch die durchzusetzenden Regeln nicht dem Dokumentenverzeichnis einer Gemeinschaft zur Verfügung stehen, muss der XACML-PDP (Policy Decision Point) als eigenständiger Aktor implementiert werden, um die Interoperabilität in Bezug auf die Durchsetzung der Richtlinien sicherzustellen. Ausserdem sollen auch die Policy Repositories (Policy Administration Point (XACML-PAP)) selbst als Policy Enforcing Service Provider wirken.

Die Komplexität und Flexibilität der definierten Zugriffsregeln, welche Patientinnen oder Patienten gesetzlich wahrnehmen können, erfordern, dass die Zugangsportal für Patientinnen und Patienten als Policy Manager fungieren, die eine API in das Policy Repository verwenden, um Zugriffsregeln hinzuzufügen, abzufragen, zu aktualisieren und zu löschen. Für diesen Anwendungsfall gibt es keine Interoperabilitätsstandards.

The Swiss Electronic Health Record (EPR) depends on an IHE XDS and multi-community based system where the patient not only consents to the creation and use of the record, but does so by explicitly defining access rules through a patient portal.

The patient's privacy choices (concerning access to his health record) are stored by the community where the patient has established his EPR (reference community) and MUST be respected by all participating systems. It has been specified for the Document Registries to act as Policy Enforcing Service Providers in terms of a XACML PEP. However, as the rules to be enforced MAY not be available to the Document Registry of a community, the XACML PDP needs to be implemented as its own separated actor to establish interoperability regarding policy enforcements. Furthermore, Policy Repositories themselves (Policy Administration Point (XACML PAP)) are specified to act as a Policy Enforcing Service Provider.

The complexity and flexibility of access rule definitions that were granted to patients by law, require the Patient Portals to act as Policy Managers that use an API into Policy Repositories to add, query, update and delete policies. There is a lack of interoperability standards regarding this use case.

1.1 Definitions of terms

1.1.1 Electronic Patient Record (EPR)

The object of the Federal Act on Electronic Patient Records (EPRA) 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: **EPR**

1.1.2 EPR circle of trust

From an organizational perspective and in terms of the EPRA, communities are an association of healthcare professionals and their institutions. Communities who want to participate in the Swiss EPR must comply with the certification requirements as laid down in the implementing provisions for the EPRA. 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: **EPR circle of trust**

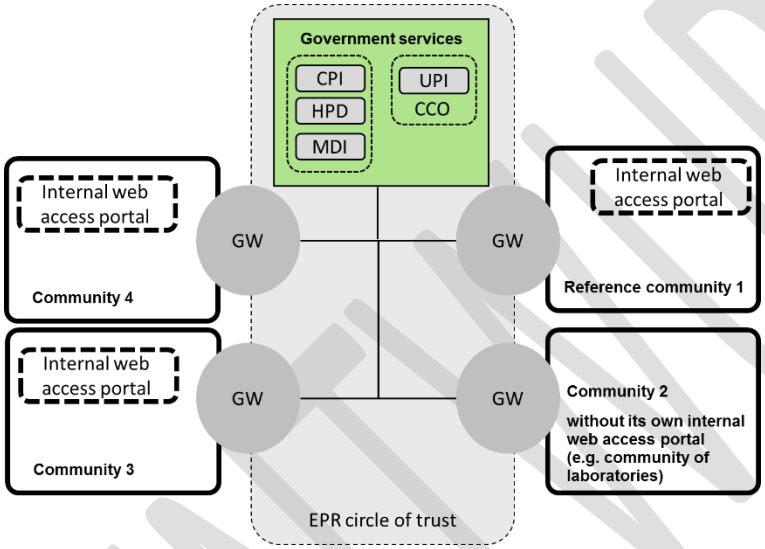


Figure 1: Swiss EPR circle of trust

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 EPR, she or he first chooses a community that manages all of his current consents and access right configurations to be used by other EPR users (in essence healthcare professionals) while accessing his personal EPR. Consents and access rights for one patient are managed by exactly one community in the EPR 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 EPR 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 EPR 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 (EPR-SPID, MPI-PID)

Communities in the EPR circle of trust use the national EPR patient identifier (EPR-SPID) only for cross-community communication. The federal Central Compensation Office (CCO)[1] is the institution which issues EPR-SPID's (EPR Sectorial Personal Identification Number). CCO is the only institution which is allowed to correlate the Social Security Number (AVN13) with the EPR-SPID. There is no correlation possible back from the EPR-SPID 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-PID to the EPR-SPID.

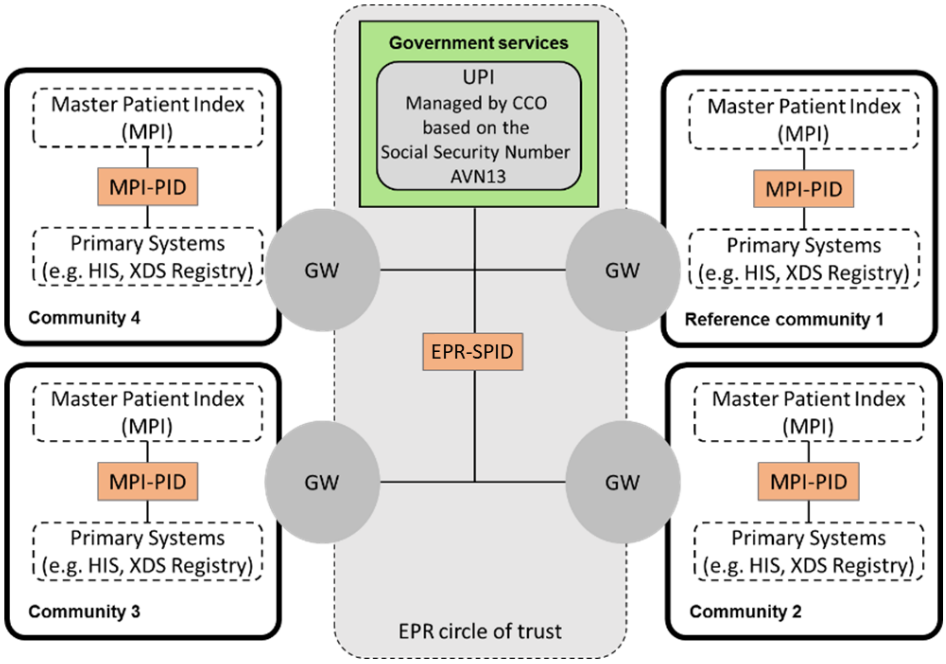


Figure 2 Swiss Patient Identifiers

1.1.5 Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

[1] http://www.zas.admin.ch/index.html

2 Volume 1 – Integration Profiles

2.1 Overview

The **Authorization Decision Request (ADR)** may be understood as a subsequent process to IHE XUA. XUA formulates the user's identity (SAML assertion) that is trying to access data through a corresponding transaction. ADR takes the information provided by the identity assertion of a transaction and formulates a decision request query by a description of the subject (who), action (how), resource (what) and environment (when). The response contains an access decision for each resource.
The **Privacy Policy Query (PPQ)**, however, may rather be understood similar to XDS transactions. A Policy Source applies PPQ transactions to add, update and delete policies and policy sets held by the Policy Repository. Policy Consumers apply PPQ transactions to retrieve policies and policy sets. PPQ is the pre-requisite for Patient Portals to manipulate the policies, authorization decisions are finally based on. It is important to understand that PPQ transactions underlie the same access control mechanisms as XDS transactions do. Therefore XUA identity assertions MUST be provided, so that the Policy Repository can verify (through a subsequent ADR transaction) whether the access control mechanism allows the corresponding operation.

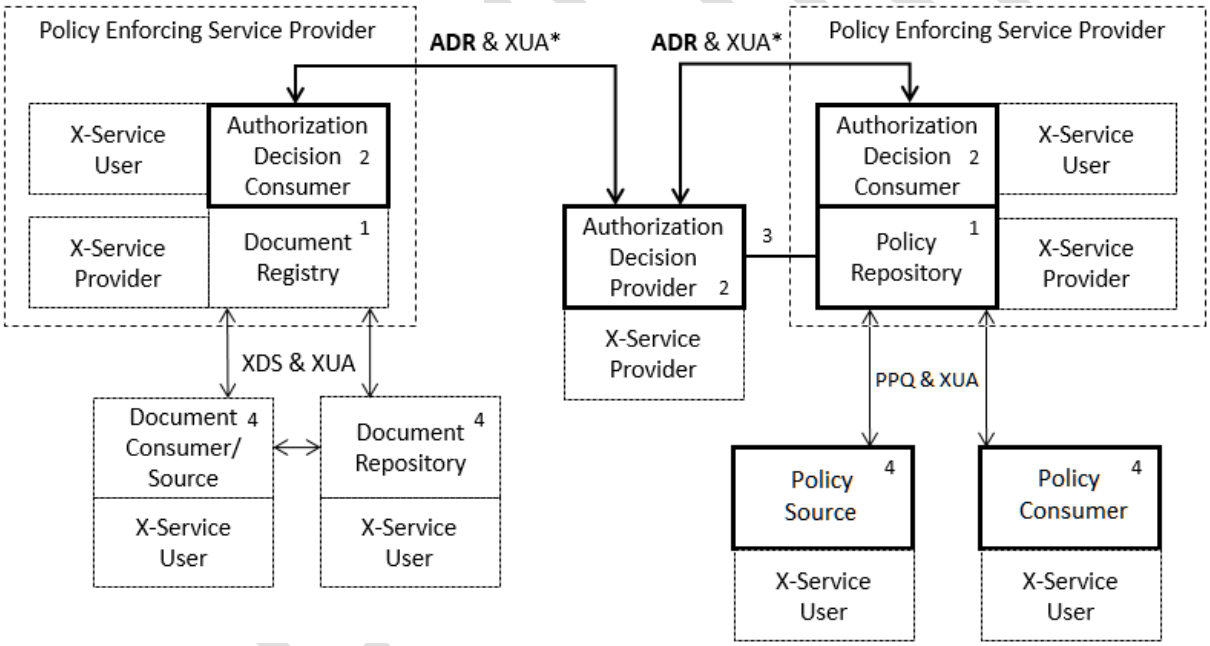


Figure 3: ADR and PPQ Actors

*Figure 3 shows the actors directly involved in the ADR and PPQ Profile and the relevant transactions between them. If needed for context, other actors that MAY be indirectly involved due to their participation in other related profiles are shown in dotted lines. Actors which have a mandatory grouping are shown in conjoined boxes. *) The ADR transaction MUST provide a XUA identity assertion of the current user mainly for auditing reasons.*

1. Document Registries (and grouped RMU Update Responder – not illustrated), Document Repositories, Policy Repositories and Patient Audit Trail Repositories (not illustrated) MUST be grouped with the ADR Authorization Decision Consumer and XUA X-Service Provider actors to become Policy Enforcing Service Providers.

2. ADR transactions are protected by XUA as well, which requires the Authorization Decision Consumer to be grouped with the X-Service User actor and the Authorization Decision Provider to be grouped with the X-Service Provider actor (marked with *).
3. The ADR Authorization Decision Provider SHOULD be grouped with a Policy Repository or requires privileged access to the policies stored by the Policy Repository.
4. A Policy Source applies Privacy Policy Feed transactions to add, update and delete policies stored by the Policy Repository. Policy Consumers apply Privacy Policy Retrieve transactions to retrieve policies and policy sets. Document Consumers apply XDS Registry Stored Query transactions to retrieve document metadata. Document Repositories apply XDS Register Document Set transactions due to XDS Provide and Register transactions by a Document Source. All four are grouped with the XUA X-Service User Actor.

2.2 Authorization Decision Request (CH:ADR)

This supplement defines new functionalities for XDS-based communities concerning the enforcement of access policies. They are applied to the clinical data stored by an XDS Document Registry, as well as to the access policies themselves, which are stored in a Policy Repository.

2.2.1 Motivation

The Document Registry, as the only system with knowledge of all clinical documents (and which only exists once) within communities (affinity domains), is generally thought of as an appropriate actor to enforce access rules on stored metadata. It is common that the Document Registry is inherently combined with the ability to make authorization decisions, which postulates access to the rules to be enforced and the ability to interpret them. As this is not necessarily given in all XDS environments, a separation of actors for decision making and enforcement, as well as the development of corresponding transactions greatly enhances interoperability. This is by no means a new idea, as the XACML standard as well as existing IHE profiles (SeR) envision the same concept and therefore will be adopted and adapted by ADR.
More generally, ADR enables a policy enforcing service provider (e.g. a Document Registry or a Policy Repository) to retrieve access decisions from an authority with access to the rules and the ability to interpret them.

2.2.2 Objectives and Constraints

The objective of the ADR Profile is the definition of a mechanism to request authorization decisions and convey the results between the actors “Authorization Decision Consumer” and “Authorization Decision Provider”. Both are to be interpreted as specific implementations of PEP and PDP as defined by the XACML specification. There is a considerable overlap of concepts and use cases with the existing IHE Secure Retrieve (SeR) Profile. The following specification is based on IHE SeR, which was adapted to the needs of the actors and use cases of ADR. Transport, transaction types and content shall be based on the same standards and technologies as far as possible.
Two new actors and a new ADR-specific Authorization Decision Query transaction are being introduced. This profile describes how a Policy Enforcing Service Provider can request authorization decisions on certain resources and actions depending on user entities, a patient’s record and other parameters allowed by the underlying standards.
Summarized, the constraints upon which this profile is developed are:

- The XACML data-flow model serves as the underlying processing model.
- There are Authorization Decision Providers acting as XACML PDPs with access to the policies and the capability to perform access decisions on.
- The policies are stored in a Policy Repository acting as XACML PAP.
- Policy enforcing service providers (e.g. Document Registries) act as XACML PEPs by implementing the Authorization Decision Consumer and the corresponding enforcement of a decision.
- The transactions between the profile’s actors rely on SAML 2.0 profile of XACML v2.0.
- Policy enforcing service providers are grouped with a XUA X-Service Provider actor and therefore are capable of processing identities communicated in a SAML identity assertion.

2.2.3 Actors / Transactions

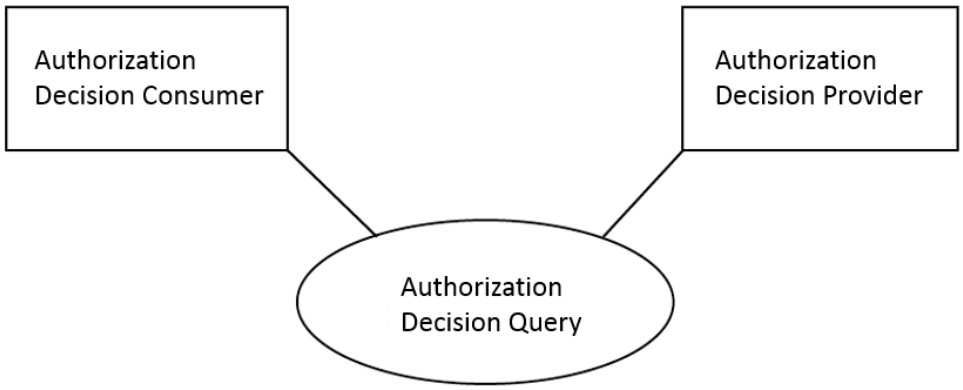


Figure 4: Diagram of actors involved in the ADR profile.

Actor:	Authorization Decision Provider
Role:	This actor accesses and interprets rules/policies and permits or denies access to resources.
Actor:	Authorization Decisions Consumer
Role:	This actor queries for authorization decisions.

Table 1 Actor Roles

2.3 Privacy Policy Query (CH:PPQ)

This supplement defines new functionalities for XDS-based communities concerning the management of access policies in terms of updating or modifying policies as well as querying policies from and adding policies to a Policy Repository by a Policy Source and Policy Consumer.

2.3.1 Motivation

The EPR defines the Policy Repository to act as an XACML PAP that holds the access rules for the entire record as defined by the patient. Communities offering that service can be chosen by the patient to serve as the holder of that information (referenceCommunity). The community also provides a Patient Portal to allow the corresponding management of that information by the patient.
For the EPR, patients have extensive choices regarding their privacy preferences. There is a base rule stack, which defines a number of general access levels; the patient has a choice to grant access to individual providers. A corresponding rule stack on top of the base rule stack MUST be allowed for the patient to be created, retrieved, manipulated and deleted. In addition to that, the patient MAY even define who has access not only to the record's documents but also to the patient's access rule stack including the ability to modify it.
The required complexity and flexibility can hardly be facilitated by existing standards. There are simpler approaches existing (e.g. IHE BPPC) to allow the expression of privacy choices by formulating consent to a set of fixed access policies (Allow publishing? Allow access during normal treatment? Allow break-the-glass?). However, allowing the patient to express specific rules for individual documents, providers and organizations requires a richer user experience and the ability to retrieve, change and delete individual rules.

2.3.2 Objectives and Constraints

The objective of PPQ is the definition of actors and transactions to convey access policies from a Patient Portal to the reference community. Three new actors "Policy Source", "Policy Consumer" and "Policy Repository" are introduced. While the Policy Repository may be interpreted as a specific implementation of a XACML PAP, there is no analogy to the two other actors is defined in XACML.

Therefore the Policy Source and Policy Consumer are introduced as entirely new actors.
This profile describes how they query, add, update and delete policies, allowing a Health Record user to manage access rights according to the freedom of choice that was granted to the patient by Swiss regulations.
Constraints upon which this profile is developed are:

- The development of transactions between the profile's actors relies on SAML 2.0 and XACML SAML extension types, elements and protocols as specified in OASIS SAML 2.0 profile of XACML v2.0.
- The Policy Repository itself acts as a Policy Enforcing Service Provider being grouped with a XUA X-Service Provider actor. Therefore it is capable of processing identities communicated in a SAML identity assertion.
- The Policy Repository responds to PPQ Requests according to the result of ADR (transaction is allowed or not allowed to be performed).
- Respectively, Policy Sources and Policy Consumers are grouped with a XUA X-Service User to convey the current user's identity.

A special case is the on-boarding process of a new patient. The policy that controls uploading of policies is by itself a part of the initial ("bootstrap") policy set of the patient, therefore this policy set cannot be fed in a regular way by a user in the role HCP or PAT. To overcome this chicken-and-egg problem, the patient's initial policy set must be uploaded by a user holding the role PADM (policy administrator), as there exists a special base policy that grants administrators the right to upload policies related to any patient whose on-boarding is not yet finished.

2.3.3 Actors / Transactions

Figure 5: Actors involved in the PPQ profile.

Table 2 lists the transactions for each actor directly involved in the PPQ Profile. To claim compliance with this profile, an actor shall support all required transactions (labeled "R") and may support the optional transactions (labeled "O").

Table 2 PPQ Actors and Transactions

Actors	Transactions	Optionality	Section
Policy Source	Privacy Policy Feed [PPQ-1]	R	3.3
Policy Repository	Privacy Policy Feed [PPQ-1]	R	3.3
	Privacy Policy Retrieve [PPQ-2]	R	3.4
Policy Consumer	Privacy Policy Retrieve [PPQ-2]	R	3.4

3 Volume 2 – Transactions

3.1 Authorization Decision Request (CH:ADR)

3.1.1 Scope

This transaction is used by the Authorization Decisions Consumer to query for authorization decisions, granted and managed by the Authorization Decisions Provider.
The Authorization Decisions Consumer asks for authorizations based on the requester entity (**Subject**), the **Resources** available to be accessed by the Subject depending on the **Action** that was initiated, each completed by further context parameters.
This transaction is based on SOAP v1.2 exchange protocol and Synchronous Web services.

3.1.2 Referenced Standards

- W3C SOAP Version 1.2
  https://www.w3.org/TR/soap12/
- Assertions and Protocols for the OASIS Security Assertion Markup Language (SAML) V2.0
  https://docs.oasis-open.org/security/saml/v2.0/saml-core-2.0-os.pdf
- The home page of the "OASIS eXtensible Access Control Markup Language" technical committee: https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=xacml references all XACML related protocols and specifications for implementers of this profile.

  Those are:

  - OASIS Multiple Resource Profile of XACML v2.0
    https://docs.oasis-open.org/xacml/2.0/access_control-xacml-2.0-mult-profile-spec-os.pdf
  - OASIS Cross-Enterprise Security and Privacy Authorization (XSPA) Profile of SAML v2.0 for Healthcare Version 2.0 (not normative)
    https://docs.oasis-open.org/xspa/saml-xspa/v2.0/saml-xspa-v2.0.html
  - OASIS eXtensible Access Control Markup Language (XACML) v2.0
    (Original: https://docs.oasis-open.org/xacml/2.0/access_control-xacml-2.0-core-spec-os.pdf) Please be aware of the errata of the specification document as published on the XACML technical committee home page:
    Errata: http://www.oasis-open.org/committees/download.php/24548/access_control-xacml-2.0-core-spec-os-errata.zip (spec and schema)
  - OASIS SAML 2.0 profile of XACML v2.0
    (Original: http://docs.oasis-open.org/xacml/2.0/access_control-xacml-2.0-core-spec-os.pdf) Please be aware of the errata of the specification document as published on the XACML technical committee home page:
    Errata: www.oasis-open.org/committees/download.php/24681/xacml-profile-saml2.0-v2-spec-wd-5-en.pdf

3.1.3 Interaction Diagram

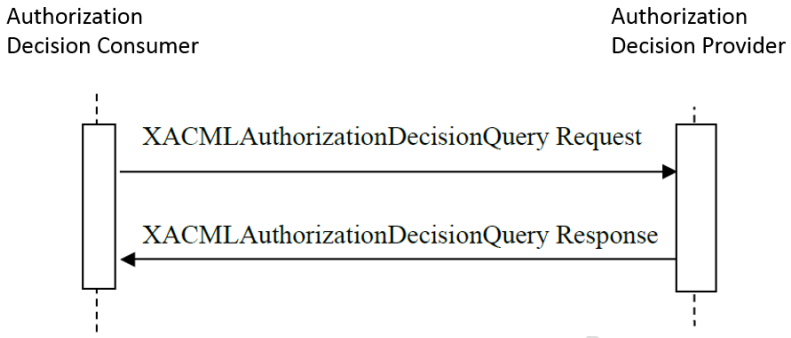


Figure 6: Sequence diagram of the XACMLAuthzDecisionQuery transaction of the ADR profile.

3.1.4 XACMLAuthzDecisionQuery Request

This message enables the Authorization Decisions Consumer to query the Authorization Decisions Provider for authorizations. This message relies on the SAML v2.0 extension for XACML and uses the element <XACMLAuthzDecisionQuery> to convey the Resource metadata, Subject identifier and Actions. The Authorization Decisions Consumer can ask for authorization regarding a number of Resources in one query as the request message complies with the Multiple Resource Profile of XACML v2.0. Actors involved support XUA and use SAML identity assertions to identify entities (see ITI TF-1: 13). SAML attribute elements SHALL be mapped into XACML context attribute elements as defined in SAML 2.0 profile of XACML v2.0.

The Authorization Decision Consumer SHALL enforce that the patient referenced in the XDS.b transaction is the same as the patient referenced in the resource-id of the SAML Assertion before issuing a XACMLAuthzDecisionQuery Request.

3.1.5 Trigger Events

The Authorization Decision Consumer of the EPR sends this message when it needs to verify whether there is an authorization to disclose specific Resources to an entity requesting them; e.g. to allow or deny access to and the manipulation of policies stored by a policy repository or to allow or deny access to document metadata stored in a Document Registry based on the entry's confidentiality code. In addition to that the Authorization Decision Consumer of the EPR sends this message when it needs to verify whether there is an authorization to persist specific Resources e.g. to allow or deny storage of document metadata in a Document Registry based on the entry's confidentiality code. The trigger events are:

- The grouped XDS Document Registry receiving a Registry Stored Query Request [ITI-18] and a Provide X-User Assertion [ITI-40] transaction, that identifies the specific requester entity within a SAML assertion, from an XDS Document Consumer;
- The grouped XDS Document Registry receiving a Register Document Set-b [ITI-42] and a Provide X-User Assertion [ITI-40] transaction, that identifies the specific requester entity within a SAML assertion, from an XDS Document Repository;
- The grouped PPQ Policy Repository receiving a Privacy Policy Feed [PPQ-1] and Privacy Policy Retrieve [PPQ-2] transactions and a Provide X-User Assertion [ITI-40] transaction from a PPQ Policy Source/PPQ Policy Consumer that identifies the specific requester entity within a SAML assertion.
- The grouped CH:ATC Patient Audit Repository receiving Retrieve Audit Event transaction [ITI-81] and a Provide X-User Assertion [ITI-40] from a Patient Audit Consumer, that identifies the specific requester entity within a SAML assertion.

3.1.6 Message Semantics

3.1.6.1 ADR due to XDS Registry Stored Query [ITI-18]

For the XDS Registry Stored Query related access decision enforcement, the EPR relies on the XDS Confidentiality Code within the document metadata to be accessed to represent a subset of the patient's health record. The Authorization Decisions Consumer MUST create one request to query for an access decision for each subset (rather than the actual document metadata objects), before providing the corresponding document metadata to a consumer. Therefore one of the attributes of each Resource within the Request must be a XDS confidentiality code defining the subset for an access decision to be made on (details see 3.1.6.5).

The PEP authorizing ITI-18 transactions by implementing an Authorization Decision Consumer MUST, in addition to the result from the Authorization Decision Query, validate that the resource-id from the SAML Assertion identifies the same patient as the MPI-PID supplied in the Registry Stored Query transaction. If not true, the transaction MUST be denied.

3.1.6.2 ADR due to XDS Register Document Set-b [ITI-42]

For the XDS Register Document Set related access decision enforcement, the EPR relies on the XDS Confidentiality Code within the document metadata to be stored in the patient's Health Record. The Authorization Decisions Consumer (Document Registry) MUST create one request to query for an access decision for each Confidentiality Code, before allowing the Register transaction to a Document Repository. One of the attributes of each Resource within the Request must be a XDS confidentiality code for an access decision to be made on (details see 3.1.6.5).
The PEP authorizing ITI-42 transactions by implementing an Authorization Decision Consumer MUST, in addition to the result from the Authorization Decision Query, validate that the resource-id from the SAML Assertion identifies the same patient as the MPI-PID supplied in the Register Document Set-b transaction. If not true, the transaction MUST be denied.

3.1.6.3 ADR due to PPQ

The EPR allows patients and their representatives to manage the patient's Health Record access rights. In addition to that, the patient may allow a professional to delegate his access rights to another professional if necessary.
In the case of ADR due to PPQ an access decision must be requested for each actual object (Resource) that access is being requested for (not a class of objects as it is the case for ADR due to XDS). Each Resource represents a policy set that's being queried, added, deleted or updated by a PPQ transaction. An access decision is to be requested for each of these Resources before the corresponding action can be granted (or has got to be denied, depending on the decision).
A professional may only delegate access rights to another professional not exceeding her or his own access level that was initially granted by the patient. The access level to be granted is encoded within the value of the referenced-policy-set attribute. Therefore, in case of ADR due to PPQ, one of the attributes of each Resource must be a referenced policy set (details see 3.1.6.5).

3.1.6.4 ADR due to CH:ATC

The EPR allows patients to retrieve audit information from a Patient Audit Record Repository. An access decision must be requested for a Resource representing an EPR-SPID of the patient who is requesting access.

3.1.6.5 Semantics

The XACMLAuthzDecisionQuery Request message SHALL use SOAP v1.2 message encoding. The WS-Addressing Action header SHALL have this value:
urn:e-health-suisse:2015:policy-enforcement:AuthorizationDecisionRequest
The recipient of the Authorization Decision Query SHALL be identified by the WS-Addressing <wsa:To> element in the header (URL of the endpoint).

A SAML 2.0 Identity Assertion SHALL be conveyed within the WS-Security Security header.

```
<soap:Envelope
xmlns:soap=http://www.w3.org/2003/05/soap-envelope xmlns:wsa=http://www.w3.org/2005/08/addressing
xmlns:xsi=http://www.w3.org/2001/XMLSchema-instance
xmlns:wsse=http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd
xmlns:ds=http://www.w3.org/2000/09/xmldsig#
xmlns:xacml-saml="urn:oasis:xacml:2.0:saml:assertion:schema:os“
xmlns:xacml-samlp="urn:oasis:names:tc:xacml:2.0:profile:saml2.0:v2:schema:protocol“
xmlns:saml="urn:oasis:names:tc:SAML:2.0:assertion“
xmlns:xacml="urn:oasis:names:tc:xacml:2.0:policy:schema:os“
xmlns:epr="urn:e-health-suisse:2015:policy-administration“
xmlns:xacml-context="urn:oasis:names:tc:xacml:2.0:context:schema:os“ xmlns:hl7="urn:hl7-org:v3“>

<soap:Header>
  <wsa:Action>urn:e-health-suisse:2015:policy-enforcement:AuthorizationDecisionRequest </wsa:Action>
  <wsa:MessageID>urn:uuid:e4bb38c7-e546-4bb1-8d68-2bccf783dfbf</wsa:MessageID>
  <wsa:To>https://e-health-suisse-adr-provider.ch</wsa:To>
  <wsse:Security>
    <saml:Assertion>
      <!--SAML Assertion as described above-->
    </saml:Assertion>
  </wsse:Security>
</soap:Header>
<soap:Body>
 <!—ADR TRANSACTION PAY LOAD-->
</soap:Body>
</soap:Envelope>
```

Listing 1: The SOAP envelope with the security header and the transaction payload of the ADR transactions. For better reading placeholders are used for the SAML assertions and the transaction payload.

The body of the message SHALL use an **<XACMLAuthzDecisionQuery>** element (defined in the SAML 2.0 Profile for XACML v2.0) to convey a <Request> with the Authorization Query parameters (Subject, Resource, Action, Environment). This element SHALL contain the following attribute:
@ReturnContext SHOULD be set to “**false**”, because the content of the XACMLAuthzDecisionQuery Request is not needed within the Authorization Result.
@InputContextOnly SHALL be set to “**false**”, as the Authorization Decision Provider may have further information and rules, other than the parameters included in the request, to determine a decision. This should not be restricted by the Authorization Decision Consumer.
This profile does not define further constraints for other attributes of this element (see OASIS SAML 2.0 profile of XACML v2.0 for details).

```
<soap:Body>
  <xacml-samlp:XACMLAuthzDecisionQuery InputContextOnly="false" ReturnContext="false"
  ID="_682fee8b-46c0-442a-8c54-fd9d656412fc" Version="2.0" IssueInstant="2016-02-09T09:30:10.5Z">
    <xacml-context:Request>
      <!--Request Parameters-->
    </xacml-context:Request>
  </xacml-samlp:XACMLAuthzDecisionQuery>
</soap:Body>
```

Listing 2: The SOAP body element for the XACMLAuthzDecisionQuery transaction. For better reading a placeholder is used for the request parameter.

The <XACMLAuthzDecisionQuery> element SHALL have only one child element **<Request>.** This element SHALL comply with OASIS Multiple Resource Profile of XACML v2.0. This element SHALL have the XACML child elements **<Subject>, <Resource>, <Action> and <Environment>**. <Request> and all subsequent elements, attributes and values comply to the namespace xmlns:xacml-context="urn:oasis:names:tc:xacml:2.0:context:schema:os". The namespace is left out of the following examples for better readability.

```
<soap:Body>
  <XACMLAuthzDecisionQuery>
    <Request>
      <Subject>
        <!--Attributes-->
      </Subject>
      <Resource>
        <!--Attributes-->
      </Resource>
      <Resource>
        <!--There can be more than one Resource-->
      </Resource>…
      <Action>
        <!--Attribute-->
      </Action>
      <Environment/>
    </Request>
  </XACMLAuthzDecisionQuery>
</soap:Body>
```

Listing 3: The schematic payload of the XACMLAuthzDecisionQuery request. For better reading placeholders are used for the XACML request elements.

<Subject> identifies the Requester Entity. It SHALL have at least the following **<Attribute>** child elements:

@AttributeId=”urn:oasis:names:tc:xacml:1.0:subject:subject-id” and **@DataType=”http://www.w3.org/2001/XMLSchema#string”**.
The **<AttributeValue>** child element SHALL convey the subject identifier. This element SHALL have the same value of the /Subject/NameID element conveyed within the SAML assertion.

@AttributeId=”urn:oasis:names:tc:xacml:1.0:subject:subject-id-qualifier” and **@DataType=” http://www.w3.org/2001/XMLSchema#string”**.
The **<AttributeValue>** child element SHALL convey the subject ID qualifier. This element SHALL have the same value as the /Subject/NameID/@NameQualifier conveyed within the SAML assertion, e.g. **urn:e-health-suisse:2015:epr-spid** in case of a patient or representative or **urn:gs1:gln** in case of a professional or auxiliary person.

@AttributeId=”urn:ihe:iti:xca:2010:homeCommunityId” and **@DataType=”http://www.w3.org/2001/XMLSchema#anyURI”**.
The **<AttributeValue>** child element SHALL convey the home community id. This value is not necessarily conveyed within the XUA SAML assertion. It SHALL be set to the OID of the Authorization Decision Consumer’s community. That ID MUST be an OID in the format of an URN.

@**AttributeId=”urn:oasis:names:tc:xacml:2.0:subject:role”** and **@DataType=”urn:hl7-org:v3#CV”**.
The **<AttributeValue>** child element SHALL convey the coded value for the subject’s role. This element SHALL have the same value as the

/AttributeStatement/Attribute[@name=”urn:oasis:names:tc:xacml:2.0:subject:role”]/AttributeValue conveyed within the SAML assertion.

@AttributeId=”urn:oasis:names:tc:xspa:1.0:subject:organization-id” and **@DataType=” http://www.w3.org/2001/XMLSchema#anyURI”**.
The **<AttributeValue>** child element SHALL convey the organization identifier. This element SHALL have the same value as the organization-id conveyed within the SAML assertion. urn:gs1:gln

@AttributeId=”urn:oasis:names:tc:xspa:1.0:subject:purposeofuse” and **@DataType=”urn:hl7-org:v3#CV”**.
The **<AttributeValue>** child element SHALL convey the coded value for the subject’s purpose of use. This element SHALL have the same value of the <AttributeStatement>/<Attribute>/<AttributeValue> element **@PurposeOfUse** conveyed within the SAML assertion.

```
<Request>
  <Subject>
    <Attribute AttributeId="urn:oasis:names:tc:xacml:1.0:subject:subject-id"
               DataType="http://www.w3.org/2001/XMLSchema#string">
      <Attribute>7601000000000</AttributeValue>
    </Attribute>
    <Attribute AttributeId="urn:oasis:names:tc:xacml:1.0:subject:subject-id-qualifier"
               DataType="http://www.w3.org/2001/XMLSchema#string">
      <AttributeValue>urn:gs1:gln</AttributeValue>
    </Attribute>
    <Attribute AttributeId="urn:ihe:iti:xca:2010:homeCommunityId"
               DataType="http://www.w3.org/2001/XMLSchema#anyURI">
      <AttributeValue>urn:oid:2.999</AttributeValue>
    </Attribute>
    <Attribute AttributeId="urn:oasis:names:tc:xacml:2.0:subject:role“
               DataType="urn:hl7-org:v3#CV">
      <AttributeValue>
        <hl7:CodedValue code=“PAT" codeSystem="2.16.756.5.30.1.127.3.10.6"
         displayName=“PatientIn"/>
      </AttributeValue>
    </Attribute>
    <Attribute AttributeId="urn:oasis:names:tc:xspa:1.0:subject:organization-id"
               DataType="http://www.w3.org/2001/XMLSchema#anyURI">
      <Attribute Value>urn:oid:2.999</AttributeValue>
    </Attribute>
    <Attribute AttributeId="urn:oasis:names:tc:xspa:1.0:subject:purposeofuse"
               DataType="urn:hl7-org:v3#CV">
      <AttributeValue>
        <hl7:CodedValue code="NORM" codeSystem="2.16.756.5.30.1.127.3.10.5"
         displayName=“Normalzugriff"/>
      </AttributeValue>
    </Attribute>
  </Subject>
  <Resource/>
  <Action/>
  <Environment/>
</Request>
```

Listing 4: Example of the subject attributes elements of the XACMLAuthzDecisionQuery request.

<Resource> identifies the object (ADR due to PPQ) or the class of objects (ADR due to PPQ or ADR due to CH:ATC) an Authorization Decision is requested for. It SHALL at least have the following **<Attribute>** child elements. The Authorization Decisions Provider MAY ignore any attribute not defined in this specification.

@AttributeId="urn:oasis:names:tc:xacml:1.0:resource:resource-id" and **@DataType="http://www.w3.org/2001/XMLSchema#anyURI"**.
The **<AttributeValue>** child element SHALL convey the resource identifier.

For ADR due to XDS [ITI-18] and [ITI-42] there are always exactly three Resources to be identified, each representing a class of documents: normal, restricted and secret documents. The value MUST be constructed dynamically containing the patient's national identifier extension that was conveyed in the SAML assertion of the XDS transaction identifying the resource (resource-id). The three resource identifiers for ADR due to XDS are:
urn:e-health-suisse:2015:epr-subset:8901:normal,
urn:e-health-suisse:2015:epr-subset:8901:restricted and
urn:e-health-suisse:2015:epr-subset:8901:secret with 8901 as an example value of the patient ID.
For ADR due to CH:ATC there is exactly one Resource to be identified, representing the object class of patient audit trail records. The value MUST be constructed dynamically containing the patient's national identifier extension that was conveyed in the SAML assertion of the CH:ATC transaction identifying the resource (resource-id). The resource identifier for ADR due to CH:ATC is:

urn:e-health-suisse:2015:epr-subset:8901:patient-audit-trail-records with 8901 as an example value of the patient ID.

For ADR due to PPQ an Authorization Decision MUST be requested for each object itself, not a class of objects. In that case the value is the uuid of a Policy Set the Entity (Subject) is asking access for by a PPQ query, add, update or delete policy, e.g.:
c969c7cd-9fe9-4fdc-83c5-a7b5118922a3.
Therefore, for ADR due to PPQ, there is not a fixed number of <Resource>s (with corresponding Resource IDs) to be specified within the request.

@AttributeId="urn:e-health-suisse:2015:epr-spid" and **@DataType="urn:hl7-org:v3#II"**.
The **<AttributeValue>** child element SHALL convey the patient's national identifier that was conveyed in the SAML assertion of the XDS transaction identifying the resource (resource-id).

For ADR due to XDS each Resource element MUST also contain the actual confidentiality code corresponding to the resource-id as another attribute:
@AttributeId="urn:ihe:iti:xds-b:2007:confidentiality-code" and **DataType="urn:hl7-org:v3#CV"**.
The **<AttributeValue>** child element SHALL convey a confidentiality code, e.g. **<hl7:CodedValue code="1051000195109" codeSystem="2.16.840.1.113883.6.96" displayName="normal"/>**.

Example for one of the three Resource elements in case of ADR due to XDS [ITI-18]/[ITI-42]:

```
<Request>
  <Subject/>
  <Resource>
    <Attribute AttributeId="urn:oasis:names:tc:xacml:1.0:resource:resource-id"
               DataType="http://www.w3.org/2001/XMLSchema#anyURI">
      <AttributeValue>urn:e-health-suisse:2015:epr-subset:8901:normal</AttributeValue>
    </Attribute>
```

```
    <Attribute AttributeId="urn:e-health-suisse:2015:epr-spid“
                DataType="urn:hl7-org:v3#II">
      <AttributeValue><hl7:InstanceIdentifier root="2.16.756.5.30.1.127.3.10.3"
                      extension=“8901"/></AttributeValue>
    </Attribute>
    <Attribute AttributeId="urn:ihe:iti:xds-b:2007:confidentiality-code“
               DataType="urn:hl7-org:v3#CV">
      <AttributeValue>
        <hl7:CodedValue code="1051000195109" codeSystem="2.16.840.1.113883.6.96"
        displayName=“normal"/>
      </AttributeValue>
    </Attribute>
  </Resource>
  <Resource>
    <!-- resource element for restricted documents corresponding to the example above -->
  </Resource>
  <Resource>
    <!-- resource elements for secret documents corresponding to the example above -->
  </Resource>
  <Action/>
  <Environment/>
</Request>
```

Listing 5: Example of the resource attributes of the XACMLAuthzDecisionQuery request payload. For better reading the part for one confidentiality code is shown in detail, while for the other confidentiality codes placeholders are used.

Example of the Resource element in case of ADR due to CH:ATC [ITI-81]:

```
<Request>
  <Subject/>
  <Resource>
    <Attribute AttributeId="urn:oasis:names:tc:xacml:1.0:resource:resource-id“
               DataType="http://www.w3.org/2001/XMLSchema#anyURI">
      <AttributeValue>urn:e-health-suisse:2015:epr-subset:8901:patient-audit-trail-records</AttributeValue>
    </Attribute>
    <Attribute AttributeId="urn:e-health-suisse:2015:epr-spid“
                DataType="urn:hl7-org:v3#II">
      <AttributeValue><hl7:InstanceIdentifier root="2.16.756.5.30.1.127.3.10.3"
                      extension=“8901"/></AttributeValue>
    </Attribute>
  </Resource>
  <Action/>
  <Environment/>
</Request>
```

Listing 6: Example of the resource attribute of the XACMLAuthzDecisionQuery request payload of ADR due to CH:ATC

For ADR due to PPQ each Resource element MUST contain the **referenced** PolicySetId **within** the policy set to be potentially returned, added, updated or deleted (instead of a confidentiality code as in ADR due to XDS).
@AttributeId=”urn:e-health-suisse:2015:policy-attributes:referenced-policy-set” and **DataType=”http://www.w3.org/2001/XMLSchema#anyURI”**.
The **<AttributeValue>** child element SHALL convey the Policy Identifier that is being referenced within the Policy Set to be queried, added, updated or deleted, e.g. **urn:e-health-suisse:2015:policies:exclusion-list**.

The following example is to clarify this requirement:
If a user (e.g. a patient) tries to add a policy set with ID c969c7cd-9fe9-4fdc-83c5-a7b5118922a3 (as in @AttributeId="urn:oasis:names:tc:xacml:1.0:resource:resource-id") that adds a professional to the exclusion list, the policy set will contain a reference to another policy set from the base configuration, which will have the policy set ID urn:e-health-suisse:2015:policies:exclusion-list. That's the value to be included within the Resource attribute @AttributeId="urn:e-health-suisse:2015:policy-attributes:referenced-policy-set".

Correspondingly, the Resource element of an ADR due to PPQ transaction (to verify if the PPQ user 8901 may be allowed to perform this transaction) SHALL be constructed as in the following example:

```
<Request>
  <Subject/>
  <Resource>
    <Attribute AttributeId="urn:oasis:names:tc:xacml:1.0:resource:resource-id"
               DataType="http://www.w3.org/2001/XMLSchema#anyURI">
      <AttributeValue>c969c7cd-9fe9-4fdc-83c5-a7b5118922a3</AttributeValue>
    </Attribute>
    <Attribute AttributeId="urn:e-health-suisse:2015:epr-spid"
               DataType="urn:hl7-org:v3#II">
      <AttributeValue><hl7:InstanceIdentifier root="2.16.756.5.30.1.127.3.10.3"
                      extension="8901"/></AttributeValue>
    </Attribute>
    <Attribute AttributeId="urn:e-health-suisse:2015:policy-attributes:referenced-policy-set"
               DataType="http://www.w3.org/2001/XMLSchema#anyURI">
      <AttributeValue>urn:e-health-suisse:2015:policies:exclusion-list</AttributeValue>
    </Attribute>
  </Resource>
  <Resource>
    <!—further resource elements-->
  </Resource>
  <Action/>
  <Environment/>
</Request>
```

Listing 7: Example of resource attributes of the XACMLAuthzDecisionQuery request payload for ADR due to PPQ to request an authorization decision for access to the patient's policy configuration.

<Action> identifies the transaction being performed by the Requester Entity. The <Action> element SHALL have one **<Attribute>** child element:

@AttributeId="urn:oasis:names:tc:xacml:1.0:action:action-id" and **@DataType="http://www.w3.org/2001/XMLSchema#anyURI"**.
The **<AttributeValue>** child element SHALL convey the action identifier:
urn:e-health-suisse:2015:policy-administration:PolicyQuery or
urn:e-health-suisse:2015:policy-administration:AddPolicy or
urn:e-health-suisse:2015:policy-administration:UpdatePolicy or
urn:e-health-suisse:2015:policy-administration:DeletePolicy for ADR due to PPQ or
urn:ihe:iti:2007:RegistryStoredQuery for ADR due to XDS ITI-18 or
urn:ihe:iti:2007:RegisterDocumentSet-b for ADR due to XDS ITI-42 or
urn:ihe:iti:2010:UpdateDocumentSet for ADR due to XDS ITI-57 or
urn:ihe:iti:2018:RestrictedUpdateDocumentSet for ADR due to XDS ITI-92 or
urn:e-health-suisse:2015:patient-audit-administration:RetrieveAtnaAudit for ADR due to CH:ATC ITI-81.

```
<Request>
  <Subject/>
  <Resource/>
  <Action>
    <Attribute AttributeId="urn:oasis:names:tc:xacml:1.0:action:action-id"
               DataType="http://www.w3.org/2001/XMLSchema#anyURI">
      <AttributeValue>urn:e-health-suisse:2015:policy-administration:AddPolicy</AttributeValue>
    </Attribute>
  </Action>
  <Environment/>
</Request>
```

Listing 8: Example of the action setting of XACMLAuthzDecisionQuery request for ADR due to PPQ.

<Environment> The EPR does not specify any <Environment> parameters within the XACMLAuthzDecisionQuery. Therefore this child element MAY be empty: **<Environment />**. The Authorization Decision Provider MAY ignore any attribute in this section when arriving at an authorization decision. However, there is a constraint to the use of <Environment> in case of inputContextOnly of <XACMLAuthzDecisionQuery> was set to true. In that case, current time and date MUST be provided as attributes of <Environment>.

3.1.7 Expected Actions

The Authorization Decisions Provider SHALL return Authorization Decisions that match the XACML Query parameters according to the rules defined in XACML policies.

The Authorization Decision Provider SHALL produce a XACMLAuthzDecisionQuery Response message that conveys the results of the evaluation of the patient's policies against the request. One result for each Resource SHALL be included in the response message.

3.1.8 XACMLAuthzDecision Response

The XACMLAuthzDecision Response message is created by the Authorization Decisions Provider in response to the XACMLAuthzDecisionQuery Request. This message conveys to the Authorization Decisions Consumer the results of the evaluation made by the Authorization Decisions Provider. For each Resource specified within the Request message, the Authorization Decisions Provider provides an Authorization Result that SHALL be used by the Authorization Decisions Consumer to determine which of the requested objects are to be returned or transactions to be allowed in response to the corresponding initial transactions. This message relies on OASIS SAML 2.0 profile of XACML v2.0 protocol standard. Authorization Results are conveyed using the XACMLAuthzDecisionStatement.

3.1.9 Trigger Events

This message is created by the Authorization Decisions Provider after the evaluation of the XACMLAuthzDecisionQuery Request message. The Authorization Decision Provider MUST only return Authorization Decisions applicable to the request.

3.1.10 Message Semantics

The XACMLAuthzDecision Response message is based on OASIS SAML 2.0 profile of XACML v2.0. The WS-Addressing Action header of the SOAP message SHALL be:
urn:e-health-suisse:2015:policy-enforcement:XACMLAuthzDecisionResponse

The **XACMLAuthzDecision <Assertion>** as specified in OASIS SAML 2.0 Profile of XACML v2.0 (Chapter 4.10), is conveyed within a **XACMLAuthzDecision <Response>**. The Assertion does not need to be signed.
The **<Issuer>** of the Authorization Assertion MUST identify the Authorization Decisions Provider. For the EPR this ID is specified to be the home community ID of the Authorization Decision Provider community encoded as an URN, e.g.
<saml:Issuer NameQualifier="urn:e-health-suisse:community-index">urn:oid:2.999.1.1</saml:Issuer>.
In case of all Resources resulting in a decision of “Indeterminate” (details below), the SAML /Status/**StatusCode** of the Assertion shall be the same as the /Result/Status/StatusCode/@Value of the Response: urn:e-health-suisse:2015:error:not-holder-of-patient-policies. Otherwise the SAML /Status/**StatusCode** of the Assertion SHALL be supplied as defined in section "4.10 Element <samlp:Response>: XACMLAuthzDecision Response" of OASIS SAML 2.0 profile of XACML v2.0.

```
<soap:Body>
 <samlp:Response ID="4v7a68d0-5d67-557e-def4-8e5858676abc3" Version="2.0"
                 IssueInstant=" 2016-02-09T09:30:10.5Z ">
  <saml:Assertion ID="3b5a66d0-5d86-477e-afc4-8e561084edc1" Version="2.0"
                 IssueInstant=" 2016-02-09T09:30:10.5Z ">
   <saml:Issuer NameQualifier="urn:e-health-suisse:community-index">urn:oid:2.999.1.1</saml:Issuer>
   <saml:Status>
     <samlp:StatusCode>urn:oasis:names:tc:SAML:2.0:status:Success</samlp:StatusCode>
   </saml:Status>
   <saml:Statement xsi:type="xacml-saml:XACMLAuthzDecisionStatementType">
     <xacml-context:Response>
       <!--Decision Result per Resource-->
     </xacml-context:Response>
   </saml:Statement>
  </saml:Assertion>
 </samlp:Response>
</soap:Body>
```

Listing 9: Schematic payload of the XACMLAuthzDecision response. For better reading the details of the response is suppressed and shown in the listings below.

As specified in the OASIS multiple resource profile of XACML v2.0, the XACML **<Response>** element SHALL contain a **<Result>** element for each **<Resource>** element contained within the XACMLAuthzDecisionQuery Request message. Each <Result> element SHALL contain a **@ResourceId** attribute that identifies which Resource an Access Decision belongs to. A child element **<Decision>** holds the actual decision value.
In case of the decision code of a Result equaling to “Deny”, “Permit” or “NotApplicable”, the /Result/Status/**StatusCode**/@Value attribute SHALL equal to "urn:oasis:names:tc:xacml:1.0:status:ok". In case of “Indeterminate” it SHALL equal to “urn:e-health-suisse:2015:error:not-holder-of-patient-policies”.
<Response> and all subsequent elements, attributes and values comply to the namespace xmlns:xacml-context="urn:oasis:names:tc:xacml:2.0:context:schema:os". The namespace is left out of the following examples for better reading purposes.

```
<Response>
  <Result ResourceId="e693657c-50be-46a6-bdcd-05269147f357">
    <Decision>Deny</Decision>
    <Status>
      <StatusCode Value="urn:oasis:names:tc:xacml:1.0:status:ok"/>
    </Status>
  </Result>
  <Result ResourceId="1c9fa73c-2b9c-41b2-a814-f9164e073c15">
    <Decision>Permit</Decision>
    <Status>
      <StatusCode Value="urn:oasis:names:tc:xacml:1.0:status:ok"/>
    </Status>
  </Result>
  <Result ResourceId="c969c7cd-9fe9-4fdc-83c5-a7b5118922a3">
    <Decision>Permit</Decision>
    <Status>
      <StatusCode Value="urn:oasis:names:tc:xacml:1.0:status:ok"/>
    </Status>
  </Result>
</Response>
```

Listing 10: Structure for a response to an ADR due to PPQ request.

```
<Response>
  <Result ResourceId="urn:e-health-suisse:2015:epr-subset:8901:normal">
    <Decision>Permit</Decision>
    <Status>
      <StatusCode Value="urn:oasis:names:tc:xacml:1.0:status:ok"/>
    </Status>
  </Result>
  <Result ResourceId="urn:e-health-suisse:2015:epr-subset:8901:restricted">
    <Decision>Permit</Decision>
    <Status>
      <StatusCode Value="urn:oasis:names:tc:xacml:1.0:status:ok"/>
    </Status>
  </Result>
  <Result ResourceId="urn:e-health-suisse:2015:epr-subset:8901:secret">
    <Decision>NotApplicable</Decision>
    <Status>
      <StatusCode Value="urn:oasis:names:tc:xacml:1.0:status:ok"/>
    </Status>
  </Result>
</Response>
```

Listing 11: Structure of a Response to an ADR due to XDS message if 8901 was the patient ID (EPR-SPID) of the Health Record to be accessed.

```
<Response>
  <Result ResourceId="urn:e-health-suisse:2015:epr-subset:8901:patient-audit-trail-records">
    <Decision>Permit</Decision>
    <Status>
      <StatusCode Value="urn:oasis:names:tc:xacml:1.0:status:ok"/>
    </Status>
  </Result>
</Response>
```

Listing 12: Structure of a Response to an ADR due to CH:ATC message if 8901 was the patient ID (EPR-SPID) of the Health Record to be accessed.

As defined in the XACML v2.0 standard, there are four possible values associated with the **<Decision>**. The Authorization Decisions Provider shall use these values as described below:

- **Permit**: if the evaluation was successful and the Subject is authorized to perform the Action on the Resource;
- **Deny:** if the evaluation was successful and the Subject is explicitly not authorized to perform the Action on the Resource.
- **NotApplicable**: if the evaluation was successful, but the Subject is not authorized to perform the Action on the Resource. E.g. a Permit decision can be determined on the Resource "normal access", but no permit or deny decision can be determined for the other resources in the request. The decision code for the other resources MUST be NotApplicable.
- **Indeterminate**: if the evaluation succeeded, but access to the requested Resource is not managed by the Authorization Decisions Manager, or if the evaluation failed. The EPR specifically defines this decision code to be returned, if access rights for a given patient are not managed in the associated Policy Repository and therefore cannot be determined by the Authorization Decision Provider. To distinguish between those two cases, clients may evaluate the /Result/Status/StatusCode/@Value attribute, which has to equal "urn:e-health-suisse:2015:error:not-holder-of-patient-policies" if the Policy Repository is not responsible for holding the given patient policies.

```
<Response>
  <Result ResourceId="urn:e-health-suisse:2015:epr-subset:8901:normal">
    <Decision>Indeterminate</Decision>
    <Status>
      <StatusCode Value="urn:e-health-suisse:2015:error:not-holder-of-patient-policies"/>
      <StatusMessage>Gemeinschaft ist nicht die Stammgemeinschaft des Patienten</StatusMessage>
    </Status>
  </Result>
  <Result ResourceId="urn:e-health-suisse:2015:epr-subset:8901:restricted">
    <Decision>Indeterminate</Decision>
    <Status>
      <StatusCode Value="urn:e-health-suisse:2015:error:not-holder-of-patient-policies"/>
      <StatusMessage>Gemeinschaft ist nicht die Stammgemeinschaft des Patienten</StatusMessage>
    </Status>
  </Result>
  <Result ResourceId="urn:e-health-suisse:2015:epr-subset:8901:secret">
    <Decision>Indeterminate</Decision>
    <Status>
      <StatusCode Value="urn:e-health-suisse:2015:error:not-holder-of-patient-policies"/>
      <StatusMessage>Gemeinschaft ist nicht die Stammgemeinschaft des Patienten</StatusMessage>
    </Status>
  </Result>
</Response>
```

Listing 13: The response to a XACMLAuthzDecisionQuery in the case when the patient's policies are not known in the requested community, i.e. when the requested community is not the patients referenceCommunity.

3.1.11 Expected Actions

When the Policy Enforcing Service Provider receives a XACMLAuthzDecisionQuery Response, it SHALL enforce the decision results according to the following EPR policy.

If a **Deny** or **NotApplicable** decision is returned, the

- XDS Document Registry SHALL not disclose the related document metadata in response to ITI-18;
- XDS Document Registry SHALL not store any document metadata from a submission set containing a document that has a confidentiality code for which such a decision was returned and return a XDS registration failure to the XDS Document Repository in response to ITI-42;
- XDS Document Registry/RMU Update Responder SHALL not allow/perform (restricted) metadata update for document metadata entries containing a confidentiality code for which such a decision was returned and return a failure to the XDS Document Administrator actor / RMU Update Initiator in response to ITI-57/92 as specified by the corresponding profiles;
- CH:ATC Patient Audit Record repository SHALL not disclose the related patient audit record information in response to ITI-81;
- PPQ Policy Repository SHALL not allow the initial PPQ transaction, respectively not return the policy data or make the requested changes to the policies. For add, update and delete transaction there is no partial success defined. If the PPQ transaction includes more than one policy to be added (updated or deleted) and one of the resources is not permitted to be consumed, the entire PPQ request MUST not be allowed.

If a **Permit** decision is returned, the

- XDS Document Registry SHALL disclose the document metadata with the given confidentiality code in response to ITI-18;
- XDS Document Registry SHALL perform the initiated transaction for a submission set containing documents with a corresponding confidentiality code as long as all of the documents of a submission set have a confidentiality code that was permitted by the ADR Response (otherwise see “Deny or NotApplicable” above);
- XDS Document Registry/RMU Update Responder SHALL perform (restricted) metadata update transactions for document metadata entries containing a confidentiality code for which such a decision was returned;
- CH:ATC Patient Audit Record repository SHALL disclose the related patient audit record information in response to ITI-81;
- PPQ Policy Repository shall perform the initiated transactions, respectively return the policy data that has been queried for. For add, update and delete, the decision for all resources within the request MUST be a permit for the PPQ request to be allowed as there is no partial success defined.

If **Indeterminate** is returned, the

- XDS Document Registry MUST request a decision from another Authorization Decisions Provider (XADR as defined below). If there is no Authorization Decisions Provider that returns Deny, NotApplicable or Permit, the Document Registry SHALL not disclose any document metadata in response to ITI-18 and not perform the ITI-42 or ITI-57 transaction respectively.
- RMU Update Responder MUST request a decision from another Authorization Decisions Provider (XADR as defined below). If there is no Authorization Decisions Provider that returns Deny, NotApplicable or Permit, the Update Responder SHALL not perform the ITI-92 transaction.
- CH:ATC Patient Audit Trail Repository MUST request a decision from another Authorization Decisions Provider (XADR as defined below). If there is no Authorization Decisions Provider that returns Deny, NotApplicable or Permit, then the Patient Audit Trail Repository SHALL not disclose any related patient audit record information in response to ITI-81;
- PPQ Policy Repository SHALL not allow the initial PPQ transaction, respectively not return the policy data or make the requested changes to the policies.

3.1.12 Enforcement of XDS Retrieve Document Set transactions

The Retrieve of a document MUST be enforced according to the access rights formulated by the patient.

If the document metadata of a document cannot be accessed by a user, a Retrieve of the corresponding document MUST be denied by the Document Repository. To implement this functionality, it is recommended for the Document Repositories to initialize a XDS Registry Stored Query [ITI-18] GetDocuments ObjectRef), combined with the XUA Identity Token provided by the Document Consumer [ITI-40], before supplying the document to the Consumer. If the corresponding Document Id is included in the XDS Registry Stored Query Response, the Document SHALL be supplied to the Document Consumer. If the corresponding Document Id is not included in the XDS Registry Query Response, the Document SHALL NOT be supplied to the Document Source.
The IHE SeR Profile may provide further guidance on the enforcement of access rights concerning the XDS Retrieve Document Set transaction.

3.1.13 Security Considerations

The Authorization Decisions Query transaction requires TLS communication between actors involved. This transaction mandates the creation of Authorizations associated at least with the Requester Entity and with the document metadata (confidentiality code) requested. If additional parameters need to be associated to the authorization, then the same parameters SHALL be provided within the Authorization Decisions Query transaction.

3.1.14 Authorization Decisions Consumer Audit Message

	Field Name	**Opt**	**Value Constraints**
Event	EventID	M	EV (110112, DCM,“Query”)
	EventActionCode	M	E = Execute
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV(“ADR”, “e-health-suisse”, “Authorization Decisions Query”)
Source (Authorization Decisions Consumer) (1)			
Destination (Authorization Decisions Consumer) (1)			
Query Parameters (1..n)			
Requester Entity (1)			
Authorization Result (1..n)			

Source: AuditMessage/ ActiveParticipant	*UserID*	*U*	*not specialized*
	AlternativeUserID	MC	the process ID as used within the local operating system in the local system of logs
	UserName	*U*	*not specialized*
	UserIsRequestor	*U*	*not specialized*
	RoleIDCode	M	EV (110153, DCM, “Source”)
	NetworkAccessPointTypeCode	U	“1” for machine (DNS) name “2” for IP address
	NetworkAccessPointID	U	The machine name or IP address, as specified in DICOM PS 3.15 A.5.3.

Destination: AuditMessage/ ActiveParticipant (1)	UserID	M	Authorization Decisions Provider SOAP URI
	AlternativeUserID	U	the process ID as used within the local operating system in the local system of logs
	UserName	*U*	*not specialized*
	UserIsRequestor	*U*	*not specialized*
	RoleIDCode	M	EV (110152, DCM, “Destination”)
	NetworkAccessPointTypeCode	U	“1” for machine (DNS) name “2” for IP address
	NetworkAccessPointID	U	The machine name or IP address, as specified in DICOM PS 3.15 A.5.3.

Requester Entity: AuditMessage/ ParticipantObjectIdentification (1)	ParticipantObjectTypeCode	M	“1” (person)
	ParticipantObjectTypeCodeRole	M	“11” (security user entity)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV(“ADR”, “e-health-suisse”, “Authorization Decisions Query”)
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	The Requester Entity (identified in the Attribute with AttributeId urn:oasis:names:tc:xacml:1.0:subject:subject-id)
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*

Query Parameters: AuditMessage/ ParticipantObjectIdentification (1..n)	ParticipantObjectTypeCode	M	“2” (SYSTEM)
	ParticipantObjectTypeCodeRole	M	“24” (query)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV(“ADR”, “e-health-suisse”, “Authorization Decisions Query”)
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	*M*	*not specialized*
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	M	Resource-ID
	ParticipantObjectDetail	*U*	*not specialized*

Authorization Result: AuditMessage/ ParticipantObjectIdentification (1..n)	ParticipantObjectTypeCode	M	**“**2” (SYSTEM)
	ParticipantObjectTypeCodeRole	M	“13” (security resource)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV(“ADR”, “e-health-suisse”, “Authorization Decisions Query”)
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	Resource-ID
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	M	Decision Code (Permit, Deny, NotApplicable, Indeterminate)

3.1.15 Authorization Decisions Provider Audit Message

	Field Name	Opt	Value Constraints
Event	EventID	M	EV (110112, DCM,“Query”)
	EventActionCode	M	E = Execute
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV(“ADR”, “e-health-suisse”, “Authorization Decisions Query”)
Source (Authorization Decisions Provider) (1)			
Destination (Authorization Decisions Provider) (1)			
Query Parameters (1..n)			
Requester Entity (1)			
Authorization Result (1..n)			

Source: AuditMessage/ ActiveParticipant	*UserID*	*U*	*not specialized*
	AlternativeUserID	MC	the process ID as used within the local operating system in the local system of logs
	UserName	*U*	*not specialized*
	UserIsRequestor	*U*	*not specialized*
	RoleIDCode	M	EV (110153, DCM, “Source”)
	NetworkAccessPointTypeCode	U	“1” for machine (DNS) name “2” for IP address
	NetworkAccessPointID	U	The machine name or IP address, as specified in DICOM PS 3.15 A.5.3.

Destination: AuditMessage/ ActiveParticipant (1)	UserID	M	Authorization Decisions Provider SOAP URI
	AlternativeUserID	U	the process ID as used within the local operating system in the local system of logs
	UserName	*U*	*not specialized*
	UserIsRequestor	*U*	*not specialized*
	RoleIDCode	M	EV (110152, DCM, “Destination”)
	NetworkAccessPointTypeCode	U	“1” for machine (DNS) name “2” for IP address
	NetworkAccessPointID	U	The machine name or IP address, as specified in DICOM PS 3.15 A.5.3.

Requester Entity: AuditMessage/ ParticipantObjectIdentification (1)	ParticipantObjectTypeCode	M	“1” (person)
	ParticipantObjectTypeCodeRole	M	“11” (security user entity)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV(“ADR”, “e-health-suisse”, “Authorization Decisions Query”)
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	The Requester Entity (identified in the Attribute with AttributeId urn:oasis:names:tc:xacml: 1.0:subject:subject-id)
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*

Query Parameters: AuditMessage/ ParticipantObjectIdentification (1..n)	ParticipantObjectTypeCode	M	“2” (SYSTEM)
	ParticipantObjectTypeCodeRole	M	“24” (query)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV(“ADR”, “e-health-suisse”, “Authorization Decisions Query”)
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	*M*	*not specialized*
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	M	Resource-ID
	ParticipantObjectDetail	*U*	*not specialized*

Authorization Result: AuditMessage/ ParticipantObjectIdentification (1..n)	ParticipantObjectTypeCode	M	**“**2” (SYSTEM)
	ParticipantObjectTypeCodeRole	M	“13” (security resource)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV(“ADR”, “e-health-suisse”, “Authorization Decisions Query”)
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	Resource-ID
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	M	Decision Code (Permit, Deny, NotApplicable, Indeterminate)

3.2 Cross-Community Authorization Decision Request (CH:XADR)

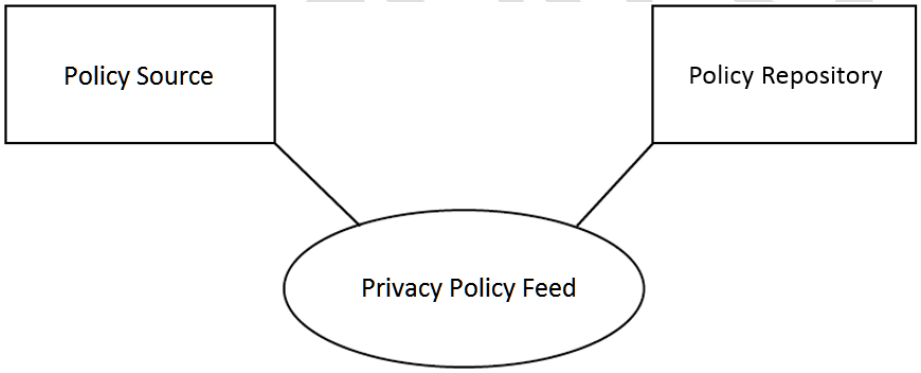
Within the EPR, the patient's Health Record access rights are to be stored within the patient's referenceCommunity only. However, each XDS Document Registry MUST act as Policy Enforcing Service Provider, even if the patient's Health Record access rights are not stored within the same community.
That means, any Authorization Decision Consumer grouped with a XDS Document Registry SHALL ask each Authorization Decision Provider, even outside their home community, until a response includes a decision code other than NotApplicable. The XADR request follows the same specification as ADR above. Only the service endpoint of an XADR Authorization Decision Provider will be outside of the community of the Authorization Decision Consumer. There may be strategies to be implemented to reduce the number of necessary service calls, which are out of scope of this specification.
For the Authorization Decision Consumer, grouped with a PPQ Policy Repository, this is not a requirement, as patient access rights are always managed by community specific Policy Source and Policy Consumer. In that case, the Authorization Decision Provider is always grouped with the Policy Repository of the Policy Source/Policy Consumer community, and therefore is the only source of an ADR due to PPQ access decision.

3.3 Privacy Policy Feed (PPQ-1)

3.3.1 Scope

This transaction is used by the Policy Source to add, update, or delete authorization policies and policy sets stored in a Policy Repository.

3.3.2 Use Case Roles



Actor: Policy Source
Role: Initiates additions, updates, and deletions of patient privacy policies and policy sets.

Actor: Policy Repository
Role: Processes requests to add, update, or delete patient privacy policies and policy sets.

3.3.3 Referenced Standards

Privacy Policy Feed messages shall be transmitted using synchronous Web Services, according to the requirements specified in ITI TF-2x: Appendix V.

- W3C SOAP Version 1.2
  https://www.w3.org/TR/soap12/
- Assertions and Protocols for the OASIS Security Assertion Markup Language (SAML) V2.0
  https://docs.oasis-open.org/security/saml/v2.0/saml-core-2.0-os.pdf

- The home page of the "OASIS eXtensible Access Control Markup Language" technical committee: https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=xacml references all XACML related protocols and specifications for implementers of this profile.

  Those are:

  - OASIS Multiple Resource Profile of XACML v2.0
    https://docs.oasis-open.org/xacml/2.0/access_control-xacml-2.0-mult-profile-spec-os.pdf
  - OASIS eXtensible Access Control Markup Language (XACML) v2.0
    https://docs.oasis-open.org/xacml/2.0/access_control-xacml-2.0-core-spec-os.pdf
    Please be aware of the errata of the specification document as published on the XACML technical committee home page:
    Errata: http://www.oasis-open.org/committees/download.php/26986/access_control-xacml-2.0-core-spec-os-errata.doc
  - OASIS SAML 2.0 profile of XACML v2.0
    (Original: http://docs.oasis-open.org/xacml/2.0/access_control-xacml-2.0-core-spec-os.pdf)
    Please be aware of the errata of the specification document as published on the XACML technical committee home page:
    Errata: www.oasis-open.org/committees/download.php/24681/xacml-profile-saml2.0-v2-spec-wd-5-en.pdf

3.3.4 Interaction Diagrams

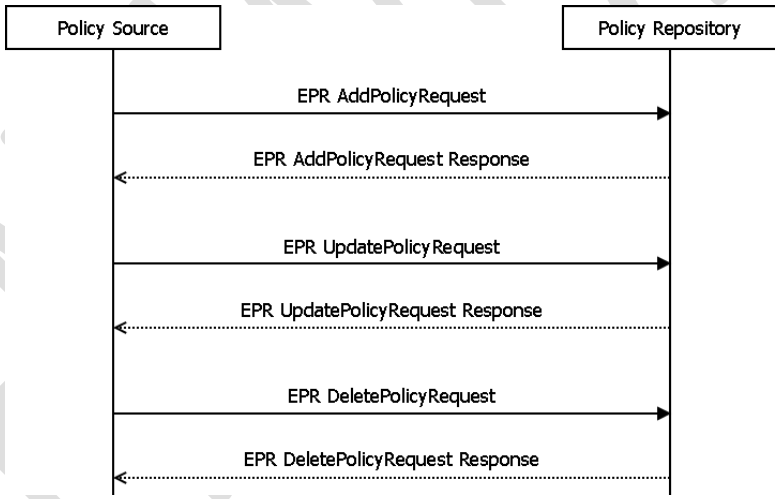


Figure 7: Sequence diagrams for the Privacy Policy Feed transaction

3.3.5 Message Semantics

Privacy Policy Feed request messages SHALL use SOAP v1.2 message encoding.
The WS-Addressing Action header of the SOAP message SHALL be:
urn:e-health-suisse:2015:policy-administration:AddPolicy or
urn:e-health-suisse:2015:policy-administration:UpdatePolicy or
urn:e-health-suisse:2015:policy-administration:DeletePolicy, depending on the corresponding trigger event.

```
<soap:Envelope
        xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
        xmlns:wsa="http://www.w3.org/2005/08/addressing"
        xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd"
        xmlns:saml="urn:oasis:names:tc:SAML:2.0:assertion“>

  <soap:Header>
    <wsa:Action>urn:e-health-suisse:2015:policy-administration:AddPolicy</wsa:Action><!--or-->
    <wsa:Action>urn:e-health-suisse:2015:policy-administration:UpdatePolicy</wsa:Action><!--or-->
    <wsa:Action>urn:e-health-suisse:2015:policy-administration:DeletePolicy</wsa:Action>
    <wsa:MessageID>urn:uuid:feafcab1-1f9d-4d46-8321-8af925f55f13</wsa:MessageID>
    <wsa:To>https://policy-repository-community-abc.ch</wsa:To>
    <wsse:Security>
      <saml:Assertion>
        <!--XUA SAML Assertion as described above-->
      </saml:Assertion>
    </wsse:Security>
  </soap:Header>

  <soap:Body>
    <!—PRIVACY POLICY FEED TRANSACTION PAY LOAD-->
  </soap:Body>

</soap:Envelope>
```

Listing 14: The SOAP envelope with the security header, the SAML assertions and the transaction payload of the Privacy Policy Feed request. For better reading placeholders are used for the SAML assertions and the transaction payload.

Privacy Policy Feed response messages SHALL use SOAP v1.2 message encoding.
The Addressing Action header of the SOAP message SHALL be:
urn:e-health-suisse:2015:policy-administration:AddPolicyResponse or
urn:e-health-suisse:2015:policy-administration:UpdatePolicyResponse or
urn:e-health-suisse:2015:policy-administration:DeletePolicyResponse, depending on the original trigger event.

```
<soap:Envelope
        xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
        xmlns:wsa="http://www.w3.org/2005/08/addressing"
        xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd">

  <soap:Header>
    <wsa:Action>urn:e-health-suisse:2015:policy-administration:AddPolicyResponse</wsa:Action><!--or-->
    <wsa:Action>urn:e-health-suisse:2015:policy-administration:UpdatePolicyResponse</wsa:Action><!--or-->
    <wsa:Action>urn:e-health-suisse:2015:policy-administration:DeletePolicyResponse</wsa:Action>
    <wsa:MessageID>urn:uuid:03010066-ba69-43d9-82b1-bb740f8c9a79</wsa:MessageID>
    <wsa:To>https://policy-source-community-abc.ch</wsa:To>
  </soap:Header>

  <soap:Body>
    <!—PRIVACY POLICY FEED RESPONSE PAYLOAD-->
  </soap:Body>

</soap:Envelope>
```

Listing 15: The SOAP envelope with the transaction payload of the Privacy Policy Feed response. For better reading a placeholder is used for the response payload.

3.3.6 EPR AddPolicyRequest and EPR UpdatePolicyRequest

This message enables the Policy Source to add or update XACML policies, respectively existing XACML Policy Sets of a patient.
This message relies on SAML 2.0 Profile of XACML v2.0.
Actors involved support XUA and use SAML identity assertions to identify current user entities for subsequent access enforcement.

3.3.6.1 Trigger Events

The Policy Source sends these messages when it needs to add new or update existing policies and/or policy sets stored within the Policy Repository (of a patient's referenceCommunity).

3.3.6.2 Message Semantics

This message relies on an EPR specific transaction schema (epr-policy-administration-combined-schema-1.3-local.xsd) as the SAML 2.0 profile of XACML v2.0 does not provide a transaction type and schema required by these requests. It uses the element **<AddPolicyRequest>** or **<UpdatePolicyRequest>** to identify the transaction and convey the request.
XACML Policies or Policy Sets to be added or updated are conveyed using a SAML **<Statement>** of type **XACMLPolicyStatementType** within a XACML Policy SAML **<Assertion>** as specified in OASIS SAML 2.0 profile of XACML v2.0. The Assertion does not need to be signed. The **<Issuer>** of the Assertion SHALL identify the Policy Source. For the EPR this ID is required to be the home community ID of the Authorization Decision Provider community encoded as an URN, e.g. **<saml:Issuer NameQualifier="urn:e-health-suisse:community-index">urn:oid:2.98</saml:Issuer>.**

```
<soap:Body>
  <epr:AddPolicyRequest> <!--or-->
  <epr:UpdatePolicyRequest>
    <saml:Assertion ID="_3b5a66d0-5d86-477e-afc4-8e561084edc9" Version="2.0“
```

```
                    IssueInstant="2016-02-09T09:30:10.5Z">
    <saml:Issuer NameQualifier="urn:e-health-suisse:community-index">urn:oid:2.999</saml:Issuer>
    <saml:Statement xsi:type="xacml-saml:XACMLPolicyStatementType">
      <!—XACML Policies and policy sets-->
    </saml:Statement>
   </saml:Assertion>
  </epr:AddPolicyRequest> <!--or-->
  </epr:UpdatePolicyRequest>
</soap:Body>
```

Listing 16: Structure of the SOAP body element of the response to an AddPolicyRequest or an UpdatePolicyRequest, with policies or policy sets to be conveyed injected in the Statement as denoted by the placeholder.

3.3.6.3 Expected Actions

The Policy Repository SHALL return a status according to the success or failure of the transaction as defined below.

3.3.7 EPR AddPolicyRequest Response and EPR UpdatePolicyRequest Response

The EPR AddPolicyRequest Response or EPR UpdatePolicyRequest Response message is created by the Policy Repository in response to the EPR AddPolicyRequest or EPR UpdatePolicyRequest message.
An EPR-specific XML element PolicyRepositoryResponse is used to report a general success or failure code. A special SOAP fault MUST be reported back to the Policy Source in case an EPR UpdatePolicyRequest cannot be executed due to unknown policy or policy set IDs. There is no partial success defined. If at least one policy or policy set within the request cannot be added or updated, the entire request MUST result in a failure/fault response.

3.3.7.1 Trigger Events

This message is created by the Policy Repository after the EPR AddPolicyRequest or EPR UpdatePolicyRequest have been executed or failed to be executed.

3.3.7.2 Message Semantics

The EPR-specific XML element **<PolicyRepositoryResponse>** conveys a status **urn:e-health-suisse:2015:response-status:success** or **urn:e-health-suisse:2015:response-status:failure**.

```
<soap:Body>
  <epr:EprPolicyRepositoryResponse status="urn:e-health-suisse:2015:response-status:success"/>
</soap:Body>

<soap:Body>
  <epr:EprPolicyRepositoryResponse status="urn:e-health-suisse:2015:response-status:failure"/>
</soap:Body>
```

Listing 17: Status element of the response to a request to add or to update a policy.

In case of an update failure due to unknown Policy Set IDs, a SOAP **<Fault>** with a **<Detail> <epr-policy-administration:UnknownPolicySetId>** MUST be returned to the Policy Source.

```
<soap:Fault>
  <soap:Code>
    <soap:Value>soap:Receiver</soap:Value>
  </soap:Code>
  <soap:Reason>
    <soap:Text xml:lang="en">The PolicySet with the given PolicySet ID does not exist</soap:Text>
  </soap:Reason>
```

```
  <soap:Detail>
    <ppq-policy-administration:UnknownPolicySetId xmlns:ppq-policy-administration="urn:e-health-
suisse:2015:policy-administration" />
  </soap:Detail>
</soap:Fault>
```

Listing 18: The SOAP Fault element with error message in the case of an failure of the update request.

3.3.8 EPR DeletePolicyRequest

This message enables the Policy Source actor to delete XACML Policies or Policy Sets from a Policy Repository.
This message relies on SAML 2.0 profile of XACML v2.0.
Actors involved support XUA and use SAML identity assertions to identify entities (see ITI TF-1: 13).

3.3.8.1 Trigger Events

The Policy Source sends these messages when it needs to delete existing patient-specific policy sets stored within the Policy Repository (of a patient's referenceCommunity).

3.3.8.2 Message Semantics

This message relies on an EPR specific transaction schema (epr-policy-administration-combined-schema-1.3-local.xsd) as the SAML 2.0 profile of XACML does not provide a transaction type and schema required by this requests. It uses the element **<DeletePolicyRequest>** to identify the transaction and convey the request.
Otherwise it relies on the same specification and concepts as the EPR AddPolicyRequest and EPR UpdatePolicyRequest do. However, there is no Statement type specified to convey the information needed by this transaction. Policies or Policy Sets to be deleted are to be identified by corresponding IDs that are to be conveyed using an EPR specific SAML **<Statement>** of type **XACMLPolicySetIdReferenceStatementType** (as defined in epr-policy-administration-combined-schema-1.3-local.xsd) within a XACML Policy SAML **<Assertion>**. The Assertion does not need to be signed. The ID of a deleted Policy MUST not be reused.
The **<Issuer>** of the Assertion SHALL identify the Policy Source. For the EPR this ID is specified to be the home community ID of the Authorization Decision Provider community encoded as an URN, e.g. **<saml:Issuer NameQualifier="urn:e-health-suisse:community-index">urn:oid:2.98</saml:Issuer>.**

```
<soap:Body>
  <epr:DeletePolicyRequest>
    <saml:Assertion ID="_3b5a66d0-5d86-477e-afc4-8e561084edc9" Version="2.0“
                    IssueInstant="2016-02-09T09:30:10.5Z">
      <saml:Issuer NameQualifier="urn:e-health-suisse:community-index">urn:oid:2.999</saml:Issuer>
      <saml:Statement xsi:type="epr:XACMLPolicySetIdReferenceStatementType">
        <xacml:PolicySetIdReference>10a3f268-d9d6-4772-b908-9d8521161</xacml:PolicySetIdReference>
      </saml:Statement>
    </saml:Assertion>
  </epr:DeletePolicyRequest>
</soap:Body>
```

Listing 19: Structure of the SOAP body for a EPR DeletePolicyRequest

3.3.8.3 Expected Actions

The Policy Repository SHALL return a status according to the success or failure of the transaction as defined below.

3.3.9 EPR DeletePolicyRequest Response

The EPR DeletePolicyRequest Response message is created by the Policy Repository in response to the EPR DeletePolicyRequest.
An EPR specific transaction EPR PolicyRepositoryResponse is applied to report a general success or failure code. A special SOAP Fault MUST be reported back to the Policy Source in case an EPR DeletePolicyRequest cannot be executed due to unknown Policy or Policy Set IDs.

3.3.9.1 Trigger Events

This message is created by the Policy Repository after the EPR DeletePolicyRequest or have been executed or refused to be executed.

3.3.9.2 Message Semantics

The EPR specific transaction **<PolicyRepositoryResponse>** conveys the status **urn:e-health-suisse:2015:response-status:success** or **urn:e-health-suisse:2015:response-status:failure**.

```
<soap:Body>
  <epr:EprPolicyRepositoryResponse status="urn:e-health-suisse:2015:response-status:success"/>
</soap:Body>

<soap:Body>
  <epr:EprPolicyRepositoryResponse status="urn:e-health-suisse:2015:response-status:failure"/>
</soap:Body>
```

Listing 20: Status element of the response to a request to delete a policy.

In case of a failure of the delete request due to unknown Policy Set IDs a soap **<Fault>** with a **<Detail> <epr-policy-administration:UnknownPolicySetId>** MUST be returned to the Policy Source.

```
<soap:Fault>
   <soap:Code>
      <soap:Value>soap:Receiver</soap:Value>
   </soap:Code>
   <soap:Reason>
      <soap:Text xml:lang="en">The PolicySet with the given PolicySet ID does not exist</soap:Text>
   </soap:Reason>
   <soap:Detail>
      <ppq-policy-administration:UnknownPolicySetId xmlns:ppq-policy-administration="urn:e-health-
suisse:2015:policy-administration" />
   </soap:Detail>
</soap:Fault>
```

Listing 21: The SOAP Fault element with error message in the case of a failure of the delete request.

3.3.10 Security Considerations

Relevant Security Considerations are defined in ITI TF-1: 9.4, 9.5, 9.6. The Privacy Policy Feed transaction mandates TLS communication between actors involved. Relevant XDS Affinity Domain Security background is discussed in the XDS Security Considerations Section (see ITI TF-1: 10.7). The Actors involved SHALL record audit events according to the following:

3.3.10.1 Policy Source Audit Message

	Field Name	**Opt**	**Value Constraints**
Event	EventID	M	EV (110106, DCM,“Export”)
	EventActionCode	M	• For Add Policy: C = Create • For Update Policy: U = Update • For Delete Policy: D = Delete
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV(“PPQ-1”, “e-health-suisse”, “Privacy Policy Feed”)
Source (Policy Source) (1)			
Human Requestor (0..n)			
Destination (Policy Registry) (1)			
Audit Source (Policy Source) (1)			
Patient (1..1)			
Policy or Policy Set (0..n)			

Source: AuditMessage/ ActiveParticipant	*UserID*	*U*	*not specialized*
	AlternativeUserID	M	the process ID as used within the local operating system in the local system of logs
	UserName	*U*	*not specialized*
	UserIsRequestor	*U*	*not specialized*
	RoleIDCode	M	EV (110153, DCM, “Source”)
	NetworkAccessPointTypeCode	U	“1” for machine (DNS) name “2” for IP address
	NetworkAccessPointID	U	The machine name or IP address.

Human Requestor (if known): AuditMessage/ ActiveParticipant	UserID	M	Identity of the human that initiated the transaction.
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	*U*	*not specialized*
	RoleIDCode	U	Access Control role(s) the user holds that allows this transaction.
	NetworkAccessPointTypeCode	NA	
	NetworkAccessPointID	NA	

Destination: AuditMessage/ ActiveParticipant	UserID	M	SOAP endpoint URI.
	AlternativeUserID	U	not specialized
	UserName	U	not specialized
	UserIsRequestor	U	not specialized
	RoleIDCode	U	EV(110152, DCM, “Destination”)
	NetworkAccessPointTypeCode	M	“1” for machine (DNS) name, “2” for IP address
	NetworkAccessPointID	M	The machine name or IP address.

Audit Source: AuditMessage/ AuditSourceIdentification	*AlternativeUserID*	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	*U*	*not specialized*

Patient: (AuditMessage/ ParticipantObjectIdentification)	ParticipantObjectTypeCode	M	“1” (person)
	ParticipantObjectTypeCodeRole	M	“1” (patient)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	*not specialized*
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	The patient ID in HL7 CX format.
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*

Policy or Policy Set: AuditMessage/ ParticipantObjectIdentification	ParticipantObjectTypeCode	M	“2” (system object)
	ParticipantObjectTypeCodeRole	M	“13” (security resource)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	*M*	*not specialized*
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	ID of the policy or policy set from the PPQ request message. For Add and Update requests, only IDs of top-level policies and policy sets are required; IDs of nested policies and policy sets should be omitted
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*

3.3.10.2 Policy Repository Audit Message

	Field Name	Opt	Value Constraints
Event	EventID	M	EV (110107, DCM,“Import”)
	EventActionCode	M	• For Add Policy: C = Create • For Update Policy: U = Update • For Delete Policy: D = Delete
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV(“PPQ-1”, “e-health-suisse”, “Privacy Policy Feed”)
Source (Policy Source) (1)			
Destination (Policy Repository) (1)			
Audit Source (Policy Repository) (1)			
Patient (1..1)			
Policy or Policy Set (0..n)			

Source: AuditMessage/ ActiveParticipant	UserID	*M*	*not specialized*
	AlternativeUserID	U	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	*U*	*not specialized*
	RoleIDCode	M	EV (110153, DCM, “Source”)
	NetworkAccessPointTypeCode	M	“1” for machine (DNS) name “2” for IP address
	NetworkAccessPointID	U	The machine name or IP address.

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

Audit Source AuditMessage/ AuditSourceIdentification	*AlternativeUserID*	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	*U*	*not specialized*

Patient (AuditMessage/ ParticipantObjectIdentification)	ParticipantObjectTypeCode	M	“1” (person)
	ParticipantObjectTypeCodeRole	M	“1” (patient)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	*not specialized*
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	The patient ID in HL7 CX format.
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*

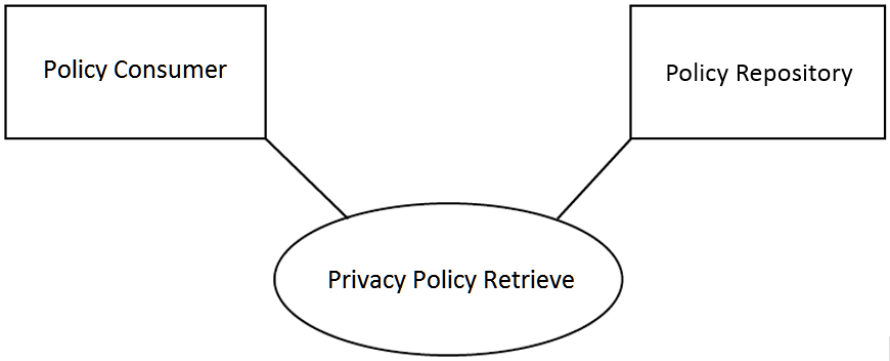
Policy or Policy Set: AuditMessage/ ParticipantObjectIdentification (0..n)	ParticipantObjectTypeCode	M	“2” (system object)
	ParticipantObjectTypeCodeRole	M	“13” (security resource)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	*M*	*not specialized*
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	ID of the policy or policy set from the PPQ request message. For Add and Update requests, only IDs of top-level policies and policy sets are required; IDs of nested policies and policy sets should be omitted
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*

3.4 Privacy Policy Retrieve (PPQ-2)

3.4.1 Scope

This transaction is used by the Policy Consumer retrieve authorization policies and policy from a Policy Repository.

3.4.2 Use Case Roles



Actor: Policy Consumer
Role: Queries for privacy policies and policy sets.

Actor: Policy Repository
Role: Delivers privacy policies and policy sets.

3.4.3 Referenced Standards

Same as in the Privacy Policy Feed [PPQ-1] transaction, see Section 3.3.3.

WS-Addressing Action headers of the request and response SOAP messages SHALL be **urn:e-health-suisse:2015:policy-administration:PolicyQuery** and **urn:e-health-suisse:2015:policy-administration:PolicyQueryResponse** respectively.

3.4.4 Interaction Diagrams

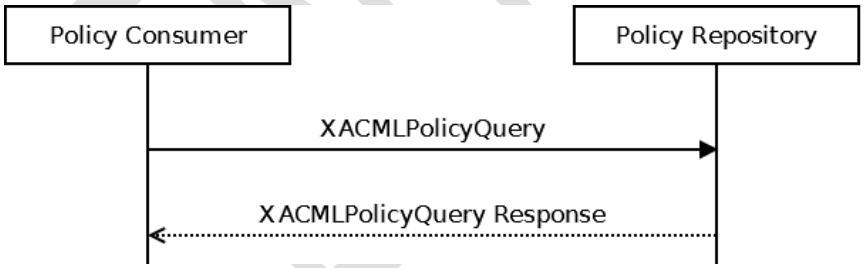


Figure 8: Sequence diagrams for the Privacy Policy Retrieve transaction

3.4.5 XACMLPolicyQuery

3.4.5.1 Trigger Events

The Policy Consumer sends this message when it needs to retrieve existing XACML policies or policy sets stored in a Policy Repository (of the patient's referenceCommunity).

3.4.5.2 Message Semantics

This message relies on a SAML v2.0 extension protocol element <xacml-samlp:XACMLPolicyQuery> with xmlns:xacml-samlp="urn:oasis:names:tc:xacml:2.0:profile:saml2.0:v2:schema:protocol" (please refer to the referenced specification in 3.3.3.

According to the schema, there are two variants of querying for policies or policy sets:

- Retrieve all policies and policy sets related to a particular patient.
- Retrieve policies and policy sets directly referenced by their IDs (also useful for not patient-related policies).

In the first case, the patient ID is embedded into an element <Resource>. The subelement <Attribute> MUST have an AttributeId of **urn:e-health-suisse:2015:epr-spid** and DataType of **urn:hl7-org:v3#II** declared. The <AttributeValue> SHALL be an InstanceIdentifier as specified by HL7, identifying the patient's record a PolicySet was formulated to control access for:

```
<soap:Body>
  <xacml-samlp:XACMLPolicyQuery>
    <xacml-context:Request>
      <xacml-contect:Subject />
      <xacml-context:Resource>
        <xacml-context:Attribute    AttributeId="urn:e-health-suisse:2015:epr-spid"
                                    DataType="urn:hl7-org:v3#II" >
          <xacml-context:AttributeValue>
            <hl7:InstanceIdentifier xsi:type="hl7:II" root="2.16.756.5.30.1.127.3.10.3" extension="8901" />
          </xacml-context:AttributeValue>
        </xacml-context:Attribute>
      </xacml-context:Resource>
      <xacml-context:Action />
      <xacml-context:Environment />
    </xacml-context:Request>
  </xacml-samlp:XACMLPolicyQuery
</soap:Body>
```

Listing 22: Example of a SOAP body element of a XACMLPolicyQuery for retrieving policies and policy sets for a patient with the given patient ID.

A Request MAY contain more than one Resource but there SHALL be "one request per patient", meaning the InstanceIdentifier for a patient's record must occure with one and the same value throughout a XACMLPolicyQuery. <Subject>, <Action> and <Environment> have no PPQ usecase yet.

When the Policy Consumer needs to retrieve policies and policy sets directly referenced by their IDs, these IDs shall be provided in subelements <PolicyIdReference> and <PolicySetIdReference> of the query:

```
<soap:Body>
  <xacml-samlp:XACMLPolicyQuery>
    <xacml:PolicySetIdReference>urn:e-health-suisse:2015:policies:exclusion-list</xacml:PolicySetIdReference>
  </xacml-samlp:XACMLPolicyQuery>
</soap:Body>
```

Listing 23: Example of a SOAP body element of a XACMLPolicyQuery for retrieving a policy set with a given ID.

3.4.5.3 Expected Actions

All policies satisfying the Resource definitions within a Request SHALL be returned if allowed by ADR. Possible PolicyIdReference or PolicySetIdReference references within the PolicySet(s) to be returned SHALL NOT be resolved and returned.

3.4.6 XACMLPolicyQuery Response

The XACMLPolicyQuery Response message is created by the Policy Repository in response to the XACMLPolicyQuery Request. In conformance to SAML 2.0 profile of XACML v2.0, the Policy

Repository SHALL produce a SAML Assertion response message that conveys the resulting Policies and Policy Sets within a Policy Statement.

3.4.6.1 Trigger Events

This message is created by the Policy Repository after the evaluation of a XACMLPolicyQuery Request message. The Policy Repository identifies policies and policy sets applicable to be returned to the requester.

3.4.6.2 Message Semantics

The **XACMLPolicy <Assertion>** as specified in OASIS SAML 2.0 Profile of XACML v2.0 (Chapter 5.6), is conveyed within a XACMLPolicy **<Response>**. The Assertion does not need to be signed. The **<Issuer>** of the Assertion MUST identify the Policy Repository. For the EPR this ID is specified to be the home community ID of the Authorization Decision Provider community encoded as an URN, e.g. **<saml:Issuer NameQualifier="urn:e-health-suisse:community-index">urn:oid:2.99</saml:Issuer>.** The SAML **StatusCode** of the /Assertion/Status of the Response SHALL be conveyed as defined in OASIS SAML 2.0 Profile of XACML v2.0.

```
<soap:Body>
  <samlp:Response ID="4v7a68d0-5d67-557e-def4-8e5858676abc2" Version="2.0"
                  IssueInstant=" 2016-02-09T09:30:10.5Z ">
    <saml:Assertion ID="3b5a66d0-5d86-477e-afc4-8e561084edc9" Version="2.0"
                  IssueInstant=" 2016-02-09T09:30:10.5Z ">
      <saml:Issuer NameQualifier="urn:e-health-suisse:community-index">urn:oid:2.999.1</saml:Issuer>
      <saml:Status>
        <samlp:StatusCode>urn:oasis:names:tc:SAML:2.0:status:Success</samlp:StatusCode>
      </saml:Status>
      <saml:Statement xsi:type="xacml-saml:XACMLPolicyStatementType">
        <!—XACML Policy-->
      </saml:Statement>
    </saml:Assertion>
  </samlp:Response>
</soap:Body>
```

Listing 24: Structure of the SOAP body element of the response to a XACMLPolicyQuery. A placeholder is used for the XACML policies returned by the Policy Repository.

3.4.7 Security Considerations

Relevant Security Considerations are defined in ITI TF-1: 9.4 9.5, 9.6. The Privacy Policy Retrieve transaction mandates TLS communication between actors involved. Relevant XDS Affinity Domain Security background is discussed in the XDS Security Considerations Section (see ITI TF-1: 10.7). The Actors involved SHALL record audit events according to the following:

3.4.7.1 Policy Consumer Audit Message

	Field Name	**Opt**	**Value Constraints**
Event	EventID	M	EV (110112, DCM,“Query”)
	EventActionCode	M	E = Execute
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV(“PPQ-2”, “e-health-suisse”, “Privacy Policy Retrieve”)
Source (Policy Source) (1)			
Human Requestor (0..n)			
Destination (Policy Registry) (1)			
Audit Source (Policy Source) (1)			
Patient (1..1)			
Query Parameters (1..1)			

Source: AuditMessage/ ActiveParticipant	*UserID*	*U*	*not specialized*
	AlternativeUserID	M	the process ID as used within the local operating system in the local system of logs
	UserName	*U*	*not specialized*
	UserIsRequestor	*U*	*not specialized*
	RoleIDCode	M	EV (110153, DCM, “Source”)
	NetworkAccessPointTypeCode	U	“1” for machine (DNS) name “2” for IP address
	NetworkAccessPointID	U	The machine name or IP address.

Human Requestor (if known): AuditMessage/ ActiveParticipant	UserID	M	Identity of the human that initiated the transaction.
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	*U*	*not specialized*
	RoleIDCode	U	Access Control role(s) the user holds that allows this transaction.
	NetworkAccessPointTypeCode	NA	
	NetworkAccessPointID	NA	

Destination: AuditMessage/ ActiveParticipant	UserID	M	SOAP endpoint URI.
	AlternativeUserID	U	not specialized
	UserName	U	not specialized
	UserIsRequestor	U	not specialized
	RoleIDCode	U	EV(110152, DCM, “Destination”)
	NetworkAccessPointTypeCode	M	“1” for machine (DNS) name, “2” for IP address
	NetworkAccessPointID	M	The machine name or IP address.

Audit Source: AuditMessage/ AuditSourceIdentification	*AlternativeUserID*	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	*U*	*not specialized*

	ParticipantObjectTypeCode	M	“1” (person)

Patient: (AuditMessage/ ParticipantObjectIdentification)	ParticipantObjectTypeCodeRole	M	"1" (patient)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	*not specialized*
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	The patient ID in HL7 CX format.
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*

Query Parameters: AuditMessage/ ParticipantObjectIdentification	ParticipantObjectTypeCode	M	"2" (system object)
	ParticipantObjectTypeCodeRole	M	"24" (query)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	*not specialized*
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	Value of the attribute /XACMLPolicyQuery/@ID
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	M	The XACML Policy Query, base64 encoded
	ParticipantObjectDetail	M	Attribute *type* — fixed string "QueryEncoding", attribute *value* — name the character encoding, such as "UTF-8", used to encode the query before base64 encoding.

3.4.7.2 Policy Repository Audit Message

	Field Name	**Opt**	**Value Constraints**
Event	EventID	M	EV (110112, DCM,“Query”)
	EventActionCode	M	E = Execute
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV(“PPQ-2”, “e-health-suisse”, “Privacy Policy Retrieve”)
Source (Policy Source) (1)			
Destination (Policy Repository) (1)			
Audit Source (Policy Repository) (1)			
Patient (1..1)			
Query Parameters (1..1)			

Source: AuditMessage/ ActiveParticipant	UserID	*M*	*not specialized*
	AlternativeUserID	U	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	*U*	*not specialized*
	RoleIDCode	M	EV (110153, DCM, “Source”)
	NetworkAccessPointTypeCode	M	“1” for machine (DNS) name “2” for IP address
	NetworkAccessPointID	U	The machine name or IP address.

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

Audit Source AuditMessage/ AuditSourceIdentification	*AlternativeUserID*	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	*U*	*not specialized*

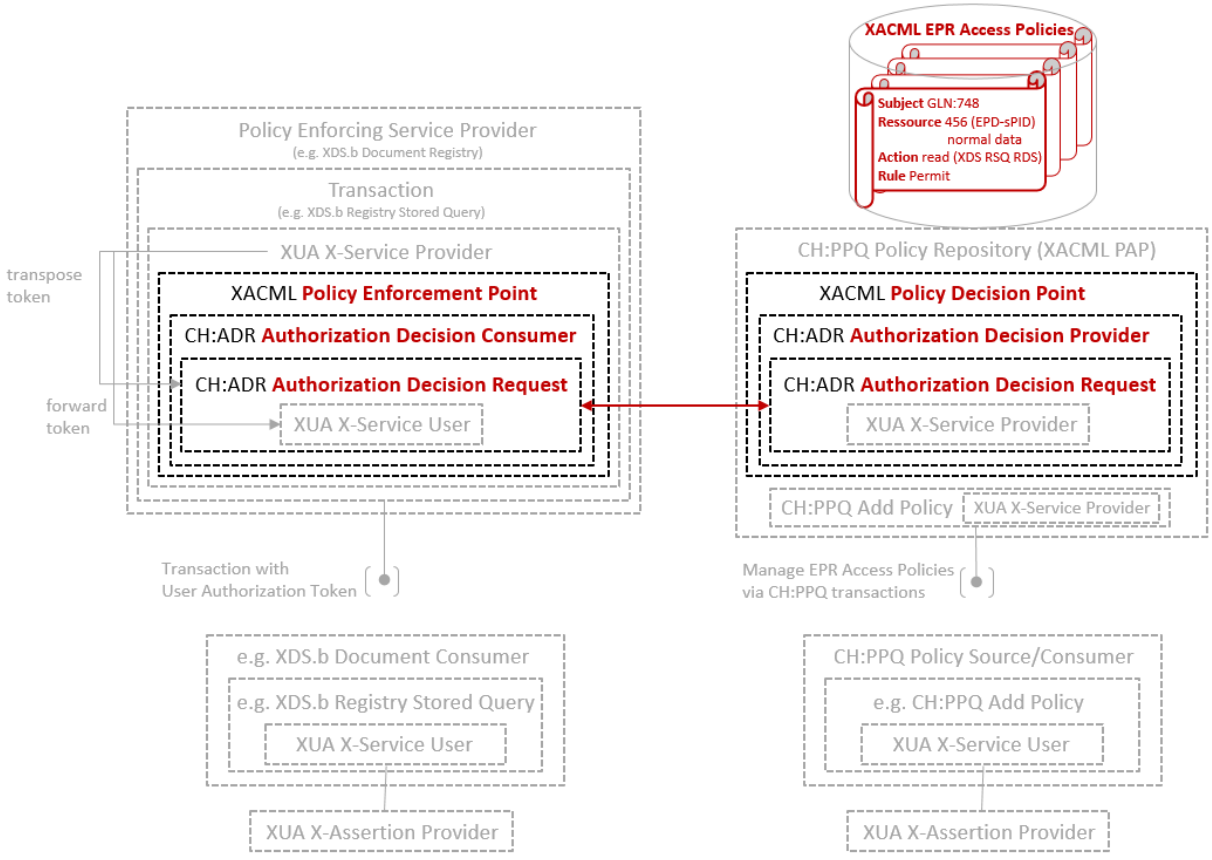
Patient (AuditMessage/ ParticipantObjectIdentification)	ParticipantObjectTypeCode	M	“1” (person)
	ParticipantObjectTypeCodeRole	M	“1” (patient)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	*not specialized*
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	The patient ID in HL7 CX format.
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*

Query Parameters: AuditMessage/ ParticipantObjectIdentification	ParticipantObjectTypeCode	M	“2” (system object)
	ParticipantObjectTypeCodeRole	M	“24” (query)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	*not specialized*
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	Value of the attribute /XACMLPolicyQuery/@ID
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	M	The XACML Policy Query, base64 encoded
	ParticipantObjectDetail	M	Attribute *type* — fixed string “QueryEncoding”, attribute *value* — name the character encoding, such as “UTF-8”, used to encode the query before base64 encoding.

4 Volume 3 – Content Profiles

4.1 XACML EPR Access Policies

Swiss EPR CH:PPQ Policy Repository actors are grouped with CH:ADR Authorization Decision Provider actors, acting as Oasis XACML Policy Decision Points, providing CH:ADR Authorization Decision Consumers with access decisions according to record owners' wills and other legal access constraints defined by the legal authorities and legislations. The technical representation of such constraints by XACML EPR Access Policies is to be administrated by CH:PPQ Policy Repositories, acting as Oasis XACML Policy Administration Points. XACML EPR Access Policies serve as the technical persistence of the constraints and rules and thereby as the information base for the Policy Decision Point to calculate Swiss EPR access decisions on to be communicated via CH:ADR Authorization Decision Request responses and finally enforced by XACML Policy Enforcement Points.



The technical representation of the EPR Access Policies is based on the "OASIS eXtensible Access Control Markup Language (XACML) 2.0" which shall not be discussed in detail in this document. Please refer to the OASIS technical committee's home page https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=xacml and specifically to the OASIS eXtensible Access Control Markup Language (XACML) v2.0 specification (original: https://docs.oasis-open.org/xacml/2.0/access_control-xacml-2.0-core-spec-os.pdf) Please be aware of the errata of the specification document as published on the XACML technical committee home page:
Errata: http://www.oasis-open.org/committees/download.php/24548/access_control-xacml-2.0-core-spec-os-errata.zip (spec and schema)

Although the main objective is to allow the owner of a record (referred to as "the patient") to manage access by healthcare professionals to her/his record's documents, there are some more sophisticated concepts to be taken account of.
There are EPR users accessing EPR information objects via EPR specific transactions. These are the main concepts also represented by XACML policies referred to as <subjects>, <resources> and <actions>. There are more (e.g. <environments> for time constraints), but these are the main concepts being used for general EPR access constraints and rule descriptions. Subject and resource related attributes are communicated via a XUA User Authorization Token as part of an EPR transaction. The CH:ADR Authorization Decision Consumer transposes those attributes and adds a corresponding action specific attribute (transaction) to formulate CH:ADR Authorization Decision Requests to be matched against the XACML EPR Access Policies by the CH:ADR Authorization Decision Provider, subsequently responding with corresponding access decisions. (Please refer to volume 1 and volume 2 of the CH:ADR Profile for related actors and transactions.)
The Swiss EPR Access Policy stack utilizes the following attributes and values to formulate Swiss EPR access constraints and rules:

Subjects: subject identifier
- a GLN for healthcare professionals
- an EPR-SPID for record owners (patients)

role code
- PAT for patients
- HCP for professionals
- REP for representatives
- PADM for policy administrators
- DADM for document administrators

group identifier (a user may be a member of)
- an OID

access type code (purpose of use)
- NORM for normal access
- EMER for emergency access
- AUTO for access by a machine on behalf of a healthcare professional

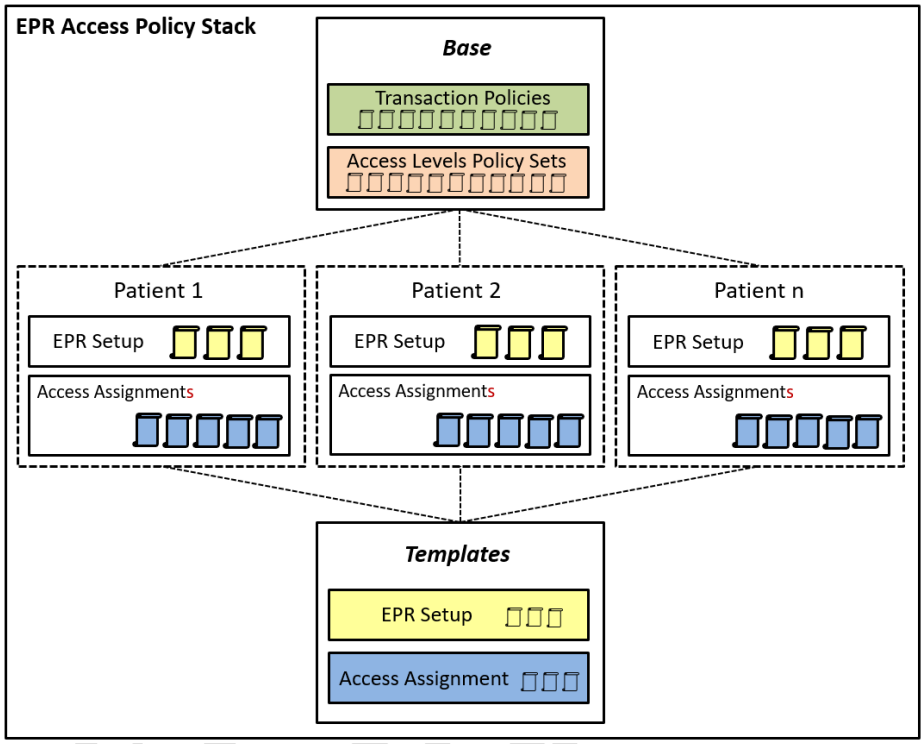
Resources: record identifier
- an EPR-SPID

document confidentiality code
- 1051000195109 for normal
- 1131000195104 for restricted
- 1141000195107 for secret

Actions: transaction identifiers
- urn:ihe:iti:2007:RegistryStoredQuery
- urn:ihe:iti:2007:RetrieveDocumentSet
- urn:ihe:iti:2007:RegisterDocumentSet-b
- urn:ihe:iti:2007:ProvideAndRegisterDocumentSet-b
- urn:e-health-suisse:2015:policy-administration:PolicyQuery
- urn:e-health-suisse:2015:policy-administration:AddPolicy
- urn:e-health-suisse:2015:policy-administration:UpdatePolicy
- urn:e-health-suisse:2015:policy-administration:DeletePolicy
- urn:ihe:iti:2010:UpdateDocumentSet
- urn:ihe:iti:2018:RestrictedUpdateDocumentSet

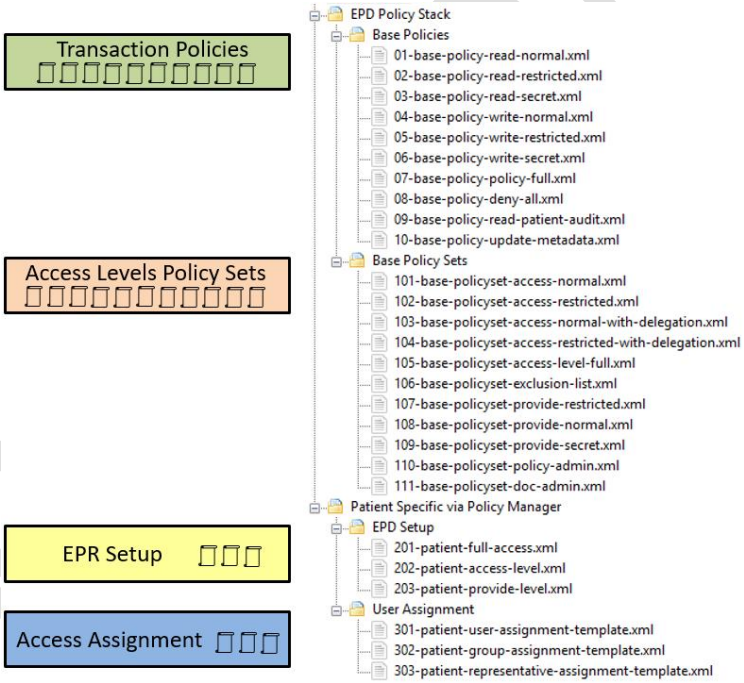
4.2 EPR Access Policy Stack

The EPR Access Policy Stack is virtually divided into two main layers, a static "Base Stack" representing the basic Swiss EPR constraints and rules to be persisted by a CH:PPQ Policy Repository actor and a "Templates Stack" to be managed by CH:PPQ Policy Sources and Consumers representing the record owner's will during the lifetime of a record by referencing the constraints and rules provided by the base stack.



The "Base Stack" is virtually subdivided into two more layers mainly for conceptional structuring reasons. Policies of the transaction layer specify the rules for specific sets of EPR transactions explicitly leading to a PERMIT or a DENY decision. E.g. there is a policy permitting document metadata update transactions or a policy denying all EPR transactions. Those basic transaction related policies are to be incorporated/referenced by "policy sets" to be constructed by the other layers, representing the actual constraints for one or more rules to take effect in terms of "Access Level" restrictions, "EPR Setup" authorizations and dedicated "Access Assignment". A change of EPR legislations concerning EPR transactions will always be reflected by a change of the policies of the base layer. Policies and policy sets are identified and referenced by policy IDs and policy set IDs respectively. The terms "policy" and "policy set" are used according to the XACML specification. For a general understanding, a policy leads to a decision by formulating a rule, whereas a "policy set" formulates a set of constraints ("targets") that will lead to a specific decision by incorporating/referencing "policies" or other "policy sets" referencing "policies" and so on. However, common language does not distinguish precisely between both, but rather uses the term "policy" for either one and particularly for the policy set templates of the templates stack.
The "Templates Stack" is virtually subdivided into EPR Setup policy set templates and policy set templates for dedicated access assignment.
EPR Setup policy sets (according to the definitions of three policy set templates) are to be added via CH:PPQ Policy Add transaction by a CH:PPQ Policy Source actor involved in the patient (record owner) onboarding process. The user to perform the transaction as part of the onboarding process must have a Policy Administrator (PADM) role, as this role is authorized (by the base stack) to administrate the policy stack. It may be understood as an EPR bootstrap role as it will feed three EPR Setup policy sets to bootstrap the authorization system for a specific record.
There is one EPR Setup policy set template to authorize full record access (documents, policy sets,

audit trail), which makes the subject of that policy set (patient) become an owner of a record. A second EPR Setup policy set defines default emergency access for healthcare professionals to that record as explained below. The third EPR Setup policy set defines the default setting of document confidentiality to be provided by healthcare professionals or machines acting on behalf of a healthcare professional, at document registration to that record as explained below.
The second and third policy set of the templates stack may be manipulated by record owners, representatives and policy administrators via a system supporting the CH:PPQ Policy Source/Consumer actor during the lifetime of a record to change the corresponding default settings authorized by those policy sets.
Specific Access Assignment policy sets are to be manipulated by patients, representatives, policy administrators and authorized healthcare professionals via a system supporting the CH:PPQ Policy Source/Consumer actor during the lifetime of a record to assign access rights to healthcare professionals, groups of healthcare professionals and representatives (one template for each subject type to be authorized).
The EPR XACML Policy Stack (base and templates) can be downloaded from https://www.e-health-suisse.ch/specs.



4.3 Access Constraints

Record Setup

There shall be an initial bootstrap of the authorization system regarding a specific record. The bootstrap procedure shall grant full access of a patient to a specific record making that <subject> the owner of that record. The default setup of emergency access and required document confidentiality at document registration shall be established during record setup too, as furtherly explained below.

Document Read, Document Administration and corresponding Policy Administration

A record is virtually divided into three sub-records by the confidentiality of a record's documents. Document confidentiality is labeled "normal", "restricted" or "secret". The patient and policy administrators shall be enabled to explicitly authorize healthcare professional's access to sub-records. In addition to that, the patient and policy administrators shall be enabled to specifically assign healthcare professionals or representatives to be authorized to perform the very same procedure on behalf of the patient.
Beside the patient, authorized representatives and document administrators being the only ones

generally allowed to access all three sub-record's documents of a record, a patient, authorized representatives or policy administrators may authorize access for healthcare professionals to the "normal" sub-record's documents only or to the "normal and restricted" sub-record's documents. A healthcare professional may do so, if specifically authorized by the patient (delegation of policy management), however, only within the scope of the specific sub-record access authorizations granted to that healthcare professional by a patient.
Emergency Access shall be authorizable to healthcare professionals in general. Patients, representatives and policy administrators shall be enabled to define a corresponding access scope of the emergency access. The scope shall be "normal and restricted" sub-record's documents (default at record setup), "normal" sub-record's documents only or no emergency access at all.
Furthermore, patients, representatives or document administrators may change document's confidentiality to virtually move them to another sub-record.
There are no specific rules for document read and document administration concerning intra- and cross-community access. Corresponding rules are to be applied for both access patterns/types of transactions identically.
There is the concept of groups of healthcare professionals, which shall be explicitly authorizable by a patient. Therefore, a healthcare professional may be authorized by a group relationship to be communicated via the XUA user authorization token and transposed into the CH:ADR request.
A healthcare professional's auxiliary person is another concept relevant to EPR access regulations. However, EPR users carrying that role (which is not an explicit EPR policy stack role) will be implicitly authorized via a relationship to a healthcare professional stored elsewhere in the community. Auxiliary person related authorizations are not reflected by the EPR XACML policies. Access decisions for an auxiliary person are based on the attributes of the actual healthcare professional the user acts as an auxiliary person to (to be communicated via the XUA user authorization token and transposed into the CH:ADR request).

Document Write and corresponding Policy Administration
Policy administrators shall authorize document write access by the setup of the record. Subsequently to the record's setup, patients, authorized representatives and policy administrators shall be enabled to define the confidentiality of documents to be provided by healthcare professionals or a machine acting on behalf of a healthcare professional at document registration. The corresponding choice shall be "normal or restricted", "restricted" or "secret" - with the default being "normal or restricted" at record setup. Patients and representatives shall be allowed to choose any document confidentiality - "normal or restricted or secret" - for a document at document registration.

Audit Trail Read
Access to the record's audit trail (access protocol) shall be allowed for patients and authorized representatives. The corresponding rule shall be persisted at record setup (as part of the access authorization for a patient at record setup).

Denial of EPR Record Access
Finally, denial of record access (documents and policies) for healthcare professionals by patients, representatives and policy administrators shall be possible.

4.4 Read and Write Access Rights Overview

For the correct enforcement of the access rights formulated by the patient, the following definition is significant:

1. **Read** enforcement decisions base on a **maximum** access level definied by the patient in his privacy policy.
2. **Write** enforcement decisions base on a **minimum** provide level definied by the patient in his privacy policy.

Legend:
✓: Indicates an CH:ADR transaction response that contains a permit.
✗: Indicates an CH:ADR transaction response that contains a deny.

Table 3: EPR access level matrix

Read EPR		**Confidentiality Level**			**Patients setting**	
		normal	restricted	secret		
EPR User	Health Care Professional (real person granted by the Patient)	✓	✗	✗	normal	**Maximal Access Level**
		✓	✓	✗	restricted	
		✓[2]	✗[3]	✗	emergency	
		✗	✗	✗	exclusion-list[4]	
	Patient	✓	✓	✓	full	
	Document Administrator	✓	✓	✗(?)	n/a	
	Technical User	✗	✗	✗	n/a	

Table 4: EPR provide level matrix

Write EPR		**Confidentiality Level[5]**			**Patients setting[6]**	
		normal	restricted	secret		
EPR Role	Health Care Professional (role of the user; impersonal)	✓	✓	✗	normal	**Minimal Provide Level**
		✗	✓	✗	restricted	
	Patient	✓	✓	✓	full	
	Document Administrator	✓	✓	✗	n/a	
	Technical User	✓	✓	✗	normal	
		✗	✓	✗	restricted	

[2] The patient can change this behavior using the Privacy Manager in order to let CH:ADR transaction responses deny: ✗

[3] The patient can change this behavior using the Privacy Manager in order to let CH:ADR transaction responses permit: ✓ (if and only if his choice for Confidentiality Level 'normal' is as well ✓!)

[4] The exclusion list overrides all other settings: If a health care professional is on a patient's exclusion-list, all read enforcement decisions are always deny!

[5] Creation of new documents and update Metadata for existing documents are basically both handled using the provide level matrix. There is one exception: All write request enforcement decisions for updates of confidentiality codes are always deny for health professionaly. Only the patient is allowed to update confidentiality codes. This has to be handled by the Authorization Decision Provider and does not affect the Privacy Policy.

[6] These settings are independent of the purpose of use (normal access / emergency access)

Legend:
✓: Indicates an CH:ADR transaction response that contains a permit if right is granted by the patient.
✓*: Indicates an CH:ADR transaction response that contains a permit even if no right was granted by the patient.
✗: Indicates an CH:ADR transaction response that contains a deny.

Table 5: Transaction level CH:ADR responses.

		XDS			XDS-MU	RMU	PPQ		ATC
		ITI-18 Registry Stored Query	ITI-43 Retrieve Document Set	ITI-41 Provide and Register	ITI-57 Update Document Set	ITI-X1 Restricted Update Document Set	PPQ-1 Privacy Policy Feed	PPQ-2 Privacy Policy Retrieve	ITI-81 Retrieve Audit Event
User	Patient / Representative	✓	✓	✓	✓	✓	✓	✓	✓
	Health Care Professional / Assistent	✓	✓	✓	✓	✓	✓[7]	✓[8]	✗
	Technical User	✗	✗	✓	✗	✗	✗	✗	✗
	Document Administrator	✓*	✓*	✗	✓*	✓*	✗	✗	✗
	Policy Administrator	✗	✗	✗	✗	✗	✓*	✓*	✗

[7] Only when patient calls healthcare professional as delegate.
[8] Only when patient calls healthcare professional as delegate.

4.4.1 Detailed Privacy Policy Format definitions

The detailed specifications for the Policy requirements specified within the XACML 2.0 Specification Set MUST be used with the following Swiss precisions.

4.4.1.1 Policy

Refers to data type xacml:PolicyType

Table 6: xacml:PolicyType definitions

Element Name	Card.	Swiss Precision
attributes:		
PolicyId	1..1	See Value-Set in section 4.4.2.1 PolicyId
Version	0..1	Not permitted
RuleCombiningAlgId	1..1	urn:oasis:names:tc:xacml:1.0:rule-combining-algorithm:deny-overrides
Description	0..1	See https://www.bag.admin.ch/epra
PolicyDefaults	0..1	Not permitted
CombinerParameters	0..1	Not permitted
Target	1..1	Must be declared as empty element for embedded Policies in Base Policy Sets for delegation. For Base Policies, see Table 7: xacml:TargetType definitions for Policy.
choice:	1..*	1..1
CombinerParameters	0..1	Not permitted
RuleCombinerParameters	0..1	Not permitted
VariableDefinition	1..1	Not permitted in this choice.
Rule	1..1	See Table 8: xacml:RuleType definitions.
Obligations	0..1	Not permitted

Table 7: xacml:TargetType definitions for Policy

Element Name	Card.	Swiss Precision
Subjects	0..1	Not permitted
Resources	0..1	1..1
Resource	1..*	No further refinement
ResourceMatch	1..*	See Table 9: xacml:ResourceMatchType definitions for Policies.
Actions	0..1	1..1
Action	1..*	No further refinement
ActionMatch	1..*	See Table 12: xacml:ActionMatchType definitions.
Environments	0..1	Not permitted

Table 8: xacml:RuleType definitions

Element Name	Card.	Swiss Precision
attributes:		
RuleId	1..1	GUID defined by the Policy Source
Effect	1..1	See Value-Set in section 4.4.2.3 Rule Effect
Description	0..1	Not permitted
Target	0..1	Not permitted
Condition	0..1	Not permitted for Base Policies [0..0]. Required [1..1] for embedded Policies in Base Policy Sets for delegation, see Table 15: xacml:ConditionType definitions for embedded Policies in Base Policy Sets for delegation.

Table 9: xacml:ResourceMatchType definitions for Policies

Element Name	Card.	Swiss Precision
attributes:		
MatchId	1..1	urn:hl7-org:v3:function:CV-equal
AttributeValue	1..1	See Table 10: xacml:AttributeValueType definitions for ResourceMatch for Policies.
choice:	1..1	No further refinement
ResourceAttributeDesignator	1..1	See Table 13: xacml:AttributeDesignatorType definitions for ResourceMatch for Policies.
AttributeSelector	1..1	Not permitted in this choice.

Table 10: xacml:AttributeValueType definitions for ResourceMatch for Policies

Element Name	Card.	Swiss Precision
attributes:		
xs:anyAttribute	0..1	[1..1] DataType: urn:hl7-org:v3#CV
xs:any	0..1	[1..1] hl7:CodedValue codeSystem="2.16.840.1.113883.6.96" code: Valid value according to Swiss Metadata, table Confidentiality level

Table 11: xacml:AttributeValueType definitions for ActionMatch

Element Name	Card.	Swiss Precision
attributes:		
xs:anyAttribute	0..1	[1..1] DataType: http://www.w3.org/2001/XMLSchema#anyURI
xs:any	0..1	Not permitted
Text	0..1	[1..1] See Value-Set in section 4.4.2.2 Actions

Table 12: xacml:ActionMatchType definitions

Element Name	Card.	Swiss Precision
attributes:		
MatchId	1..1	urn:oasis:names:tc:xacml:1.0:function:anyURI-equal
AttributeValue	0..1	Not permitted
choice:	0..1	Not permitted
ActionAttributeDesignator	0..1	[1..1] See Table 14: xacml:AttributeDesignatorType definitions for ActionMatch
AttributeSelector	0..1	Not permitted

Table 13: xacml:AttributeDesignatorType definitions for ResourceMatch for Policies

Element Name	Card.	Swiss Precision
attributes:		
AttributeId	1..1	urn:ihe:iti:xds-b:2007:confidentiality-code
DataType	1..1	urn:hl7-org:v3#CV
Issuer	0..1	Not permitted
MustBePresent	0..1	Not permitted

Table 14: xacml:AttributeDesignatorType definitions for ActionMatch

Element Name	Card.	Swiss Precision
attributes:		
AttributeId	1..1	urn:oasis:names:tc:xacml:1.0:action:action-id
DataType	1..1	http://www.w3.org/2001/XMLSchema#anyURI
Issuer	0..1	Not permitted
MustBePresent	0..1	Not permitted

Table 15: xacml:ConditionType definitions for embedded Policies in Base Policy Sets for delegation

Element Name	Card.	Swiss Precision
Apply	1..1	Ensure that there is the correct access level policySet referenced
attributes:		
FunctionId	1..1	urn:oasis:names:tc:xacml:2.0:function:anyURI-regexp-match
AttributeValue	1..1	No further refinement
attributes:		
DataType	1..1	http://www.w3.org/2001/XMLSchema#string
text	1..1	For normal access levels: (urn:e-health-suisse:2015:policies:access-level:)(normal).* For normal or restricted access levels: (urn:e-health-suisse:2015:policies:access-level:)(normal|restricted).*
Apply	1..1	Ensure that there is one policySet referenced
attributes:		
FunctionId	1..1	urn:oasis:names:tc:xacml:1.0:function:anyURI-one-and-only
ResourceAttributeDesignator	1..1	No further refinement
attributes:		
DataType	1..1	http://www.w3.org/2001/XMLSchema#anyURI
AttributeId	1..1	urn:e-health-suisse:2015:policy-attributes:referenced-policy-set

4.4.1.2 PolicySet

Refers to data type xacml:PolicySetType

Table 16: xacml:PolicySetType definitions

Element Name	Card.	Swiss Precision
attributes:		
PolicySetId	1..1	See Value-Set in section 4.4.2.4 PolicySetId
Version	0..1	Not permitted
PolicyCombiningAlgId	1..1	urn:oasis:names:tc:xacml:1.0:policy-combining-algorithm:deny-overrides
Description	0..1	See https://www.bag.admin.ch/epra
PolicySetDefaults	0..1	Not permitted
Target	1..1	See Table 17: xacml:TargetType definitions for *PolicySet*
choice:	0..*	No further refinement
PolicySet	1..1	Not permitted in this choice.
Policy	1..1	Required for embedded Policies in Base Policy Sets for delegation, see section 4.4.1.1 Policy. Not permitted for other PolicySets.
PolicySetIdReference	1..1	See Table 18: xacml:IdReferenceType definitions
PolicyIdReference	1..1	See Table 19: xacml:IdReferenceType definitions for Policies
CombinerParameters	1..1	Not permitted in this choice.
PolicyCombinerParameters	1..1	Not permitted in this choice.
PolicySetCombinerParameters	1..1	Not permitted in this choice.
Obligations	0..1	Not permitted

Table 17: xacml:TargetType definitions for PolicySet

Element Name	Card.	Swiss Precision
Subjects	0..1	Required [1..1] for EPR Setup Policy Sets (except for write permissions) and User Assignment Policy Sets. Not permitted for other PolicySets [0..0].
Subject	1..*	No further refinement
SubjectMatch	1..*	Required for EPR Setup Policy Sets (except for write permissions) and User Assignment Policy Sets, see Table 20: xacml:SubjectMatchType definitions.
Resources	0..1	Required [1..1] for EPR Setup Policy Sets and User Assignment Policy Sets. Not permitted for other PolicySets [0..0].
Resource	1..*	No further refinement
ResourceMatch	1..*	Required for EPR Setup Policy Sets and User Assignment Policy Sets, see Table 21: xacml:ResourceMatchType definitions for PolicySets.
Actions	0..1	Not permitted
Environments	0..1	Required [1..1] for User Assignment PolicySets. Not permitted for other PolicySets [0..0].
Environment	1..*	No further refinement
EnvironmentMatch	1..*	See Table 24: xacml:EnvironmentMatchType definitions.

Table 18: xacml:IdReferenceType definitions for PolicySets

Element Name	Card.	Swiss Precision
attributes:		
Version	0..1	Not permitted
EarliestVersion	0..1	Not permitted
LatestVersion	0..1	Not permitted
text	1..1	See Value-Set in section 4.4.2.4 PolicySetId

Table 19: xacml:IdReferenceType definitions for Policies

Element Name	Card.	Swiss Precision
attributes:		
Version	0..1	Not permitted
EarliestVersion	0..1	Not permitted
LatestVersion	0..1	Not permitted
text	1..1	See Value-Set in section 4.4.2.1 PolicyId

Table 20: xacml:SubjectMatchType definitions

Element Name	Card.	Swiss Precision
attributes:		
MatchId	1..1	For GLN of health professionals: urn:oasis:names:tc:xacml:1.0:function:string-equal According to the EPR SAML 2.0 Assertions Subject/@NameQualifier attribute: urn:oasis:names:tc:xacml:1.0:function:anyURI-equal For EPR-SPID of patients: urn:hl7-org:v3:function:II-match For user roles and purpose of use: urn:hl7-org:v3:function:CV-equal
AttributeValue	1..1	No further refinement.
attributes:		
xs:anyAttribute:	0..1	[1..1] For GLN of health professionals: • For the GLN: DataType: http://www.w3.org/2001/XMLSchema#string • For the URI: DataType: http://www.w3.org/2001/XMLSchema#anyURI For EPR-SPID of patients: DataType: urn:hl7-org:v3#II For user roles: DataType: urn:hl7-org:v3#CV For purpose of use: DataType: urn:hl7-org:v3#CV

Element Name	Card.	Swiss Precision
xs:any	0..1	[1..1] For GLN of health professionals: DataType: Not permitted For EPR-SPID of patients: hl7:InstanceIdentifier @root: 2.16.756.5.30.1.127.3.10.3 @extension: The real EPR-SPID of the patient For user roles: hl7:CodedValue @code: PAT or HCP or ASS or REP @codeSystem: 2.16.756.5.30.1.127.3.10.6 For purpose of use: hl7:CodedValue @code: NORM or EMER @codeSystem: 2.16.756.5.30.1.127.3.10.5
text	0..1	For GLN of health professionals [1..1]: • For the GLN: DataType: The GLN of the health professional • For the URI: DataTape: urn:gs1:gln For EPR-SPID of patients [0..0]: Not permitted For user roles [0..0]: Not permitted For purpose of use [0..0]: Not permitted
choice:	1..1	No further refinement
SubjectAttributeDesignator	1..1	No further refinement
attributes:		
AttributeId	1..1	For GLN of health professionals: • For the GLN: urn:oasis:names:tc:xacml:1.0:subject:subject-id • For the URI: urn:oasis:names:tc:xacml:1.0:subject:subject-id-qualifier For EPR-SPID of patients: urn:oasis:names:tc:xacml:1.0:subject:subject-id For user roles: urn:oasis:names:tc:xacml:2.0:subject:role For purpose of use: urn:oasis:names:tc:xspa:1.0:subject:purposeofuse
DataType	1..1	For GLN of health professionals: • For the GLN: http://www.w3.org/2001/XMLSchema#string • For the URI: http://www.w3.org/2001/XMLSchema#anyURI For EPR-SPID of patients: http://www.w3.org/2001/XMLSchema#string For user roles: urn:hl7-org:v3#CV For purpose of use: urn:hl7-org:v3#CV

Element Name	Card.	Swiss Precision
Issuer	0..1	Not permitted
MustBePresent	0..1	Not permitted
SubjectCategory	0..1	Not permitted
AttributeSelector	1..1	Not permitted in this choice.

Table 21: xacml:ResourceMatchType definitions for PolicySets

Element Name	Card.	Swiss Precision
attributes:		
MatchId	1..1	urn:hl7-org:v3:function:II-equal
AttributeValue	1..1	See Table 22: xacml:AttributeValueType definitions for ResourceMatch for PolicySets
choice:	1..1	No further refinement
ResourceAttributeDesignator	1..1	See Table 23: xacml:AttributeDesignatorType definitions for ResourceMatch for PolicySets
AttributeSelector	1..1	Not permitted in this choice.

Table 22: xacml:AttributeValueType definitions for ResourceMatch for PolicySets

Element Name	Card.	Swiss Precision
attributes:		
xs:anyAttribute	0..1	[1..1] DataType: urn:hl7-org:v3:function:II-equal
xs:any	0..1	[1..1] hl7:InstanceIdentifier @root: 2.16.756.5.30.1.127.3.10.3 @extension: The EPR-SPID of the patient

Table 23: xacml:AttributeDesignatorType definitions for ResourceMatch for PolicySets

Element Name	Card.	Swiss Precision
attributes:		
AttributeId	1..1	urn:e-health-suisse:2015:epr-spid
DataType	1..1	urn:hl7-org:v3#II
Issuer	0..1	Not permitted
MustBePresent	0..1	Not permitted

Table 24: xacml:EnvironmentMatchType definitions

Element Name	Card.	Swiss Precision
attributes:		
MatchId	1..1	For Valid from date: urn:oasis:names:tc:xacml:1.0:function:date-greater-than-or-equal For Valid to date: urn:oasis:names:tc:xacml:1.0:function:date-less-than-or-equal
AttributeValue	0..1	[1..1] See Table 25: xacml:AttributeValueType definitions for EnvironMatch for PoliciySets
choice:	0..1	No further refinement
EnvironmentAttributeDesignator	0..1	[1..1] See Table 26: xacml:AttributeDesignatorType definitions for EnvironmentAttributeDesignator
AttributeSelector	0..1	Not permitted

Table 25: xacml:AttributeValueType definitions for EnvironMatch for PoliciySets

Element Name	Card.	Swiss Precision
attributes:		
xs:anyAttribute	0..1	[1..1] DataType: http://www.w3.org/2001/XMLSchema#date
xs:any	0..1	Not permitted
text	0..1	[1..1] Timestamp reflecting the Valid from / Valid to date Format: According to the W3C XSD Date Data Type. UTC time is required. Timezones are not permitted. Use offset from the UTC time.

Table 26: xacml:AttributeDesignatorType definitions for EnvironmentAttributeDesignator

Element Name	Card.	Swiss Precision
attributes:		
AttributeId	1..1	urn:oasis:names:tc:xacml:1.0:environment:current-date
DataType	1..1	http://www.w3.org/2001/XMLSchema#date
Issuer	0..1	Not permitted
MustBePresent	0..1	Not permitted

4.4.2 Value-Sets

4.4.2.1 PolicyId

The following PolicyId values are permitted:

- urn:e-health-suisse:2015:policies:permit-reading-normal
- urn:e-health-suisse:2015:policies:permit-reading-restricted
- urn:e-health-suisse:2015:policies:permit-reading-secret
- urn:e-health-suisse:2015:policies:permit-writing-normal
- urn:e-health-suisse:2015:policies:permit-writing-restricted
- urn:e-health-suisse:2015:policies:permit-writing-secret
- urn:e-health-suisse:2015:policies:full-policy-administration
- urn:e-health-suisse:2015:policies:deny-all
- urn:e-health-suisse:2015:policies:delegation-up-to-normal

4.4.2.2 Actions

The following Action values are permitted:

- Reading:
  - urn:ihe:iti:2007:RegistryStoredQuery
  - urn:ihe:iti:2007:RetrieveDocumentSet
  - urn:ihe:iti:2007:CrossGatewayQuery
  - urn:ihe:iti:2007:CrossGatewayRetrieve
  - urn:ihe:iti:2011:CrossGatewayFetch
- Writing:
  - urn:ihe:iti:2007:RegisterDocumentSet-b
  - urn:ihe:iti:2007:ProvideAndRegisterDocumentSet-b
- Policy administration:
  - urn:e-health-suisse:2015:policy-administration:PolicyQuery
  - urn:e-health-suisse:2015:policy-administration:AddPolicy
  - urn:e-health-suisse:2015:policy-administration:UpdatePolicy
  - urn:e-health-suisse:2015:policy-administration:DeletePolicy

4.4.2.3 Rule Effect

The following Rule Effect values are permitted:

- Permit
- Deny

4.4.2.4 PolicySetId

The following PolicySetId values are permitted:

- urn:uuid:<UUID> (patient specific policy stack)
- urn:e-health-suisse:2015:policies:access-level:normal
- urn:e-health-suisse:2015:policies:access-level:restricted
- urn:e-health-suisse:2015:policies:access-level:delegation-and-restricted
- urn:e-health-suisse:2015:policies:access-level:delegation-and-normal
- urn:e-health-suisse:2015:policies:access-level:full
- urn:e-health-suisse:2015:policies:provide-level:normal
- urn:e-health-suisse:2015:policies:provide-level:restricted
- urn:e-health-suisse:2015:policies:exclusion-list

5 Appendix

5.1 Figures

5.2 Tables