



RS 816.111

Complemento 2.3 all'allegato 5 dell'ordinanza del DFI del 22 marzo 2017 sulla cartella informatizzata del paziente

Profili d'integrazione nazionale secondo l'articolo 5 capoverso 1 lettera c OCIP-DFI

Community Portal Index (CH:CPI)

Complemento 2.3 all'allegato 5 OCIP-DFI : Adegualiamenti nazionali

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Table of contents

1	Introduction	3
2	Volume 1 – Integration Profile	4
2.1	Overview.....	4
2.2	Community Portal Index (CH:CPI)	4
2.2.1	Motivation.....	4
2.2.2	Objectives and Constraints.....	4
2.2.3	Actors / Transactions	5
2.2.4	Dependencies among Integration Profiles.....	5
3	Volume 2 – Transactions	6
3.1	Community Portal Index (CH:CPI)	6
3.1.1	Scope.....	6
3.1.2	Referenced Standards.....	6
3.1.3	Interaction Diagram	6
3.1.4	Community Information Query (CH:CIQ) Request	6
3.1.5	Community Information Query (CH:CIQ) Response	8
3.1.6	Community Information Delta Download (CH:CIDD) Request	12
3.1.7	Community Information Delta Download (CH:CIDD) Response	13
3.1.8	Security Considerations.....	16
3.1.9	Audit Record Considerations	16
4	Volume 3 – Content Profile	20
4.1	Community Information Format.....	20
4.1.1	Scope.....	20
4.1.2	Referenced Standards.....	20
4.1.3	Detailed CH:CPI Format definitions.....	20
4.1.4	Value sets	29
5	Appendix	30
5.1	Appendix A – Community Information Query schema (DSMLv2.xsd)	30
5.2	Appendix B – Community Information Delta Download schema (CIDD.xsd)	30
5.3	Appendix C – CH:CPI Webservice (WSDL).....	30
6	List of figures.....	31
7	List of tables.....	31

1 Introduction

Il presente documento è stato creato per adempiere i disciplinamenti svizzeri dell'ordinanza sulla cartella informatizzata del paziente (OCIP; RS 816.11). L'OCIP e l'OCIP-DFI (RS 816.111) sono pubblicate nella Raccolta ufficiale (in italiano, francese e tedesco)¹.

La cartella informatizzata del paziente (CIP) si basa su un sistema che prevede più comunità IHE XDS, in cui il paziente non accorda solo il consenso per l'apertura e l'utilizzo della CIP, ma stabilisce esplicitamente anche regole per l'accesso tramite un portale per i pazienti.

L'architettura di questo sistema costituisce dunque un'area riservata CIP a livello svizzero e tutte le comunità (di riferimento) partecipanti devono avere accesso a un indice affidabile di un partner certificato.

Il presente documento specifica il profilo d'integrazione nazionale corrispondente, denominato «Community Portal Index (CH:CPI)». Al momento, contiene solo informazioni sulle comunità (di riferimento), poiché i portali attualmente non fanno ancora parte delle CIP svizzere. I portali saranno integrati in un secondo momento.

This document fulfils the Swiss regulations of the Ordinance on the Electronic Patient Record (EPRO, SR 816.11). The EPRO and the EPRO-FDHA (SR 816.111) are published in Official Compilation of Federal Legislation (available in German, French and Italian)¹.

The Swiss Electronic Patient 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 architecture of this system builds therefore a Swiss EPR circle of trust and all participating communities need to have access to a trustworthy index of certified partners.

The present document specifies the corresponding national integration profile, called "Community Portal Index (CH:CPI)". It currently contains only information about communities, as portals are not currently part of the Swiss EPR. Portals are intended to be integrated later.

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

2 Volume 1 – Integration Profile

2.1 Overview

The **Community Portal Index (CH:CPI)** is an index containing all information about certified (reference) communities and their endpoints according to the Federal Act on the Electronic Patient Record (EPRA). The CH:CPI-Service is one of the central services provided by the Federal Office of Public Health (FOPH) and the FOPH is also responsible for the content of the CH:CPI.

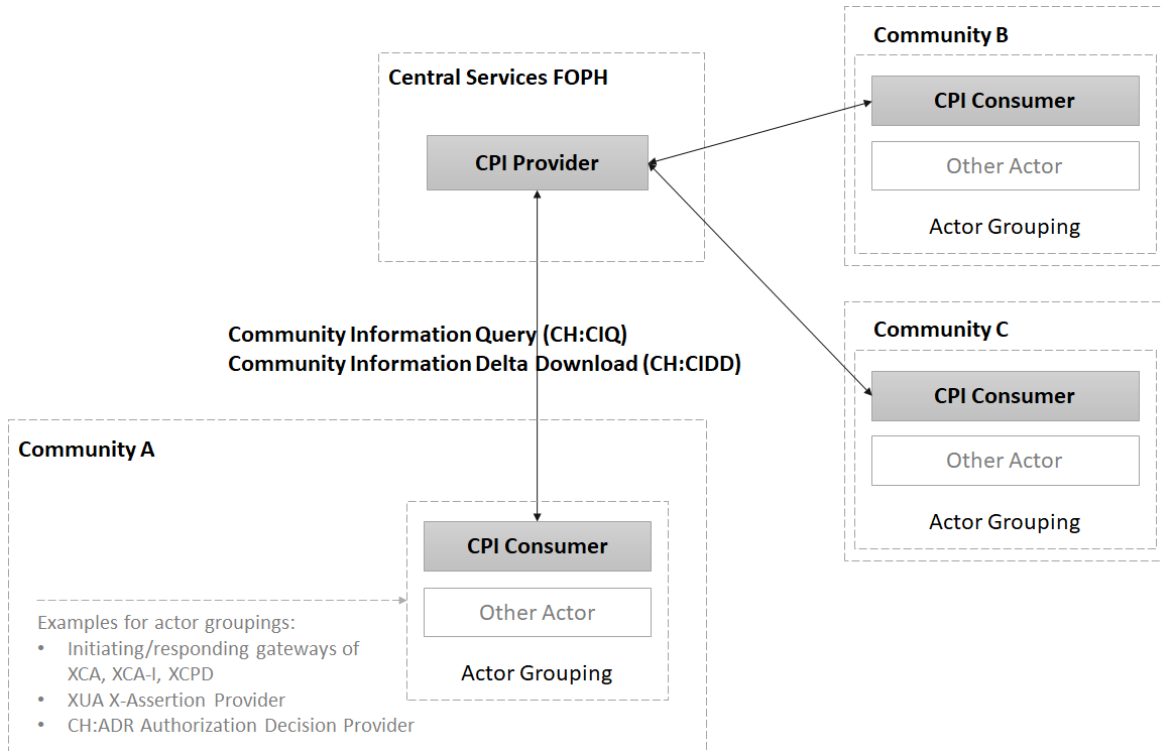


Figure 1: CH:CPI Actors within the Swiss EPR circle of trust

2.2 Community Portal Index (CH:CPI)

This profile defines functionalities for the Swiss EPR circle of trust in order to provide a trustworthy list of certified communities and reference communities within the Swiss EPR circle of trust. This list also contains information about relevant endpoints of the certified (reference-)communities.

In other words, the content of the CH:CPI is the binding endpoint configuration list and therefore allows the trustworthy cross-community addressing among the certified Swiss EPR participants.

2.2.1 Motivation

The Swiss EPR is based on multiple integration profiles (IHE Profiles and national profiles) that can be split in community internal profiles and cross-community profiles. Using the CH:CPI, all communities, reference communities as well as the central services get trustworthy connected. The productive CH:CPI is for security reasons only accessible by certified communities and the FOPH administrators.

2.2.2 Objectives and Constraints

The objective of the CH:CPI Profile is the definition of a mechanism to request the endpoint configurations within the Swiss EPR circle of trust. The defined mechanism follows the IHE HPD profile², as both profiles follow the same communication requirements but different content.

² See Amendment 1 of Annex 5 EPRO-FDHA, section 1.11.

2.2.3

Actors / Transactions

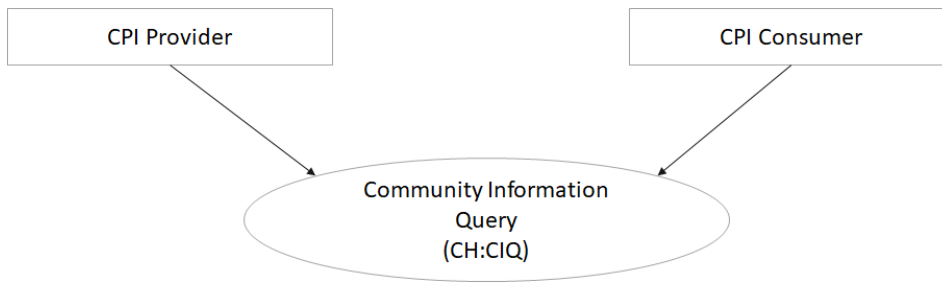


Figure 2: CH:CPI Actors for Community Information Query (CH:CIQ)

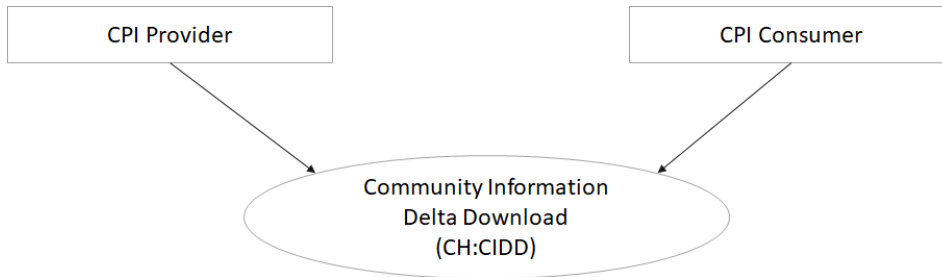


Figure 3: CH:CPI Actors for Community Information Delta Download (CH:CIDD)

Actor	Role
CH:CPI Consumer	This actor queries for information of the CH:CPI by either a query of the full content or a query for a delta download.
CH:CPI Provider	This actor provides information of the CH:CPI.

Table 1: Actor Roles of the CH:CPI profile

Actor	Transaction	Opt.	Reference
CH:CPI Consumer	Community Information Query [CH:CIQ]	R	3.1.4
	Community Information Delta Download [CH:CIDD]	O	3.1.6
CH:CPI Provider	Community Information Query [CH:CIQ]	R	3.1.5
	Community Information Delta Download [CH:CIDD]	R	3.1.70

Table 2: Actors and Transactions of the CH:CPI profile

2.2.4 Dependencies among Integration Profiles

Each CH:CPI Actor shall be grouped with the following actors: Secure Node or Secure Application (IHE ATNA) and with Time Client (IHE CT) including the corresponding Swiss National Extensions.

3 Volume 2 – Transactions

3.1 Community Portal Index (CH:CPI)

3.1.1 Scope

The CH:CPI transactions are used by the technical configuration component of a community to query the CH:CPI Provider in order to get information of the CH:CPI. This information allows a community to get the necessary information for communication with all certified communities within the Swiss EPR circle of trust. The CH:CPI contains names, endpoints and certificates that are used for setting up trustworthy communication links and other information such as contact data.

3.1.2 Referenced Standards

- a. Health informatics - Directory services for health care providers, subjects of care, and other entities (ISO/TS 21091)
- b. IETF LDAP v3 [RFC 2068, RFC 2251, RFC 2256, RFC 2985, RFC 2798, RFC 2985, 1045 RFC 5646, RFC 4512, RFC 4517]
- c. OASIS Directory Services Markup Language (DSML) v2.0:
<https://www.oasis-open.org/committees/dsml/docs/DSMLv2.xsd>
- d. W3C SOAP Version 1.2
<https://www.w3.org/TR/soap12/>

3.1.3 Interaction Diagram

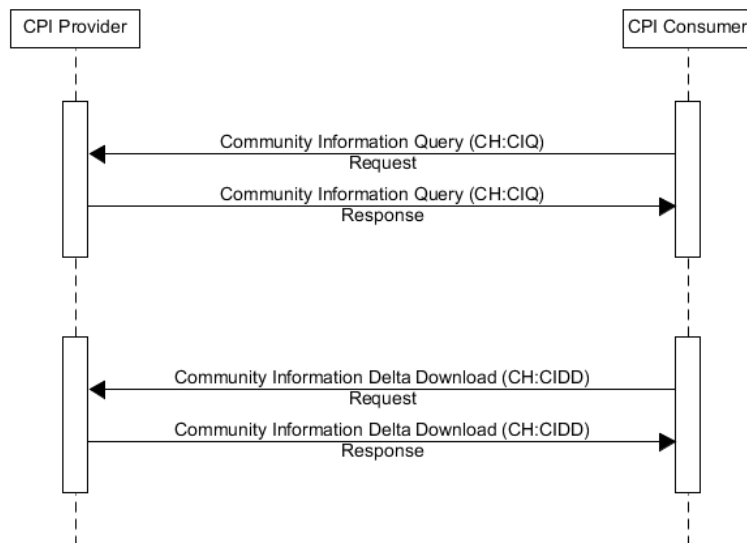


Figure 4: CH:CPI Interaction Diagram

3.1.4 Community Information Query (CH:CIQ) Request

3.1.4.1 Trigger Events

This request message is sent each time the CH:CPI Consumer needs a set of the currently available community information of the CH:CPI.

3.1.4.2 Message Semantics

The CH:CIQ Request contains a SOAP based DSMLv2 batchRequest message to express a query. See also Appendix A – Community Information Query schema (DSMLv2.xsd)

The SOAP operation namespace MUST read: **ch:admin:bag:epr:CPI:2017**

The query operation for looking up entries in the CH:CPI MUST be done through the use of searchRequest operation. The request SHALL be valid according to the DSML v2 schema. The CH:CPI Provider MUST support all LDAP standard search filters. This transaction MUST not limit any restriction on the search scope, time limit or list of attributes. The size limit MUST be set to max. 1'000 result entries.

The following table indicates the object classes that can be queried.

Type	Element	LDAP objectClass
Community	Community	CHCommunity
Endpoint	XCA Initiating Gateway	CHXcalnitGw
Endpoint	XCA Responding Gateway	CHXcaRespGW
Endpoint	XCPD Initiating Gateway	CHXcpdInitGw
Endpoint	XCPD Responding Gateway	CHXcpdRespGw
Endpoint	Authorization Decision Consumer	CHAUdecCons
Endpoint	Authorization Decision Provider	CHAUdecProv
Endpoint	X-Assertion Provider	CHAssertProv
Endpoint	CH:ATC Patient Audit Record Repository	CHAudRecRep
Endpoint	CH:ATC Patient Audit Consumer	CHPatAudCons
Endpoint	RMU Initiating Gateway	CHRmulnitGw
Endpoint	RMU Responding Gateway	CHRmuResGw

Table 3: LDAP base objects

The following example requests the full CH:CPI information:

```
<soap:Envelope xmlns:soap=http://www.w3.org/2003/05/soap-envelope
  xmlns:a=http://www.w3.org/2005/08/addressing
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Header>
    <a:Action soap:mustUnderstand="1">
      urn:ch:admin:bag:epr:2017:CommunityQuery
    </a:Action>
    <a:To soap:mustUnderstand="1">YourServiceEndpointURL</a:To>
  </soap:Header>
  <soap:Body>
    <batchRequest xmlns="urn:oasis:names:tc:DSML:2:0:core">
      <searchRequest dn="DC=CPI,O=BAG,C=CH" scope="wholeSubtree"
        derefAliases="neverDerefAliases">
        <filter>
          <present name="objectClass"/>
        </filter>
      </searchRequest>
    </batchRequest>
  </soap:Body>
</soap:Envelope>
```

Figure 5: CH:CIQ Request for full CH:CPI information

3.1.4.3 Expected Actions

The CH:CPI Provider MUST validate the authenticity of the CH:CPI Consumer by check-ing the TLS certificate, as it is under no circumstances allowed to respond to a request from a source that is not part of the CH:CPI itself. This MUST be done using the IHE ATNA Authenticate Node [ITI-19] transaction. Each node authentication failure (e.g. invalid certificate) MUST trigger an IHE ATNA "Security Alert" Audit Event.

For legitimate requests, the CH:CPI Provider responds using the Community Information Query (CH:CIQ) Response message (see 3.1.5). For all other requests, the transaction MUST fail (see 3.1.8).

3.1.5 Community Information Query (CH:CIQ) Response

3.1.5.1 Trigger Events

This response message is sent each time the CH:CPI Provider receives a CH:CIQ Request providing a valid certificate. The response either contains all entries that correspond to the searchRequest operation sent by the CH:CPI Consumer or in case of errors, the corresponding error message (SOAP fault or DSML ErrorResponse).

3.1.5.2 Message Semantics

3.1.5.2.1 SOAP fault

The CH:CIQ Response contains a SOAP fault in case of an invalid SOAP request.

The following example message shows a SOAP fault caused by an invalid SOAP header in the request:

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope">
  <s:Body>
    <s:Fault>
      <s:Code>
        <s:Value>s:Sender</s:Value>
      </s:Code>
      <s:Reason>
        <s:Text xml:lang="en-US">Unexpected internal server
error</s:Text>
      </s:Reason>
    </s:Fault>
  </s:Body>
</s:Envelope>
```

Figure 6: Sample CH:CIQ Response to an invalid SOAP header in the request

The CH:CIQ Response contains a SOAP fault in any case of an invalid SOAP body. I.e. when the DSML v2 XML schema is violated.

The following example message shows a SOAP fault caused by an invalid SOAP body in the request:

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope">
  <s:Body>
    <s:Fault>
      <s:Code>
        <s:Value>s:Sender</s:Value>
        <s:Subcode>
          <s:Value xmlns:a="urn:ch:admin:bag:epr:2017">
            a:XML_SCHEMA_VIOLATION
          </s:Value>
        </s:Subcode>
      </s:Code>
      <s:Reason>
        <s:Text xml:lang="en-US">[Explanation of the schema
violation]</s:Text>
      </s:Reason>
    </s:Fault>
  </s:Body>
</s:Envelope>
```

Figure 7: Sample CH:CIQ Response to an invalid SOAP body in the request

3.1.5.2.2 DSML ErrorResponse

The CH:CIQ Response contains a SOAP based DSMLv2 batchResponse message of errorResponse element type to send a response for an invalid searchRequest. See also Appendix A – Community Information Query schema (DSMLv2.xsd).

The following example message shows a DSML error response caused by an invalid DSML batchRequest:

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">
      urn:ch:admin:bag:epr:2017:CommunityQueryResponse
    </a:Action>
  </s:Header>
  <s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <batchResponse requestID=""
xmlns="urn:oasis:names:tc:DSML:2:0:core">
      <errorResponse requestID="" type="malformedRequest"/>
    </batchResponse>
  </s:Body>
</s:Envelope>
```

Figure 8: Sample CH:CIQ Response to an invalid DSML batchRequest

3.1.5.2.3 DSML SearchResponse

The CH:CIQ Response contains a SOAP based DSMLv2 batchResponse message of searchResponse element type to send a response for a valid searchRequest. See also Appendix A – Community Information Query schema (DSMLv2.xsd).

The CH:CIQ Response MUST contain the batchRequest and searchRequest requestID attributes of the corresponding CH:CIQ Request.

The attribute "shcStatus" of a community MUST be respected. It contains either "active" or "inactive". Only community elements having "shcStatus=active" are to be considered as part of the Swiss EPR circle of trust. Their configuration data is up to date. Community elements having "shcStatus=inactive" are to be considered as outside of the Swiss EPR circle of trust. They are therefore no longer trustworthy and all communication from and to these communities is forbidden.

The relationships between communities and their endpoints can be looked up by querying the following attributes of CHCommunity object classes:

- a. shcXcalniGW: IHE XCA Initiating Gateways
- b. shcXcaRespGW: IHE XCA Responding Gateways
- c. shcXcpdIniGW: IHE XCPD Initiating Gateways
- d. shcXcpdResGW: IHE XCPD Responding Gateways
- e. shcAuDecProv: CH:ADR Authorization Decision Provider
- f. shcAuDecCons: CH:ADR Authorization Decision Consumer
- g. shcAsPrlsCrt: IHE XUA X-Assertion Provider
- h. shcAudRecRep: CH:ATC Patient Audit Record Repository
- i. shcPatAudCons: CH:ATC Patient Audit Consumer
- j. shcRmulnitGW: IHE RMU Initiating Gateway
- k. shcRmuResGW: IHE RMU Responding Gateway

The following example message shows a DSML search response (fragment only):

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">
      urn:ch:admin:bag:epr:2017:CommunityQueryResponse
    </a:Action>
  </s:Header>
  <s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <batchResponse requestID=""
xmlns="urn:oasis:names:tc:DSML:2:0:core">
      <searchResponse requestID="test1">

        <searchResultEntry
dn="uid=CommunityA,OU=CHCommunity,DC=CPI,O=BAG,C=ch">
          <attr name="shcDisplayName">
            <value>Com-A</value>
          </attr>
          <attr name="shcIssuerName">
            <value>ComA</value>
          </attr>
          <attr name="objectClass">
            <value>top</value>
            <value>CHCommunity</value>
          </attr>
          <attr name="shcStatus">
            <value>Active</value>
          </attr>
          <!-- further attr elements ommited -->
        </searchResultEntry>
        <!-- further searchResultEntry elements ommited -->
      </searchResultEntry>
      <searchResultDone>
        <resultCode code="0"/>
      </searchResultDone>
    </searchResponse>
  </batchResponse>
</s:Body>
</s:Envelope>
```

Figure 9: Sample CH:CIQ Response (fragment only)

3.1.5.3 Expected Actions

The CH:CPI Consumer MUST validate the authenticity of the CH:CPI Provider by check-ing the TLS certificate, as it is under no circumstances allowed to process responses from a source that is not the CH:CPI Provider itself. This MUST be done using the IHE ATNA Authenticate Node [ITI-19] transaction. Each node authentication failure (e.g. invalid certificate) MUST trigger an IHE ATNA "Security Alert" Audit Event.

For legitimate responses, the CH:CPI Consumer processes the content of the response (see 4.1). For all other requests, the response MUST be discarded (see 3.1.8).

3.1.6 Community Information Delta Download (CH:CIDD) Request

3.1.6.1 Trigger Events

This request message is sent each time the CH:CPI Consumer needs a set of modified community information entries in the CH:CPI. Therefore, this request message allows to specify a time interval. The CH:CPI Consumer expects therefore a response containing all entries on the CH:CPI that have been updated within this time span.

3.1.6.2 Message Semantics

The CH:CIDD Request contains a SOAP based downloadRequest message to express a delta download query. See also Appendix B – Community Information Delta Download schema (CIDD.xsd).

The SOAP operation namespace MUST read: **ch:admin:bag:epr:CPI:2017**

The delta download query operation for looking up entries in the CH:CPI MUST be done through the use of downloadRequest operation. The following table describes the request parameters.

Parameter name	Opt.	Description
fromDate	R	Lower boundary (including beginning) of the desired time span according to W3C dateTime datatype (YYYY-MM-DDThh:mm:ss.sTZD).
toDate	O	Upper boundary (including end) of the desired time span according to W3C dateTime datatype (YYYY-MM-DDThh:mm:ss.sTZD). If not provided, the current serverside timestamp is used (see Annex 2 EPRO-FDHA, chapter 2.9.30).
requestID	O	An optional requestID according to W3C string data type that allows the association of the request in the response.

Table 4: CH:CIDD request parameters

The following example requests all CH:CPI information updates in January 2018:

```
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
  xmlns:a="http://www.w3.org/2005/08/addressing"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Header>
    <a:Action soap:mustUnderstand="1">
      urn:ch:admin:bag:epr:2017:CommunityDownload
    </a:Action>
    <a:To soap:mustUnderstand="1">YourServiceEndpointURL</a:To>
  </soap:Header>
  <soap:Body>
    <downloadRequest xmlns="urn:ch:admin:bag:epr:2017"
      fromDate="2018-01-01T00:00:00.000Z"
      toDate="2018-01-31T23:59:59.999Z" />
  </soap:Body>
</soap:Envelope>
```

Figure 10: CH:CIDD Request for information modified within a given time span

3.1.6.3 Expected Actions

The CH:CPI Provider MUST validate the authenticity of the CH:CPI Consumer by check-ing the TLS certificate, as it is under no circumstances allowed to respond to a request from a source that is not part of the CH:CPI itself. This MUST be done using the IHE ATNA Authenticate Node [ITI-19] transaction. Each node authentication failure (e.g. invalid certificate) MUST trigger an IHE ATNA “Security Alert” Audit Event.

For legitimate requests, the CH:CPI Provider responds using the Community Information Delta Download (CH:CIDD) Response message (see 3.1.7). For all other requests, the transaction MUST fail (see 3.1.8).

3.1.7 Community Information Delta Download (CH:CIDD) Response

3.1.7.1 Trigger Events

This response message is sent each time the CH:CPI Provider receives a CH:CIDD Request providing a valid certificate. It is the response either containing all entries that correspond to the download-Request operation sent by the CH:CPI Consumer or in case of errors, the corresponding error message (SOAP fault or DSML ErrorResponse).

3.1.7.2 Message Semantics

3.1.7.2.1 SOAP fault

The CH:CIDD Response contains a SOAP fault in case of an invalid SOAP or download request.

For an example to an invalid SOAP request, see Figure 6. The following example message shows a SOAP fault caused by a missing downloadRequest:

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
            xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">
      http://www.w3.org/2005/08/addressing/soap/fault
    </a:Action>
  </s:Header>
  <s:Body>
    <s:Fault>
      <s:Code>
        <s:Value>s:Sender</s:Value>
      </s:Code>
      <s:Reason>
        <s:Text xml:lang="en-US">
          The delta download request is not specified.
        </s:Text>
      </s:Reason>
    </s:Fault>
  </s:Body>
</s:Envelope>
```

Figure 11: Sample CH:CIDD Response to an invalid SOAP header in the request

The CH:CIDD Response contains a SOAP fault in any case of an invalid SOAP body. I.e. when the DSML v2 XML schema is violated.

For an example message containing a SOAP fault caused by an invalid SOAP body in the request, see Figure 7.

3.1.7.2.2 DSML ErrorResponse

The CH:CIDD Response MUST NOT use SOAP based DSMLv2 batchResponse message containing the errorResponse element. SOAP faults MUST be used, instead (see 3.1.7.2.1).

3.1.7.2.3 CH:CIDD DownloadResponse

The CH:CIDD Response contains a SOAP based downloadResponse message of DSMLv2 batchRe-quest element type to send a response for a valid downloadRequest.

See also:

- a. DownloadResponse:
Appendix B – Community Information Delta Download schema (CIDD.xsd).
- b. DSMLv2 batchRequest:
Appendix A – Community Information Query schema (DSMLv2.xsd).

The CH:CIDD Response MUST contain the requestID to associate it to the corresponding CH:CIDD Request.

The CH:CPI Provider MUST ensure that the following main elements are mutually exclusive within the CH:CIDD Response.

Element name	Opt.	Description
addRequest	O	Indicates a new CH:CPI information entry and delivers full CH:CPI information for this element. It contains the same elements as described for CH:CIQ Response. See 3.1.5.2.3 and 4.1.3.
modifyRequest	O	Indicates an updated CH:CPI information entry and delivers the changed information, only. This allows the CH:CPI Consumer to update its information base. It contains a <i>modification</i> element having the <i>name</i> attribute set with the name of the changed CH:CPI information (e.g. "shcGatewayCert") and the <i>operation</i> attribute is set to "replace". The modification element contains two child elements as instances of the <i>value</i> element: <ul style="list-style-type: none"> - The first instance contains the value before the update - The second instance contains the value after the update
modDNRequest	O	Indicates the change of the distinguished name of a CH:CPI entry.
delRequest	O	Indicates the removal of a previous CH:CPI information entry. It does not contain any further elements. The deleted entry is identified by the dn attribute.

Table 5: CH:CIDD response main elements

The following example message shows a CH:CIDD Response (fragment only):

```

<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <s:Header>
    <a:Action s:mustUnderstand="1">
      urn:ch:admin:bag:epr:2017:CommunityDownloadResponse
    </a:Action>
  </s:Header>
  <s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <downloadResponse requestID="test2"
xmlns="urn:ch:admin:bag:epr:2017">
      <batchRequest onError="resume"
xmlns="urn:oasis:names:tc:DSML:2:0:core">
        <addRequest requestID="2017-12-11T11:55:31.7643345Z"

dn="uid=newEntry,OU=CHCommunity,DC=CPI,O=BAG,C=ch">
          <!-- details ommited -->
        </addRequest>
      </batchRequest>
      <batchRequest onError="resume"
xmlns="urn:oasis:names:tc:DSML:2:0:core">
        <addRequest requestID="2017-12-12T08:09:52.7154691Z"
          dn="uid=newEntry:XcaInitiatingGateway,
            OU=CHEndpoint,DC=CPI,O=BAG,C=ch">
          <!-- details ommited -->
        </addRequest>
        <modifyRequest requestID="2017-12-12T08:09:52.7464564Z"

dn="uid=existCmty1,OU=CHCommunity,DC=CPI,O=BAG,C=ch">
          <!-- details ommited -->
        </modifyRequest>
      </batchRequest>
      <batchRequest onError="resume"
xmlns="urn:oasis:names:tc:DSML:2:0:core">
        <modifyRequest requestID="2017-12-12T08:10:19.2713348Z"

dn="uid=existCmty2,OU=CHCommunity,DC=CPI,O=BAG,C=ch">
          <!-- details ommited -->
        </modifyRequest>
      </batchRequest>
      <batchRequest onError="resume"
xmlns="urn:oasis:names:tc:DSML:2:0:core">
        <delRequest requestID="2017-12-12T13:35:53.2923242Z"
          dn="uid=existCmty3:XcaInitiatingGateway,
            OU=CHEndpoint,DC=CPI,O=BAG,C=ch"/>
      </batchRequest>
    </downloadResponse>
  </s:Body>
</s:Envelope>

```

Figure 12: Sample CH:CIDD Response (fragment only)

3.1.7.3 Expected Actions

The expected actions for CH:CIDD Response are identical to those of CH:CIQ. See 3.1.5.3.

3.1.8 Security Considerations

The IHE HPD Integration profile is taken as basic for the CH:CPI profile. The CH:CPI profile requires all actors to be grouped with Secure Node or Secure Application implementing the "STX: TLS 1.2 floor using BCP195 Option" defined in the IHE ITI TF-2³, chapter 3.19.6.2.3. The communication requires certificates from the "Swiss Government Root CA II". Beyond this, the CH:CPI profile requires all security considerations from the IHE HPD Integration profile.

3.1.9 Audit Record Considerations

The Actors involved MUST record audit events according to the following audit messages.

3.1.9.1 CH:CPI Provider Audit Messages

3.1.9.1.1 CH:CPI Provider Audit Message for CH:CIQ

Event	Field Name	Value constraints
Event	EventID	EV(000001, BAG, "CH:CIQ")
	EventActionCode	"R" (Read)
	EventDateTime	UTC-Time
	EventOutcomeIndicator	Success 0, Failure 4
	EventTypeCode	EV("CH:CIQ", "CH:EPR Transactions", "Community Information Query")
Source	UserID	Community with prefix (shcIssuerName)
	UsersRequestor	"true"
	RoleIDCode	EV(110153, DCM, "Source")
	NetworkAccessPointTypeCode	"2" for IP address
	NetworkAccessPointID	The IP address
Destination	UserID	SOAP endpoint URI
	AlternativeUserID	The process ID as used within the local operating system in the local system logs
	UsersRequestor	"false"
	RoleIDCode	EV(110152, DCM, "Destination")
	NetworkAccessPointTypeCode	"2" for IP address
	NetworkAccessPointID	The IP address
Audit Source	AuditSourceID	CPI
	AuditEnterpriseSiteID	EPD-AD.BAG.admin.ch
	AuditSourceTypeCode	„4" for Application server process tier in a multi-tier system
Community	ParticipantObjectTypeCode	„2" system object
	ParticipantObjectTypeCodeRole	„24" query
	ParticipantObjectDataLifeCycle	„6" access use
	ParticipantObjectIDTypeCode	EV("CH:CIQ", "CH:EPR Transactions", "Community Information Query")
	ParticipantObjectID	The requestID of the searchRequest
	ParticipantObjectDetail	All CI-attributes of the searchRequest

Table 6: CH:CPI Provider Audit Message for CH:CIQ

³ IHE IT Infrastructure (ITI) Technical Framework, Volume 2, Revision 19.0, June 17, 2022

3.1.9.1.2 CH:CPI Provider Audit Message for CH:CIDD

Event	Field Name	Value constraints
Event	EventID	EV(000006, BAG, "CH:CIDD")
	EventActionCode	"R" (Read)
	EventDateTime	UTC-Time
	EventOutcomeIndicator	Success 0, Failure 4
	EventTypeCode	EV("CH:CIDD", "CH:EPR Transactions", "Community Information Delta Download")
Source	UserID	Community with prefix (shclssuerName)
	UserIsRequestor	"true"
	RoleIDCode	EV(110153, DCM, "Source")
	NetworkAccessPointTypeCode	"2" for IP address
	NetworkAccessPointID	The IP address
Destination	UserID	SOAP endpoint URI
	AlternativeUserID	The process ID as used within the local operating system in the local system logs
	UserIsRequestor	"false"
	RoleIDCode	EV(110152, DCM, "Destination")
	NetworkAccessPointTypeCode	"2" for IP address
	NetworkAccessPointID	The IP address
Audit Source	AuditSourceID	CPI
	AuditEnterpriseSiteID	EPD-AD.BAG.admin.ch
	AuditSourceTypeCode	„4“ for Application server process tier in a multi-tier system
Community	ParticipantObjectTypeCode	„2“ system object
	ParticipantObjectTypeCodeRole	„24“ query
	ParticipantObjectDataLifeCycle	„6“ access or use
	ParticipantObjectIDTypeCode	EV("CH:CIDD", "CH:EPR Transactions", "Community Information Delta Download")
	ParticipantObjectID	The requestID of the downloadRequest
	ParticipantObjectDetail	The CH:CIDD downloadRequest parameters: <ul style="list-style-type: none"> - fromDate - toDate - requestID

Table 7: CH:CPI Provider Audit Message for CH:CIDD

3.1.9.2 CH:CPI Consumer Audit Messages

3.1.9.2.1 CH:CPI Consumer Audit Message for CIQ

Event	Field Name	Value constraints
Event	EventID	EV(000001, BAG, "CH:CIQ")
	EventActionCode	"R" (Read)
	EventDateTime	UTC-Time
	EventOutcomeIndicator	Success 0, Failure 4
	EventTypeCode	EV("CH:CIQ", "CH:EPR Transactions", "Community Information Query")
Source	UserID	The process ID as used within the local operating system in the local system logs.
	UsersRequestor	"true"
	RoleIDCode	EV(110153, DCM, "Source")
	NetworkAccessPointTypeCode	"2" for IP address
	NetworkAccessPointID	The IP address
Destination	UserID	SOAP endpoint URI
	AlternativeUserID	Not specialized
	UsersRequestor	"false"
	RoleIDCode	EV(110152, DCM, "Destination")
	NetworkAccessPointTypeCode	"2" for IP address
	NetworkAccessPointID	The IP address
Audit Source	AuditSourceID	Not specialized
	AuditEnterpriseSiteID	Not specialized
	AuditSourceTypeCode	Not specialized
Consumer	ParticipantObjectTypeCode	„2“ system object
	ParticipantObjectTypeCodeRole	„24“ query
	ParticipantObjectDataLifeCycle	„6“ access use
	ParticipantObjectIDTypeCode	EV("CH:CIQ", "CH:EPR Transactions", "Community Information Query")
	ParticipantObjectID	The requestID of the searchRequest
	ParticipantObjectDetail	All CI-attributes of the searchRequest

Table 8: CH:CPI Consumer Audit Message for CH:CIQ

3.1.9.2.2 CH:CPI Consumer Audit Message for CIDD

Event	Field Name	Value constraints
Event	EventID	EV(000006, BAG, "CH:CIDD")
	EventActionCode	"R" (Read)
	EventDateTime	UTC-Time
	EventOutcomeIndicator	Success 0, Failure 4
	EventTypeCode	EV("CH:CIDD", "CH:EPR Transactions", "Community Information Delta Download")
Source	UserID	The process ID as used within the local operating system in the local system logs.
	UserIsRequestor	"true"
	RoleIDCode	EV(110153, DCM, "Source")
	NetworkAccessPointTypeCode	"2" for IP address
	NetworkAccessPointID	The IP address
Destination	UserID	SOAP endpoint URI
	AlternativeUserID	Not specialized
	UserIsRequestor	"false"
	RoleIDCode	EV(110152, DCM, "Destination")
	NetworkAccessPointTypeCode	"2" for IP address
	NetworkAccessPointID	The IP address
Audit Source	AuditSourceID	Not specialized
	AuditEnterpriseSiteID	Not specialized
	AuditSourceTypeCode	Not specialized
Consumer	ParticipantObjectTypeCode	„2" system object
	ParticipantObjectTypeCodeRole	„24" query
	ParticipantObjectDataLifeCycle	„6" access or use
	ParticipantObjectIDTypeCode	EV("CH:CIDD", "CH:EPR Transactions", "Community Information Delta Download")
	ParticipantObjectID	The requestID of the downloadRequest
	ParticipantObjectDetail	The CH:CIDD downloadRequest parameters: fromDate toDate requestID

Table 9: CH:CPI Consumer Audit Message for CH:CIDD

4 Volume 3 – Content Profile

4.1 Community Information Format

4.1.1 Scope

The CH:CPI requires to express different attributes for a community and its endpoints. As the concept described in Volume 2 follows the IHE HPD profile⁴, CH:CPI is also based on LDAP. This content profile therefore describes the detailed usage of the LDAP structure and attributes for the usage in CH:CPI.

This content profile does not explain the spirit of LDAP but only focuses on the detailed field description.

DSML v2 expresses LDAP requests and responses as XML document fragments. This specification therefore only specifies the usage of DSML v2.

4.1.2 Referenced Standards

OASIS Directory Services Markup Language (DSML) v2.0:

<https://www.oasis-open.org/committees/dsml/docs/DSMLv2.xsd>

4.1.3 Detailed CH:CPI Format definitions

The following illustration shows the LDAP structure for CH:CPI. It is not complete and therefore intended as an overview, only. See sub sections for the detailed attribute lists.

⁴ See Amendment 1 of Annex 5 EPRO-FDHA



Figure 13: CH:CPI LDAP Schema (symbolic representation while incomplete)

4.1.3.1 Conventions

Conventions for the tables in the following sections:

Optionality column (Opt):

- a. O=optional
- b. R=required

Cardinality column (Card):

- c. S=Single-valued
- d. M=Multi-valued

4.1.3.2 Community

Attribute name	Opt.	Card.	Data type	OID	Description
uid	R	S	DirectoryString	0.9.2342.19200300.100.1.1	Community rDN
shcFullName	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.1	Community full name
shcAbbrName	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.2	Community abbreviated name
shcDisplayName	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.3	Community display name
shcLegal	O	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.4	Legal form of the community (see 4.1.4.1)
shcIssuerName	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.15	Community issuer name
shcIdentifier	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.6	Community OID
shcPatIdAssigAu	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.39	Patient ID assigning authority OID
shcAdminContact	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.5	Administrative contact information of the community
shcTechContact	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.7	Technical contact information of the community
shcDPrivContact	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.8	Data privacy contact information of the community
shcCertDate	R	S	GeneralizedTime	2.16.756.5.30.1.127.3.10.4.10	Latest date of community certification according to Annex 2 EPRO-FDHA
shcType	O	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.14	Community type
shcCertIssuer	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.9	Latest certification issuer of the community
shcLanguage	O	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.11	Community main language
shcStatus	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.12	Community status . Only active communities build the Swiss EPR circle of trust!
shcXcaIniGW	O	S	DN	2.16.756.5.30.1.127.3.10.4.18	DN of the community XCA Initiating Gateway element
shcXcaRespGW	O	S	DN	2.16.756.5.30.1.127.3.10.4.20	DN of the community XCA Responding Gateway element
shcXcpdIniGW	O	S	DN	2.16.756.5.30.1.127.3.10.4.22	DN of the community XCPD Initiating Gateway element
shcXcpdResGW	O	S	DN	2.16.756.5.30.1.127.3.10.4.24	DN of the community XCPD Responding Gateway element
shcAuDecProv	O	S	DN	2.16.756.5.30.1.127.3.10.4.26	DN of the community Authorization Decision Provider element
shcAuDecCons	O	S	DN	2.16.756.5.30.1.127.3.10.4.28	DN of the community Authorization Decision Consumer element
shcAsPrIsCrt	O	S	DN	2.16.756.5.30.1.127.3.10.4.30	DN of the community X-Assertion Provider Issuer Certificate element
shcAudRecRep	O	S	DN	2.16.756.5.30.1.127.3.10.4.56	DN of the community CH:ATC Patient Audit Record Repository element
shcPatAudCons	O	S	DN	2.16.756.5.30.1.127.3.10.4.65	DN of the community CH:ATC Patient Audit Consumer element
shcRmulnitGW	O	S	DN	2.16.756.5.30.1.127.3.10.4.58	DN of the community RMU Initiating Gateway element

Attribute name	Opt.	Card.	Data type	OID	Description
shcRmuResGW	O	S	DN	2.16.756.5.30.1.127.3.10.4.60	DN of the community RMU Responding Gateway element

Table 10: CH:CPI content profile definitions for Communities

4.1.3.3 Endpoints

The following definition is valid for all subsequent endpoint types:

- a. Super Class="top"
- b. RDN=<uid>

4.1.3.3.1 XCA Initiating Gateway

OID: 2.16.756.5.30.1.127.3.10.4.32

Attribute name	Opt.	Card.	Data type	OID	Description
uid	R	S	DirectoryString	0.9.2342.19200300.100.1.1	Endpoint rDN. Concatenation rule: CHCommunity.shcIssuerName + "." + XcaInitiatingGateway
shcGatewayName	O	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.41	Gateway name
shcGatewayFqdn	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.42	Gateway FQDN (e.g. gateway.domain.ch)
shcGatewayCert	R	M	OctetString	2.16.756.5.30.1.127.3.10.4.47	List of certificates identifying this endpoint

Table 11: CH:CPI content profile definitions for XCA Initiating Gateways

4.1.3.3.2 XCA Responding Gateway

OID: 2.16.756.5.30.1.127.3.10.4.33

Attribute name	Opt.	Card.	Data type	OID	Description
uid	R	S	DirectoryString	0.9.2342.19200300.100.1.1	Endpoint rDN. Concatenation rule: CHCommunity.shcIssuerName + ":" + XcaRespondingGateway
shcGatewayName	O	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.41	Gateway name
shcGwQryUrl	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.43	Query URL (e.g. gateway.domain.ch/path)
shcGwRetUrl	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.44	Retrieve URL (e.g. gateway.domain.ch/path)
shcGatewayCert	R	M	OctetString	2.16.756.5.30.1.127.3.10.4.47	List of certificates identifying this endpoint

Table 12: CH:CPI content profile definitions for XCA Responding Gateways

4.1.3.3.3 XCPD Initiating Gateway

OID: 2.16.756.5.30.1.127.3.10.4.36

Attribute name	Opt.	Card.	Data type	OID	Description
Uid	R	S	DirectoryString	0.9.2342.19200300.100.1.1	Endpoint rDN. Concatenation rule: CHCommunity.shcIssuerName + ":" XcpdInitiatingGateway
shcGatewayName	O	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.41	Gateway name
shcGatewayFqdn	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.42	Gateway FQDN (e.g. gateway.domain.ch)
shcDeviceId	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.40	Device Id OID
shcGatewayCert	R	M	OctetString	2.16.756.5.30.1.127.3.10.4.47	List of certificates identifying this endpoint

Table 13: CH:CPI content profile definitions for XCPD Initiating Gateways

4.1.3.3.4 XCPD Responding Gateway

OID: 2.16.756.5.30.1.127.3.10.4.37

Attribute name	Opt.	Card.	Data type	OID	Description
uid	R	S	DirectoryString	0.9.2342.19200300.100.1.1	Endpoint rDN. Concatenation rule: CHCommunity.shcIssuerName + ":" + XcpdRespondingGateway
shcGatewayName	O	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.41	Gateway name
shcGwQryUrl	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.43	Query URL (e.g.. gateway.domain.ch/path)
shcDeviceId	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.40	Device Id OID
shcGatewayCert	R	M	OctetString	2.16.756.5.30.1.127.3.10.4.47	List of certificates identifying this endpoint

Table 14: CH:CPI content profile definitions for XCPD Responding Gateways

4.1.3.3.5 Authorization Decision Provider

OID: 2.16.756.5.30.1.127.3.10.4.34

Attribute name	Opt.	Card.	Data type	OID	Description
uid	R	S	DirectoryString	0.9.2342.19200300.100.1.1	Endpoint rDN. Concatenation rule: CHCommunity.shcIssuerName + ":" + AuthorizationDecisionProviderGateway
shcAuthDecName	O	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.49	Endpoint name
shcAuthDecUrl	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.50	Endpoint URL (e.g. gateway.domain.ch/path)
shcAuthDecCert	R	M	OctetString	2.16.756.5.30.1.127.3.10.4.51	List of certificates identifying this endpoint

Table 15: CH:CPI content profile definitions for Authorization Decision Providers

4.1.3.3.6 Authorization Decision Consumer

OID: 2.16.756.5.30.1.127.3.10.4.38

Attribute name	Opt.	Card.	Data type	OID	Description
uid	R	S	DirectoryString	0.9.2342.19200300.100.1.1	Endpoint rDN. Concatenation rule: CHCommunity.shcIssuerName + ":" + AuthorizationDecisionConsumerGateway
shcAuthDecName	O	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.49	Endpoint name
shcAuthDecCert	R	M	OctetString	2.16.756.5.30.1.127.3.10.4.51	List of certificates identifying this endpoint

Table 16: CH:CPI content profile definitions for Authorization Decision Consumers

4.1.3.3.7 X-Assertion Provider

OID: 2.16.756.5.30.1.127.3.10.4.35

Attribute name	Opt.	Card.	Data type	OID	Description
uid	R	S	DirectoryString	0.9.2342.19200300.100.1.1	Endpoint rDN. Concatenation rule: CHCommunity.shcIssuerName + ":" + AssertionProviderIssuerCertificate
shcProviderName	O	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.48	Assertion provider name
shcIssuerCert	R	M	OctetString	2.16.756.5.30.1.127.3.10.4.46	List of certificates identifying this endpoint

Table 17: CH:CPI content profile definitions for X-Assertion Providers

4.1.3.3.8 CH:ATC Patient Audit Record Repository

OID: 2.16.756.5.30.1.127.3.10.4.52

Attribute name	Opt.	Card.	Data type	OID	Description
uid	R	S	DirectoryString	0.9.2342.19200300.100.1.1	Endpoint rDN. Concatenation rule: CHCommunity.shcIssuerName + ":" + AtcPatientAuditRecordRepository
shcRepName	O	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.53	Repository name
shcRepQryUrl	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.54	Repository URL (e.g. atc-repository.domain.ch/path)
shcRepCert	R	M	OctetString	2.16.756.5.30.1.127.3.10.4.55	List of certificates identifying this endpoint

Table 18: CH:CPI content profile definitions for CH:ATC Patient Audit Repositories

4.1.3.3.9 CH:ATC Patient Audit Consumer

OID: 2.16.756.5.30.1.127.3.10.4.66

Attribute name	Opt.	Card.	Data type	OID	Description
uid	R	S	DirectoryString	0.9.2342.19200300.100.1.1	Endpoint rDN. Concatenation rule: CHCommunity.shcIssuerName + ":" + AtcPatientAuditConsumer + optional suffix where "optional suffix" is "- + <number>".
shcAudConsName	O	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.67	CH:ATC Patient Audit Consumer name
shcAudConsCert	R	M	OctetString	2.16.756.5.30.1.127.3.10.4.68	List of certificates identifying this endpoint

Table 19: CH:CPI content profile definitions for CH:ATC Patient Audit Consumers

4.1.3.3.10 RMU Initiating Gateway

OID: 2.16.756.5.30.1.127.3.10.4.62

Attribute name	Opt.	Card.	Data type	OID	Description
Uid	R	S	DirectoryString	0.9.2342.19200300.100.1.1	Endpoint rDN. Concatenation rule: CHCommunity.shcIssuerName + ":" RmuInitiatingGateway
shcGatewayName	O	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.41	Gateway name
shcGatewayFqdn	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.42	Gateway FQDN (e.g. gateway.domain.ch)
shcGatewayCert	R	M	OctetString	2.16.756.5.30.1.127.3.10.4.47	List of certificates identifying this endpoint

Table 20: CH:CPI content profile definitions for RMU Initiating Gateways

4.1.3.3.11 RMU Responding Gateway

OID: 2.16.756.5.30.1.127.3.10.4.63

Attribute name	Opt.	Card.	Data type	OID	Description
uid	R	S	DirectoryString	0.9.2342.19200300.100.1.1	Endpoint rDN. Concatenation rule: CHCommunity.shcIssuerName + ":" + RmuRespondingGateway
shcGatewayName	O	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.41	Gateway name
shcGwUpdUrl	R	S	DirectoryString	2.16.756.5.30.1.127.3.10.4.64	Update URL (e.g.. gateway.domain.ch/path)
shcGatewayCert	R	M	OctetString	2.16.756.5.30.1.127.3.10.4.47	List of certificates identifying this endpoint

Table 21: CH:CPI content profile definitions for RMU Responding Gateways

4.1.4 Value sets

The value sets mentioned in the following subsections are static value sets. All entries of the following value sets are case sensitive.

4.1.4.1 shcLegal

This value set contains the final list of allowed entries describing the legal form of the community.

Code	Description	Group
CompanyLimitedByShares	ge: Aktiengesellschaft / AG fr: société anonyme / SA	Capital companies ge: Kapitalgesellschaften fr: sociétés de capitaux)
PartnershipLimitedByShares	ge: Kommanditaktiengesellschaft / Kommandit-AG fr: société en commandite par actions	
LimitedLiabilityCompany	ge: Gesellschaft mit beschränkter Haftung / GmbH fr: société à responsabilité limitée / Sarl.	
Cooperative	ge: Genossenschaft fr: société cooperative	Other legal forms
Foundation	ge: Stiftung fr: fondation	
Association	ge: Verein fr: Société / association	

Table 22: Value set for shcLegal

4.1.4.2 shcType

This value set contains the final list of allowed entries describing the type of a community.

Code	Description
ReferenceCommunity	ge: Stammgemeinschaft fr: communauté de référence
Community	ge: Gemeinschaft fr: communauté

Table 23: Value set for shcType

4.1.4.3 shcLanguage

This value set contains the final list of allowed entries describing the main language of a community.

Code	Description
de	German
fr	French
it	Italian

Table 24: Value set for shcLanguage

4.1.4.4 shcStatus

This value set contains the final list of allowed entries describing the community status.

Code	Description
Active	Community is part of the Swiss EPR circle of trust.
Inactive	Community is considered as untrusted.

Table 25: Value set for shcStatus

5 Appendix

5.1 Appendix A – Community Information Query schema (DSMLv2.xsd)

The Community Information Query is based on OASIS Directory Services Markup Language (DSML) v2.0. See section “3.1.2 Referenced Standards”.

5.2 Appendix B – Community Information Delta Download schema (CIDD.xsd)

This schema makes use of the OASIS Directory Services Markup Language (DSML) v2.0 schema and defines the following additional elements:

- a. downloadRequest (containing the parameters fromDate, toDate, requestID)
- b. downloadResponse (refers to the DSML batchRequest element).

5.3 Appendix C – CH:CPI Webservice (WSDL)

The CH:CPI Webservice defines the following operations:

- a. CommunityQueryRequest for CH:CIQ
- b. CommunityDownloadRequest for CH:CIDD

6 List of figures

Figure 1: CH:CPI Actors within the Swiss EPR circle of trust	4
Figure 2: CH:CPI Actors for Community Information Query (CH:CIQ)	5
Figure 3: CH:CPI Actors for Community Information Delta Download (CH:CIDD)	5
Figure 4: CH:CPI Interaction Diagram	6
Figure 5: CH:CIQ Request for full CH:CPI information	7
Figure 6: Sample CH:CIQ Response to an invalid SOAP header in the request.....	8
Figure 7: Sample CH:CIQ Response to an invalid SOAP body in the request.....	9
Figure 8: Sample CH:CIQ Response to an invalid DSML batchRequest	9
Figure 9: Sample CH:CIQ Response (fragment only)	11
Figure 10: CH:CIDD Request for information modified within a given time span	12
Figure 11: Sample CH:CIDD Response to an invalid SOAP header in the request	13
Figure 12: Sample CH:CIDD Response (fragment only)	15
Figure 13: CH:CPI LDAP Schema (symbolic representation while incomplete)	21

7 List of tables

Table 1: Actor Roles of the CH:CPI profile	5
Table 2: Actors and Transactions of the CH:CPI profile	5
Table 3: LDAP base objects	7
Table 4: CH:CIDD request parameters	12
Table 5: CH:CIDD response main elements	14
Table 6: CH:CPI Provider Audit Message for CH:CIQ	16
Table 7: CH:CPI Provider Audit Message for CH:CIDD.....	17
Table 8: CH:CPI Consumer Audit Message for CH:CIQ.....	18
Table 9: CH:CPI Consumer Audit Message for CH:CIDD	19
Table 10: CH:CPI content profile definitions for Communities	23
Table 11: CH:CPI content profile definitions for XCA Initiating Gateways	23
Table 12: CH:CPI content profile definitions for XCA Responding Gateways	24
Table 13: CH:CPI content profile definitions for XCPD Initiating Gateways	24
Table 14: CH:CPI content profile definitions for XCPD Responding Gateways.....	25
Table 15: CH:CPI content profile definitions for Authorization Decision Providers.....	25
Table 16: CH:CPI content profile definitions for Authorization Decision Consumers.....	26
Table 17: CH:CPI content profile definitions for X-Assertion Providers	26
Table 18: CH:CPI content profile definitions for CH:ATC Patient Audit Record Repositories	27
Table 19: CH:CPI content profile definitions for CH:ATC Patient Audit Consumers.....	27
Table 20: CH:CPI content profile definitions for RMU Initiating Gateways	28
Table 21: CH:CPI content profile definitions for RMU Responding Gateways	28
Table 22: Value set for shcLegal	29
Table 23: Value set for shcType.....	29
Table 24: Value set for shcLanguage.....	29
Table 25: Value set for shcStatus.....	29