

# Servicebeschrijvingen Nummervoorziening

Pseudonimisering in de leermiddelenketen

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## Document informatie

### Status

Auteur	Kennisset, Marc Fleischeuers
Versie	1.0.12
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Status	concept

### Versiehistorie

Versie	Datum	Auteur	Beschrijving
0.9	6 april 2016	Marc Fleischeuers	Assembled from project service descriptions
0.91	18 april 2016	Marc Fleischeuers	Naar aanleiding van KAT Edu-K overleg
0.92	27 mei 2016	Marc Fleischeuers	Exceptions in lijn met realisatie; hpgn format; sample SOAP messages
1.0	12 juli 2017	Marc Fleischeuers	
1.0.9	23 januari 2017	Marc Fleischeuers	Wijzigingen wetgeving (introductie stampseudoniem)
1.0.10	6 april 2017	Marc Fleischeuers	Substitutie van stampseudoniem ipv ECK iD
1.0.11	2 juni 2017	Marc Fleischeuers	Voorbeeldberichten
1.0.12	21 sept 2017	Marc Fleischeuers	'DuplicateHPgnListException' -> 'DuplicateBatchListException'. Change stampseudonym -> substitute PGN for stampseudonym
1.0.13	8 februari 2018	Vincent Tedjakusuma	Aanpassingen n.a.v. nieuwe URL en aangepaste WSDL

### Betrokken/geraadpleegd

Betrokken	Rol

### Distributie en goedkeuring

Versie	Datum	Goedgekeurd (indien van toepassing)
1.0.9	21-3-2017	Tactisch overleg Toegang tot leermateriaal

## **1. Samenvatting**

## 2. Services

Some of these services are illustrated with sample requests and responses. These were obtained using synthetic input in SOAPUI executed on the sandbox environment, which can be recognized by *service-s* in the URL. De IDs in these samples are not associated with actual people and in the production environment, the obtained values will be different. The structure of request and response however is correct.

### 2.1. Create Stampseudonym

<b>SERVICE</b>	<b>retrieveStampseudonym</b>
<b>DESCRIPTION</b>	
<b>CONTEXT</b>	This service is called by allowed LAS systems to obtain a stampseudonym for, for instance, a just enrolled student. This function is called during the process of enrollment, and its availability is business critical.
<b>INPUT</b>	<ul style="list-style-type: none"> <li>• hpgn: HPgn, oblig, hashed PGN;</li> </ul>
<b>VALIDATIONS</b>	<ul style="list-style-type: none"> <li>• The calling system, identified by its OIN in the SerialNumber field of the Certificate, is checked against the list of allowed callers (NotAllowedCallerException on failure)</li> <li>• The calling school is identified from the OIN in the wsa:from SOAP header. If the school is not in the list of allowed schools, a NotAllowedCallerException will be thrown</li> <li>• hashed PGN: format validations (InvalidHPgnException on failure)</li> </ul>
<b>OPERATION</b>	The service derives a stampseudonym from the input. The derivation of a valid stampseudonym is performed by a component that is specified in software configuration.
<b>OUTPUT</b>	stampseudonym: The generated stampseudonym
<b>EXCEPTIONS</b>	<ul style="list-style-type: none"> <li>• NotAllowedCallerException</li> <li>• HashOperationException (indicates server configuration error)</li> </ul>
<b>REMARKS</b>	•

#### 2.1.1. Sample request

```
POST https://service-s.ketenid.nl/eck/ws/201703 HTTP/1.1
Accept-Encoding: gzip,deflate
Content-Type: text/xml; charset=UTF-8
SOAPAction: "http://ketenid.nl/eck/schemas/v1_0/retrieveStampseudonym"
Content-Length: 1031
Host: service-s.ketenid.nl
Connection: Keep-Alive
User-Agent: Apache-HttpClient/4.1.1 (java 1.5)

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:v1="http://ketenid.nl/eck/schemas/v1_0"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <soapenv:Header>
    <a:Action
soapenv:mustUnderstand="1">http://ketenid.nl/eck/schemas/v1_0/retrieveStampseudonym</a:Action>
    <a:MessageID>urn:uuid:a61d7a7d-cd0c-4b41-9b14-fa86a5391e08</a:MessageID>
    <a:To soapenv:mustUnderstand="1">https://service-s.ketenid.nl/eck/ws/201703</a:To>
    <a:From a:IsReferenceParameter="true">
<a:Address>http://www.w3.org/2005/08/addressing/anonymous?oin=000000700019HY34567</a:Address>
  </a:From>
  <a:ReplyTo a:IsReferenceParameter="true">
    <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
  </a:ReplyTo>
</soapenv:Header>
<soapenv:Body>
  <v1:retrieveStampseudonymRequest>
```

```

    <v1:hpgn>a3c8147df7da94a1c81fc15e54b9470a164dbe8279f86b1c0cec9dbb5586e89b</v1:hpgn>
  </v1:retrieveStampseudonymRequest>
</soapenv:Body>
</soapenv:Envelope>

```

### 2.1.2. Sample response

```

<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <Action
      xmlns="http://www.w3.org/2005/08/addressing">http://ketenid.nl/eck/schemas/v1_0/EckIDPort/r
      etrieveStampseudonymResponse</Action>
    <MessageID xmlns="http://www.w3.org/2005/08/addressing">urn:uuid:0517c247-c188-473b-
      b456-65e91548c983</MessageID>
    <To
      xmlns="http://www.w3.org/2005/08/addressing">http://www.w3.org/2005/08/addressing/anonymous
      ?oin=0000000700019HY34567</To>
    <RelatesTo xmlns="http://www.w3.org/2005/08/addressing">urn:uuid:a61d7a7d-cd0c-4b41-
      9b14-fa86a5391e08</RelatesTo>
    <From xmlns="http://www.w3.org/2005/08/addressing">
  </Address>http://www.w3.org/2005/08/addressing/anonymous?oin=00000003272448340000</Address>
  </From>
</soap:Header>
  <soap:Body>
    <retrieveStampseudonymResponse xmlns="http://ketenid.nl/eck/schemas/v1_0">
  <stampseudonym>https://ketenid.nl/sppilot/5ee21873be1c1f93525bbb48b4a780e8982f397fbfce3c7c3
  e8c40c340ef96c484546c89118f6691144889186a5c1e03d643512951ccc5146ccfd2ff893cb422</stampseudo
  nym>
    </retrieveStampseudonymResponse>
  </soap:Body>
</soap:Envelope>

```

## 2.2. Create ECK id

SERVICE DESCRIPTION	retrieveEckId
CONTEXT	This service is called by allowed LAS systems to obtain a ECK id for, for instance, a just enrolled student. This function is called during the process of enrollment, and its availability is business critical.
INPUT	<ul style="list-style-type: none"> <li>Stampseudonym: Stampseudonym, obtained with 'retrieveStampseudonym'</li> <li>chainID: xsd:string, oblig, Identifier for ECK chain</li> <li>sectorID: xsd:string, oblig, Identifier for educational sector</li> </ul>
VALIDATIONS	<ul style="list-style-type: none"> <li>The calling system, identified by its OIN in the SerialNumber field of the Certificate, is checked against the list of allowed callers (NotAllowedCallerException on failure)</li> <li>The calling school is identified from the OIN in the wsa:from SOAP header. If the school is not in the list of allowed schools, a NotAllowedCallerException will be thrown</li> <li>Stampseudonym, SectorID, ChainID: format validations (FormatException specific for argument on failure, e.g. InvalidStampseudonymException, InvalidChainIdException and InvalidSectorIdException).</li> <li>SectorID is one of the IDs of educational sectors (InvalidSectorIdException on failure).</li> <li>ChainID is one of the IDs in chains (InvalidChainIdException on failure)</li> <li>Hashed PGN is not in substitutionList.old (BlockedHPgnException on failure)</li> </ul>
OPERATION	The service combines the three inputs and from the result derives a valid ECK id. The derivation of a valid ECK id is performed by a component that is specified in software configuration.

	If the provided stampseudonymis in substitutionList.new and sectorID is equal to the substitutionlist.sectorID and today is later than substitutiontable.effectedate, the previous stampseudonym is used to derive the ECK iD from.
<b>OUTPUT</b>	eckID: EckID, The derived ECK iD
<b>EXCEPTIONS</b>	<ul style="list-style-type: none"> <li>• InvalidSectorIdException InvalidChainIdException InvalidHPgnException</li> <li>• BlockedStampseudonymException</li> <li>• NotAllowedCallerException</li> <li>• HashOperationException (indicates server configuration error)</li> </ul>
<b>REMARKS</b>	<ul style="list-style-type: none"> <li>• chainID, sectorID are in the form of OBK URN's. Retrieve these values using the retrieveChains, retrieveSectors operations respectively.</li> <li>• eckID is in the form of a URL: <a href="https://ketenid.nl/201703/[128-char hex string]">https://ketenid.nl/201703/[128-char hex string]</a>. Currently this url resolves to a static page containing general information about the ECK iD.</li> </ul>

### 2.2.1. Sample request

POST <https://service-s.ketenid.nl/eck/ws/201703> HTTP/1.1

Accept-Encoding: gzip,deflate

Content-Type: text/xml;charset=UTF-8

SOAPAction: "[http://ketenid.nl/eck/schemas/v1\\_0/retrieveEckId](http://ketenid.nl/eck/schemas/v1_0/retrieveEckId)"

Content-Length: 1346

Host: service-s.ketenid.nl

Connection: Keep-Alive

User-Agent: Apache-HttpClient/4.1.1 (java 1.5)

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:v1="http://ketenid.nl/eck/schemas/v1_0"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <soapenv:Header>
    <a:Action>
      soapenv:mustUnderstand="1">http://ketenid.nl/eck/schemas/v1\_0/retrieveEckId</a:Action>
    <a:MessageID>urn:uuid:a61d7a7d-cd0c-4b41-9b14-fa86a5391e08</a:MessageID>
    <a:To soapenv:mustUnderstand="1">https://service-s.ketenid.nl/eck/ws/201703</a:To>
    <a:From a:IsReferenceParameter="true">
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous?oin=0000000700019HY34567</a:Address>
    </a:From>
    <a:ReplyTo a:IsReferenceParameter="true">
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
  </soapenv:Header>
  <soapenv:Body>
    <v1:retrieveEckIdRequest>
      <v1:stampseudonym>https://ketenid.nl/sppilot/5ee21873be1c1f93525bbb48b4a780e8982f397fbfce3c7c3e8c40c340ef96c484546c89118f6691144889186a5c1e03d643512951ccc5146ccfd2ff893cb422</v1:stampseudonym>
      <v1:chainId>http://purl.edustandaard.nl/begrippenkader/e7ec7d3c-c235-4513-bfb6-e54e66854795</v1:chainId>
      <v1:sectorId>http://purl.edustandaard.nl/begrippenkader/512e4729-03a4-43a2-95ba-758071d1b725</v1:sectorId>
    </v1:retrieveEckIdRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

### 2.2.2. Sample response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <Action>
      xmlns="http://www.w3.org/2005/08/addressing">http://ketenid.nl/eck/schemas/v1\_0/EckIDPort/retrieveEckIdResponse</Action>
    <MessageID xmlns="http://www.w3.org/2005/08/addressing">urn:uuid:fec01859-902f-4afc-8273-2575bcd190c9</MessageID>
```

```

    <To
xmlns="http://www.w3.org/2005/08/addressing">http://www.w3.org/2005/08/addressing/anonymous
?oin=0000000700019HY34567</To>
    <RelatesTo xmlns="http://www.w3.org/2005/08/addressing">urn:uuid:a61d7a7d-cd0c-4b41-
9b14-fa86a5391e08</RelatesTo>
    <From xmlns="http://www.w3.org/2005/08/addressing">

<Address>http://www.w3.org/2005/08/addressing/anonymous?oin=00000003272448340000</Address>
    </From>
  </soap:Header>
  <soap:Body>
    <retrieveEckIdResponse xmlns="http://ketenid.nl/eck/schemas/v1_0">

<eckId>https://ketenid.nl/pilot/97b60d516b4a495944114126f68a2a8d3b98ef5db4751c1536c5687f118
64d3cade62adad1bce8dce4e1788c045ea727823a8364564ef69285de33a5930f43aa</eckId>
    </retrieveEckIdResponse>
  </soap:Body>
</soap:Envelope>

```

### 2.3. Substitute PGN for stampseudonym

SERVICE DESCRIPTION	replaceStampseudonym
CONTEXT	This service is called when a school administration needs to indicate that a student is assigned a new PGN by the authorities. A change of PGN number is handled as follows: the old and the new stem hashed PGN are recorded in the database; subsequent requests for the old hashed PGN are rejected, and for requests with the new stem hashed PGN, the old hashed PGN is used to derive the stampseudonym from. See also service description Create stampseudonym.
INPUT	<ul style="list-style-type: none"> <li>• hPGNOld, hPGNNew: oblig, resp. previous hashed PGN and new hashed PGN</li> <li>• effectiveDate: xsd:date, optional, 'now' if not given, date and time that the change should take effect</li> </ul>
VALIDATIONS	<ul style="list-style-type: none"> <li>• The calling system identified by its OIN in the Certificate is checked against the list of allowed callers (NotAllowedCallerException on failure)</li> <li>• The calling school is identified from the OIN in the wsa:from header. If the school is not in the list of allowed schools, a NotAllowedCallerException will be thrown</li> <li>• Format validations on input arguments (format Exception specific for argument on failure).</li> <li>• Old hPGN is not already in the substitution table (old and new) (BlockedPGNException otherwise)</li> <li>• New hPGN is not already in the substitution table (old and new) (BlockedPGNException otherwise)</li> <li>• Old and new hPGN are different (substitutionOperationException otherwise)</li> <li>• Effective date: if given, is valid and in the future (xml parse error in case of invalid date format)</li> </ul>
OPERATION	Old hPGN, new hPGN are recorded in the substitution table, and a stampseudonym for the new hPGN is derived using function 'Create stampseudonym'.
OUTPUT	stampseudonym: The stampseudonym for the new hpgn
EXCEPTIONS	<ul style="list-style-type: none"> <li>• InvalidhPGNException with information on which stampseudonym is invalid, and why</li> <li>• SubstitutionOperationException</li> <li>• NotAllowedCallerException</li> <li>• HashOperationException (indicates server configuration error)</li> </ul>
REMARKS	<ul style="list-style-type: none"> <li>• Stampseudonym is in the form of a URL: https://ketenid.nl/spv1/[128-char hex string].</li> </ul>

#### 2.3.1. Sample request

```

POST https://service-s.ketenid.nl/eck/ws/201703 HTTP/1.1
Accept-Encoding: gzip,deflate

```



```

Content-Type: text/xml; charset=UTF-8
SOAPAction: "http://ketenid.nl/eck/schemas/v1_0/replaceStampseudonym"
Content-Length: 1225
Host: service-s.ketenid.nl
Connection: Keep-Alive
User-Agent: Apache-HttpClient/4.1.1 (java 1.5)

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:v1="http://ketenid.nl/eck/schemas/v1_0"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <soapenv:Header>
    <a:Action
soapenv:mustUnderstand="1">http://ketenid.nl/eck/schemas/v1_0/replaceStampseudonym</a:Action>
  <a:MessageID>urn:uuid:a61d7a7d-cd0c-4b41-9b14-fa86a5391e08</a:MessageID>
    <a:To soapenv:mustUnderstand="1">https://service-s.ketenid.nl/service/201703</a:To>
    <a:From a:IsReferenceParameter="true">

<a:Address>http://www.w3.org/2005/08/addressing/anonymous?oin=000000700019HY34567</a:Address>
  </a:From>
  <a:ReplyTo a:IsReferenceParameter="true">
    <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
  </a:ReplyTo></soapenv:Header>
  <soapenv:Body>
    <v1:replaceStampseudonymRequest>

<v1:hpgnOld>1f600cb5a432a31f6f877528324f4eca08b2006d50bb8d6374591be4ea995828</v1:hpgnOld>

<v1:hpgnNew>8a333608fc1c31ff37618d12f76be459078ddddd227fa8031458a72b662b6f93</v1:hpgnNew>
    <!--Optional:-->
    <v1:effectiveDate>2017-01-01T11:26:30.806+01:00</v1:effectiveDate>
  </v1:replaceStampseudonymRequest>
</soapenv:Body>
</soapenv:Envelope>

```

### 2.3.2. Sample response

The stampseudonym that is returned by this function (highlighted in the response) is the stampseudonym that is associated to the new hashed PGN, starting at effectiveDate if given or now. This stampseudonym used to be associated with hpgnOld in the request. Starting effectiveDate or the moment the request is submitted, the hashed PGN hpgnOld can no longer be used (see below).

```

<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <Action
xmlns="http://www.w3.org/2005/08/addressing">http://ketenid.nl/eck/schemas/v1_0/EckIDPort/replaceStampseudonymResponse</Action>
    <MessageID xmlns="http://www.w3.org/2005/08/addressing">urn:uuid:842bc5a6-b004-4872-a428-a14c02c37dfa</MessageID>
    <To
xmlns="http://www.w3.org/2005/08/addressing">http://www.w3.org/2005/08/addressing/anonymous?oin=000000700019HY34567</To>
    <RelatesTo xmlns="http://www.w3.org/2005/08/addressing">urn:uuid:a61d7a7d-cd0c-4b41-9b14-fa86a5391e08</RelatesTo>
    <From xmlns="http://www.w3.org/2005/08/addressing">

<Address>http://www.w3.org/2005/08/addressing/anonymous?oin=000000327244834000</Address>
  </From>
</soap:Header>
  <soap:Body>
    <replaceStampseudonymResponse xmlns="http://ketenid.nl/eck/schemas/v1_0">

<stampseudonym>https://ketenid.nl/sppilot/b87d57ea2b40fe0cfb7cf29b3d162dc1e5cb8ca5e040a3208fec5220c0d65a5cfe627afe67c8e779e045a5049c8e61caf592da5f17d4c872017fa5352498436</stampseudonym>

```

```

    </replaceStampseudonymResponse>
  </soap:Body>
</soap:Envelope>

```

### 2.3.3. Followup request

This is a request that uses a previously substituted hashed PGN

```

POST https://service-s.ketenid.nl/eck/ws/201703 HTTP/1.1
Accept-Encoding: gzip,deflate
Content-Type: text/xml; charset=UTF-8
SOAPAction: "http://ketenid.nl/eck/schemas/v1_0/retrieveStampseudonym"
Content-Length: 1031
Host: service-s.ketenid.nl
Connection: Keep-Alive
User-Agent: Apache-HttpClient/4.1.1 (java 1.5)

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:v1="http://ketenid.nl/eck/schemas/v1_0"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <soapenv:Header>
    <a:Action
soapenv:mustUnderstand="1">http://ketenid.nl/eck/schemas/v1_0/retrieveStampseudonym</a:Action>
    <a:MessageID>urn:uuid:a61d7a7d-cd0c-4b41-9b14-fa86a5391e08</a:MessageID>
    <a:To soapenv:mustUnderstand="1">https://service-s.ketenid.nl/eck/ws/201703</a:To>
    <a:From a:IsReferenceParameter="true">
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous?oin=0000000700019HY34567</a:Address>
    </a:From>
    <a:ReplyTo a:IsReferenceParameter="true">
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
  </soapenv:Header>
  <soapenv:Body>
    <v1:retrieveStampseudonymRequest>
      <v1:hpgn>1f600cb5a432a31f6f877528324f4eca08b2006d50bb8d6374591be4ea995828</v1:hpgn>
    </v1:retrieveStampseudonymRequest>
  </soapenv:Body>
</soapenv:Envelope>

```

### 2.3.4. Followup response

```

<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <Action
xmlns="http://www.w3.org/2005/08/addressing">http://ketenid.nl/eck/schemas/v1_0/EckIDPort/retrieveStampseudonym/Fault/SOAPFaultException</Action>
    <MessageID xmlns="http://www.w3.org/2005/08/addressing">urn:uuid:22f85e55-11c1-4c48-b293-ac3db4098632</MessageID>
    <To
xmlns="http://www.w3.org/2005/08/addressing">http://www.w3.org/2005/08/addressing/anonymous?oin=0000000700019HY34567</To>
    <RelatesTo xmlns="http://www.w3.org/2005/08/addressing">urn:uuid:a61d7a7d-cd0c-4b41-9b14-fa86a5391e08</RelatesTo>
    <From xmlns="http://www.w3.org/2005/08/addressing">
      <Address>http://www.w3.org/2005/08/addressing/anonymous?oin=00000003272448340000</Address>
    </From>
  </soap:Header>
  <soap:Body>
    <soap:Fault>
      <faultcode>soap:SERVER</faultcode>
      <faultstring>Fout geconstateerd bij het verwerken van een aanroep van 'retrieveStampseudonym': Het aangeleverde HPgn is geblokkeerd</faultstring>
    </soap:Fault>
  </soap:Body>
</soap:Envelope>

```

```

<faultactor>BlockedHPgnException</faultactor>
<detail>
  <message>Het aangeleverde HPgn is geblokkeerd</message>
</detail>
</soap:Fault>
</soap:Body>
</soap:Envelope>

```

## 2.4. Batch creation of stampseudonyms

SERVICE DESCRIPTION	submitStampseudonymBatch
CONTEXT	This service is called by allowed LAS systems to submit a list of stampseudonyms, for a single Sector and a single Chain. The system processes the list and makes a corresponding list of stampseudonyms available for retrieval (see retrieveEckBatch).
INPUT	<ul style="list-style-type: none"> <li>stampseudonymList: a list of 1..20.000<sup>1</sup> <ul style="list-style-type: none"> <li>int: xsd:int, oblig, sequence number</li> <li>hPgn: HPgn hashed PGNs</li> </ul> </li> </ul>
VALIDATIONS	<ul style="list-style-type: none"> <li>The calling system identified by its OIN in the Certificate is checked against the list of allowed callers (NotAllowedCaller Exception on failure)</li> <li>The calling school is identified from the OIN in the wsa:from header. If the school is not in the list of allowed schools, a NotAllowedCallerException will be thrown</li> <li>The system validates the size of the input (TemporaryBannedException if too many hPgn are submitted)</li> <li>All indexes are unique (DuplicateIndexBatchListException otherwise)</li> </ul>
OPERATION	The service creates a stampseudonym for each hashed PGN in the input list and adds it to the list of generated stampseudonyms for output. If the list does not contain a hashed PGN or if the hashed PGN was previously indicated as changed, no stem pseudonym will be created and a message to indicate the nature of the failure will be added to the list of failed items for output.
OUTPUT	<ul style="list-style-type: none"> <li>batchIdentifier: xsd:string, identifier of the batch request. This identifier can be used to obtain the result, using retrieveEckBatch</li> </ul>
EXCEPTIONS	<ul style="list-style-type: none"> <li>InvalidSectorIdException InvalidChainIdException InvalidHPgnException</li> <li>NotAllowedCallerException</li> <li>HashOperationException (indicates server configuration error)</li> <li>DuplicateIndexBatchListException</li> </ul>
REMARKS	<p>The use of this service is limited to prevent abuse:</p> <ul style="list-style-type: none"> <li>A batch may contain at most 20.000 hashed PGNs</li> <li>A batch operation may be submitted at most 3 times per calendar day</li> </ul> <p>These limits are configured in the software and can be modified. Schools that exceed these limits are temporarily banned from submitting batch requests. Schools may contact Kennisnet servicedesk for information and for lifting of the bans. Schools may submit multiple batch requests, as long as the limits are observed. Batches are processed in the order in which they occur.</p> <p>A batch result is available within one hour after submission of the request. Batch results are removed after successful retrieval. The system may remove batch results that are not retrieved within 24 hours.</p>

### 2.4.1. Sample request

```

POST https://service-s.ketenid.nl/eck/ws/201703 HTTP/1.1
Accept-Encoding: gzip,deflate
Content-Type: text/xml;charset=UTF-8
SOAPAction: "http://ketenid.nl/eck/schemas/v1_0/submitStampseudonymBatch"
Content-Length: 1511
Host: service-s.ketenid.nl

```

<sup>1</sup> The size of the array is configured in software. Actual limit may differ.

Connection: Keep-Alive

User-Agent: Apache-HttpClient/4.1.1 (java 1.5)

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:v1="http://ketenid.nl/eck/schemas/v1_0"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <soapenv:Header>
    <a:Action
soapenv:mustUnderstand="1">http://ketenid.nl/eck/schemas/v1_0/submitStampseudonymBatch</a:A
ction>
    <a:MessageID>urn:uuid:a61d7a7d-cd0c-4b41-9b14-fa86a5391e08</a:MessageID>
    <a:To soapenv:mustUnderstand="1">https://service-s.ketenid.nl/eck/ws/201703</a:To>
    <a:From a:IsReferenceParameter="true">
</a:From>
    <a:ReplyTo a:IsReferenceParameter="true">
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
  </soapenv:Header>
  <soapenv:Body>
    <v1:submitStampseudonymBatchRequest>
      <!--1 or more repetitions:-->
      <v1:hpgnList>
        <v1:index>1</v1:index>
</v1:hPgn>a3c8147df7da94a1c81fc15e54b9470a164dbe8279f86b1c0cec9dbb5586e89b</v1:hPgn>
      </v1:hpgnList>
      <v1:hpgnList>
        <v1:index>3</v1:index>
</v1:hPgn>7e0306765957edf5a2a78b1ee5d4efa429be5022be602de7db413cb033733ed1</v1:hPgn>
      </v1:hpgnList>
      <v1:hpgnList>
        <v1:index>5</v1:index>
</v1:hPgn>26a152d269fd741ecf1b9bf88305641b2753529dee028c31880fe5a317db981c</v1:hPgn>
      </v1:hpgnList>
    </v1:submitStampseudonymBatchRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

#### 2.4.2. Sample response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <Action
xmlns="http://www.w3.org/2005/08/addressing">http://ketenid.nl/eck/schemas/v1_0/EckIDPort/s
ubmitStampseudonymBatchResponse</Action>
    <MessageID xmlns="http://www.w3.org/2005/08/addressing">urn:uuid:5cd10639-779a-4d3e-
95a2-684007978c82</MessageID>
    <To
xmlns="http://www.w3.org/2005/08/addressing">http://www.w3.org/2005/08/addressing/anonymous
?oin=0000000700019HY34567</To>
    <RelatesTo xmlns="http://www.w3.org/2005/08/addressing">urn:uuid:a61d7a7d-cd0c-4b41-
9b14-fa86a5391e08</RelatesTo>
    <From xmlns="http://www.w3.org/2005/08/addressing">
</Address>http://www.w3.org/2005/08/addressing/anonymous?oin=00000003272448340000</Address>
    </From>
  </soap:Header>
  <soap:Body>
    <submitBatchResponse xmlns="http://ketenid.nl/eck/schemas/v1_0">
      <batchIdentifier>201802061512053a1b0a696c3e4abca89c906dbecd6716</batchIdentifier>
    </submitBatchResponse>
  </soap:Body>
```

</soap:Envelope>

## 2.5. Batch creation of ECK iDs

SERVICE DESCRIPTION	submitEckIdBatch
<b>CONTEXT</b>	This service is called by allowed LAS systems to submit a list of stem pseudonyms, for a single Sector and a single Chain. The system processes the list and makes a corresponding list of ECK iDs available for retrieval (see retrieveEckBatch).
<b>INPUT</b>	<ul style="list-style-type: none"> <li>• stampseudonymList: a list of 1..20.000<sup>2</sup> <ul style="list-style-type: none"> <li>○ int: xsd:int, oblig, sequence number</li> <li>○ stampseudonym: Stampseudonym</li> </ul> </li> <li>• chainID: xsd:string, oblig, Identifier for ECK chain</li> <li>• sectorID: xsd:string, oblig, Identifier for educational sector</li> </ul>
<b>VALIDATIONS</b>	<ul style="list-style-type: none"> <li>• The calling system identified by its OIN in the Certificate is checked against the list of allowed callers (NotAllowedCaller Exception on failure)</li> <li>• The calling school is identified from the OIN in the wsaf:from header. If the school is not in the list of allowed schools, a NotAllowedCallerException will be thrown</li> <li>• The system validates the size of the input (TemporaryBannedException if too many stampseudonyms are submitted)</li> <li>• All indexes are unique (DuplicateIndexBatchListException otherwise)</li> <li>• SectorID is one of the IDs of educational sectors (InvalidSectorIdException on failure).</li> <li>• ChainID is one of the IDs in chains (InvalidChainIdException on failure)</li> <li>• Stampseudonyms is not in substitutionList.old (offending stampseudonym is added to the failed list for output)</li> </ul>
<b>OPERATION</b>	The service creates a ECK iD for each hashed PGN in the input list and adds it to the list of generated ECK iDs for output. If the list does not contain a hashed PGN or if the hashed PGN was previously indicated as changed, no ECK iD will be created and a message to indicate the nature of the failure will be added to the list of failed PGNs for output. If the provided hashed PGN is in substitutionList.new and sectorID is equal to the substitutionlist.sectorID and today is later than substitutiontable.effectivedate, the previous hashed PGN is used to derive the ECK iD from.
<b>OUTPUT</b>	<ul style="list-style-type: none"> <li>• batchIdentifier: xsd:string, identifier of the batch request. This identifier can be used to obtain the result, using retrieveEckBatch</li> </ul>
<b>EXCEPTIONS</b>	<ul style="list-style-type: none"> <li>• InvalidSectorIdException InvalidChainIdException InvalidHPgnException</li> <li>• BlockedHPgnException</li> <li>• NotAllowedCallerException</li> <li>• HashOperationException (indicates server configuration error)</li> <li>• DuplicateIndexBatchListException</li> </ul>
<b>REMARKS</b>	<p>The use of this service is limited to prevent abuse:</p> <ul style="list-style-type: none"> <li>• A batch may contain at most 20.000 stampseudonyms</li> <li>• A batch operation may be submitted at most 3 times per calendar day</li> </ul> <p>These limits are configured in the software and can be modified. Schools that exceed these limits are temporarily banned from submitting batch requests. Schools may contact Kennisset servicedesk for information and for lifting of the bans. Schools may submit multiple batch requests, as long as the limits are observed. Batches are processed in the order in which they occur.</p> <p>A batch result is available within one hour after submission of the request. Batch results are removed after successful retrieval. The system may remove batch results that are not retrieved within 24 hours.</p>

<sup>2</sup> The size of the array is configured in software. Actual limit may differ.

### 2.5.1. Sample request

This request intentionally contains some faulty stampseudonym values (highlighted in yellow), to demonstrate the effects of erroneous input. See 2.6 Retrieval of batch results.

```
POST https://service-s.ketenid.nl/eck/ws/201703 HTTP/1.1
Accept-Encoding: gzip,deflate
Content-Type: text/xml;charset=UTF-8
SOAPAction: "http://ketenid.nl/eck/schemas/v1_0/submitEckIdBatch"
Content-Length: 2257
Host: service-s.ketenid.nl
Connection: Keep-Alive
User-Agent: Apache-HttpClient/4.1.1 (java 1.5)

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:v1="http://ketenid.nl/eck/schemas/v1_0"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <soapenv:Header>
    <a:Action>
      soapenv:mustUnderstand="1">http://ketenid.nl/eck/schemas/v1_0/submitEckIdBatch</a:Action><a
:MessageID>urn:uuid:a61d7a7d-cd0c-4b41-9b14-fa86a5391e08</a:MessageID>
    <a:To soapenv:mustUnderstand="1">https://service-s.ketenid.nl/service/201703</a:To>
    <a:From a:IsReferenceParameter="true">
<a:Address>http://www.w3.org/2005/08/addressing/anonymous?oin=0000000700019HY34567</a:Address>
  </a:From>
  <a:ReplyTo a:IsReferenceParameter="true">
    <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
  </a:ReplyTo></soapenv:Header>
  <soapenv:Body>
    <v1:submitEckIdBatchRequest>
      <!--1 or more repetitions:-->
      <v1:stampseudonymList>
        <v1:index>1</v1:index>
<v1:stampseudonym>https://ketenid.nl/sppilot/5ee21873be1c1f93525bbb48b4a780e8982f397fbfce3c7c3e8c40c340ef96c484546c89118f6691144889186a5c1e03d643512951ccc5146ccfd2ff893cb422</v1:stampseudonym>
      </v1:stampseudonymList>
      <v1:stampseudonymList>
        <v1:index>2</v1:index>
        <v1:stampseudonym>wrongpseudonym</v1:stampseudonym>
      </v1:stampseudonymList>
      <v1:stampseudonymList>
        <v1:index>3</v1:index>
<v1:stampseudonym>https://ketenid.nl/sppilot/5d948c8f89446126d6ab9adc3c68664382daf09befb8bd6cc98f909641cdcc341bbd1858cf513f67e9d8b4e82b4b4b4c2961da173916149b6b7a66694c1d</v1:stampseudonym>
      </v1:stampseudonymList>
      <v1:stampseudonymList>
        <v1:index>4</v1:index>
<v1:stampseudonym>https://ketenid.nl/sppilot/75fff83ca4d30ae5d8a15e98292206b2b3ba9443ab14b3e8aba1fd2d7800d05afcb7cf11acfed32097b5714080133d53e68123f97efa952b3e3c1a353a5755b5</v1:stampseudonym>
      </v1:stampseudonymList>
      <v1:chainId>http://purl.edustandaard.nl/begrippenkader/e7ec7d3c-c235-4513-bfb6-e54e66854795</v1:chainId>
      <v1:sectorId>http://purl.edustandaard.nl/begrippenkader/512e4729-03a4-43a2-95ba-758071d1b725</v1:sectorId>
    </v1:submitEckIdBatchRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

### 2.5.2. Sample response'

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <Action
      xmlns="http://www.w3.org/2005/08/addressing">http://ketenid.nl/eck/schemas/v1_0/EckIDPort/submitEckIdBatchResponse</Action>
    <MessageID xmlns="http://www.w3.org/2005/08/addressing">urn:uuid:e9fc4552-ccaf-4c50-a27d-1b962adf0bc8</MessageID>
    <To
      xmlns="http://www.w3.org/2005/08/addressing">http://www.w3.org/2005/08/addressing/anonymous?oin=0000000700019HY34567</To>
    <RelatesTo xmlns="http://www.w3.org/2005/08/addressing">urn:uuid:a61d7a7d-cd0c-4b41-9b14-fa86a5391e08</RelatesTo>
    <From xmlns="http://www.w3.org/2005/08/addressing">
<Address>http://www.w3.org/2005/08/addressing/anonymous?oin=00000003272448340000</Address>
    </From>
  </soap:Header>
  <soap:Body>
    <submitBatchResponse xmlns="http://ketenid.nl/eck/schemas/v1_0">
      <batchIdentifier>201802061608189ab1f2fe2c934f479edc365c54ca02ce</batchIdentifier>
    </submitBatchResponse>
  </soap:Body>
</soap:Envelope>
```

## 2.6. Retrieval of batch results

SERVICE DESCRIPTION	retrieveBatch
CONTEXT	This service is called by allowed LAS systems to retrieve the status and result of a batch request.
INPUT	<ul style="list-style-type: none"> <li>batchIdentifier: xsd:string, oblig, the batch identifier obtained in the response from a batch submission (see submitEckIdBatch)</li> </ul>
VALIDATIONS	<ul style="list-style-type: none"> <li>The calling system identified by its OIN in the Certificate is checked against the list of allowed callers (NotAllowedCallerException on failure)</li> <li>The calling school is identified from the OIN in the wsa:from header. If the school is not in the list of allowed schools, a NotAllowedCallerException will be thrown</li> <li>The system validates the frequency of calls (SchoolTemporaryBlockedException or BatchTemporaryBlockedException if there are too many calls registered)</li> <li>The batch result can be retrieved at most once; ContentAlreadyRetrievedException is returned if the batch was retrieved earlier</li> <li>If the batch indicated by the input is purged, already retrieved, or not ready yet, a NotFinishedException is returned</li> </ul>
OPERATION	The service retrieves the batch result (either StampseudonymBatch or EckIdBatch), if available, and returns it to the caller. If an error during check or processing occurs, the error is returned.
OUTPUT	<ul style="list-style-type: none"> <li>Success: an optional list of 1..20000<sup>3</sup>:             <ul style="list-style-type: none"> <li>Index: int, the sequence number of the corresponding entry from the input</li> <li>EckId: EckId, the ECK iD of the entry indicated by the sequence number from the input</li> </ul> </li> <li>Failed: an optional list of 1..20000<sup>4</sup>:             <ul style="list-style-type: none"> <li>Index: int, the sequence number of the corresponding entry from the input</li> <li>errorMessage: string, indication of the error that occurred when computing the ECK iD</li> </ul> </li> </ul>
EXCEPTIONS	<ul style="list-style-type: none"> <li>InvalidSectorIdException</li> <li>InvalidChainIdException</li> </ul>

<sup>3</sup> Limit is set in in software configuration; actual values may differ

<sup>4</sup> Idem

- InvalidHPgnException
- BlockedHPgnException
- NotAllowedCallerException
- HashOperationException (indicates server configuration error)
- SchoolTemporaryBlockedException, BatchTemporaryBlockedException
- ContentAlreadyRetrievedException
- NotFinishedException
- 

**REMARKS**

The use of this service is limited to prevent abuse: a batch retrieval may be attempted at most once per 15 minutes (software configurable; actual limit may differ). In case this limit is exceeded, the offending school is temporarily banned from using this service. Schools may contact Kennisnet servicedesk for more information and to lift the ban.

A batch result is available within one hour after submission of the request. Batch results are removed after successful retrieval. Batch results that are not retrieved can be removed after 24 hours.

In the output of this function, both success and failure are optional arrays. If none of the input fail, the response will contain only 'success' values. If none of the input succeed, the response will contain only 'failure'.

**2.6.1. Sample request**

This request retrieves the result produced by the ECK ID Batch request above. The result of the erroneous stampseudonyms are highlighted in the response.

```
POST https://service-s.ketenid.nl/eck/ws/201703 HTTP/1.1
Accept-Encoding: gzip,deflate
Content-Type: text/xml;charset=UTF-8
SOAPAction: "http://ketenid.nl/eck/schemas/v1_0/retrieveBatch"
Content-Length: 1008
Host: service-s.ketenid.nl
Connection: Keep-Alive
User-Agent: Apache-HttpClient/4.1.1 (java 1.5)

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:v1="http://ketenid.nl/eck/schemas/v1_0"
xmlns:a="http://www.w3.org/2005/08/addressing">
  <soapenv:Header>
    <a:Action
soapenv:mustUnderstand="1">http://ketenid.nl/eck/schemas/v1_0/retrieveBatch</a:Action>
    <a:MessageID>urn:uuid:a61d7a7d-cd0c-4b41-9b14-fa86a5391e08</a:MessageID>
    <a:To soapenv:mustUnderstand="1">https://service-s.ketenid.nl/eck/ws/201703</a:To>
    <a:From a:IsReferenceParameter="true">
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous?oin=0000000700019HY34567</a:Address>
    </a:From>
    <a:ReplyTo a:IsReferenceParameter="true">
      <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
    </a:ReplyTo>
  </soapenv:Header>
  <soapenv:Body>
    <v1:retrieveBatchRequest>
      <v1:batchIdentifier>201802061608189ab1f2fe2c934f479edc365c54ca02ce</v1:batchIdentifier>
      <v1:retrieveBatchRequest>
        </v1:retrieveBatchRequest>
      </soapenv:Body>
    </soapenv:Envelope>
```



### 2.6.2. Sample response

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <Action
      xmlns="http://www.w3.org/2005/08/addressing">http://ketenid.nl/eck/schemas/v1_0/EckIDPort/retrieveBatchResponse</Action>
    <MessageID xmlns="http://www.w3.org/2005/08/addressing">urn:uuid:cb5b6835-5cff-4d6e-9814-75233bd05ca9</MessageID>
    <To
      xmlns="http://www.w3.org/2005/08/addressing">http://www.w3.org/2005/08/addressing/anonymous?oin=0000000700019HY34567</To>
    <RelatesTo xmlns="http://www.w3.org/2005/08/addressing">urn:uuid:a61d7a7d-cd0c-4b41-9b14-fa86a5391e08</RelatesTo>
    <From xmlns="http://www.w3.org/2005/08/addressing">
  </From>
</soap:Header>
<soap:Body>
  <retrieveBatchResponse xmlns="http://ketenid.nl/eck/schemas/v1_0">
    <success>
      <index>1</index>
<value>https://ketenid.nl/pilot/97b60d516b4a495944114126f68a2a8d3b98ef5db4751c1536c5687f11864d3cade62adad1bce8dce4e1788c045ea727823a8364564ef69285de33a5930f43aa</value>
    </success>
    <success>
      <index>4</index>
<value>https://ketenid.nl/pilot/1499a726d94b83f3d9a2cf6b0587d0b65853b5e1ffaf5aae2e092630ab228f67bc14ebe5cb125656f7b97c547995a077a0b0f9901d2896bf3635461d38ec169b</value>
    </success>
    <failed>
      <index>2</index>
      <errorMessage>Genereren niet succesvol</errorMessage>
    </failed>
    <failed>
      <index>3</index>
      <errorMessage>Genereren niet succesvol</errorMessage>
    </failed>
  </retrieveBatchResponse>
</soap:Body>
</soap:Envelope>
```

## 2.7. Retrieving chains and sectors

SERVICE	retrieveChains
DESCRIPTION	
CONTEXT	This service is called by allowed LAS systems to obtain the value of the ECK chain ID, for which an ECK iD can be derived. As this list changes rarely, this service will not be called often, probably not more than once per day per LAS.
INPUT	none
VALIDATIONS	<ul style="list-style-type: none"> <li>The calling system identified by its OIN in the Certificate is checked against the list of allowed callers (NotAllowedCallerException on failure)</li> <li>The calling school is identified from the OIN in the wsa:from header. If the school is not in the list of allowed schools, a NotAllowedCallerException will be thrown</li> </ul>
OPERATION	The service retrieves the list of active Chain Parties
OUTPUT	List of 1 or more : <ul style="list-style-type: none"> <li>id: xsd:string, Identifier of chain that can be used to create ECK iDs for this chain</li> <li>name: xsd:string, unique and short name for this chain</li> <li>description: xsd:string, human-readable description for this chain</li> <li>lastEdited: xsd:date, last time this entry was modified</li> </ul>

<b>EXCEPTIONS</b>	NotAllowedCallerException
<b>REMARKS</b>	<ul style="list-style-type: none"> <li>Currently, only one chain is available in the system, the ECK chain. It's value is <a href="http://purl.edustandaard.nl/begrippenkader/e7ec7d3c-c235-4513-bfb6-e54e66854795">http://purl.edustandaard.nl/begrippenkader/e7ec7d3c-c235-4513-bfb6-e54e66854795</a></li> </ul>
<b>SERVICE DESCRIPTION</b>	<b>retrieveSectors</b>
<b>CONTEXT</b>	This service is called by allowed LAS systems to obtain the list of school types for which an ECK iD can be derived. As this list changes rarely, this service will not be called often, probably not more than once per day per LAS.
<b>INPUT</b>	none
<b>VALIDATIONS</b>	<ul style="list-style-type: none"> <li>The calling system identified by its OIN in the Certificate is checked against the list of allowed callers (NotAllowedCallerException on failure)</li> <li>The calling school is identified from the OIN in the wsa:from header. If the school is not in the list of allowed schools, a NotAllowedCallerException will be thrown</li> </ul>
<b>OPERATION</b>	Retrieve the list of active SectorIDs from the database.
<b>OUTPUT</b>	<p>List of 1 or more :</p> <ul style="list-style-type: none"> <li>id: xsd:string, Identifier of sector that can be used to create ECK iDs for this sector</li> <li>name: xsd:string, unique and short name for this sector</li> <li>description: xsd:string, human-readable description for this sector</li> <li>lastEdited: xsd:date, last time this entry was modified</li> </ul>
<b>EXCEPTIONS</b>	NotAllowedCallerException
<b>REMARKS</b>	<ul style="list-style-type: none"> <li>Currently, thee educational sectors are available in the system: <ul style="list-style-type: none"> <li>Primair onderwijs: <a href="http://purl.edustandaard.nl/begrippenkader/512e4729-03a4-43a2-95ba-758071d1b725">http://purl.edustandaard.nl/begrippenkader/512e4729-03a4-43a2-95ba-758071d1b725</a></li> <li>VO: <a href="http://purl.edustandaard.nl/begrippenkader/2a1401e9-c223-493b-9b86-78f6993b1a8d">http://purl.edustandaard.nl/begrippenkader/2a1401e9-c223-493b-9b86-78f6993b1a8d</a></li> <li>MBO: <a href="http://purl.edustandaard.nl/begrippenkader/f3ac3fbb-5eae-49e0-8494-0a44855fff25">http://purl.edustandaard.nl/begrippenkader/f3ac3fbb-5eae-49e0-8494-0a44855fff25</a></li> </ul> </li> </ul> <p>The names, descriptions and values are taken from OBK.</p>

## 2.8. Ping operation

<b>SERVICE DESCRIPTION</b>	<b>pingRequest</b>
<b>CONTEXT</b>	This service is called by allowed LAS systems to verify the service is alive.
<b>INPUT</b>	none
<b>VALIDATIONS</b>	<ul style="list-style-type: none"> <li>The calling system identified by its OIN in the Certificate is checked against the list of allowed callers (NotAllowedCallerException on failure)</li> <li>The calling school is identified from the OIN in the wsa:from header. If the school is not in the list of allowed schools, a NotAllowedCallerException will be thrown</li> </ul>
<b>OPERATION</b>	Verify the database is available for operation
<b>OUTPUT</b>	<ul style="list-style-type: none"> <li>Available: Boolean, the system is available (true) or not (false)</li> <li>applicationVersion: string, identifier for the implementation version</li> <li>systemTime: xsd:dateTime, timestamp of the current system time</li> </ul>
<b>EXCEPTIONS</b>	NotAllowedCallerException
<b>REMARKS</b>	<ul style="list-style-type: none"> <li></li> </ul>

### 3. Common types

<b>Name</b>	HPgn
<b>Fields</b>	xsd:string
<b>Constraints</b>	<ul style="list-style-type: none"><li>• Consists of 64 hex characters <math>([0-9][A-Z][a-z])\{64\}</math></li></ul>
<b>Remarks</b>	Contains the result of the prescribed hash function SCrypt

<b>Name</b>	EckId
<b>Fields</b>	xsd:string
<b>Constraints</b>	<ul style="list-style-type: none"><li>• Is not empty</li></ul>
<b>Remarks</b>	

## 4. Exceptions

Exceptions will be presented by the Nummervoorziening Service as SOAP faults. To distinguish the cause Exception of an operation at the client, the element faultactor will hold the specific Exception. In the detail node, a message node is added with additional information regarding the Exception.

Example of a Soap fault as a response from the Nummervoorziening Service (omitting the Soap Headers):

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <soap:Fault>
      <faultcode>soap:SERVER</faultcode>
      <faultstring>RetrieveEckIdBatch has thrown an exception while building the
response</faultstring>
      <faultactor>InvalidBatchIdentifierException</faultactor>
      <detail>
        <message>Batch with specified identifier does not exist</message>
      </detail>
    </soap:Fault>
  </soap:Body>
</soap:Envelope>
```

The reference clients will contain code in Java and C# to handle these faults and distinguish root causes.