Evidence Broker (EB) - OOTS - API Variant

Contents

Overview

The Evidence Broker is one of the Common Services of the OOTS HLA. It is a service that publishes which types of evidence Member States can provide to prove a particular requirement of a procedure. It provides metadata on the requirements applicable in a procedure and which evidence can be used by the User to prove fulfillment. Using the mapping from criteria or information requirements to possible evidence types, the Evidence Requester can find the evidence types that can prove that the User fulfills the requirements of the procedure.

Information Model

The EB Information Model is based on the ISA[2] SEMIC Core Criterion and Core Evidence Vocabulary (CCCEV) v2.0. The CCCEV is designed to support the exchange of information between organisations defining requirements and organisations responding to these requirements by means of evidence types.

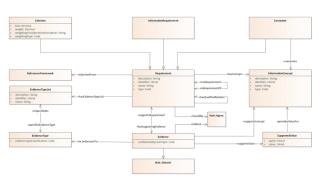The CCCEV contains two basic and complementary core concepts:

- The Requirement, which is used as the basis for making a judgement or decision, e.g. a requirement set in a public tender or a condition that has to be fulfilled for a public service to be executed;
- The evidence type, which proves that something else exists or is true. In particular, an evidence is used to prove that a specific requirement is met by someone o by something.

Requirement Model

One of the central concepts of the Evidence Broker is the '*Requirement*'. It is a condition or prerequisite that someone requests and someone else has to meet.

The requirement is realised by three concrete types of requirements: The Information Requirement, the Criterion and the Constraint.

- ***The Information Requirement*** is to be seen as a request for data that proves one or more facts of

the real world, or that leads to the source of such a proof.
- **The Criterion** is to be seen as a condition that will be evaluated.
- **The Constraint** is a limitation imposed on any type of requirement or on an element defined inside a requirement.

Evidence Type Model

Each requirement is linked with one or more lists of Evidence Types. Each list contains one or more evidence types that can prove the specific requirement. The following behavior is supported by the EB Mechanism:

- The respondent to a **Requirement** must provide at least one evidence per each type of evidence specified in one list; the respondent can select the list amongst the ones proposed by the requester. This amounts to say that the content of a list is combined via the logic operator 'AND', and the lists are combined via the logic operator (exclusive) 'OR'.
- The types of evidences can be described in detail with respect to their jursidiction level.
- The class **'Evidence'** provides the means to support responses to *Criteria* or in response to a concrete *Information Requirements*.

The EB keeps a mapping between the requirements and the evidence types, either national or harmonized, that are able to fulfill these requirements.

Criterion to Evidence Type Mapping Mechanism

The EB mapping mechanism is a requirement-oriented one. It assumes that each procedure has one or more specific requirements that need to be fulfilled by the User that executes the procedure. Conceptualy, the mapping process follows the steps below:

1. A Member state implementing a procedure, has identified a requirement that must be fulfilled by the user executing the procedure.
2. It initially checks whether this requirement already exists and has been addressed within the scope of this or another procedure, by scanning the list of available requirements.
3. If the requirement does not already exist, the Member State requests a requirement addition for the specific procedure. If it exists, then it maps this requirement as part of the implementation of the procedure in the Member State.
4. Member states providing evidence need to map the specific new requirement with list of evidence types that prove the requirement added, by adding evidence types. These evidence types MUST be registered in the codelist of evidence type classifications, published by the semantic repository.

For the pivoting mechanism to work, each requirement MUST have a EU-wide scope so that is visible and mapable to evidence types issued by all the MS.

Query Interface Specification

The query interface specification for the Evidence Broker is defined using the REST API principles. It uses the classes of `EvidenceType` and `Requirement` as its main REST top-level resources and builds its queries around these resources.

Get List of Requirements Query

The initial top-level query returns a list of available requirements.

The supported parameters and query filters, are listed in the following table:

Parameter	Requirement	Location	Description
proc-identifier	OPTIONAL	Query Parameter	The identifier of the procedure at the EU level, used to filter only the requirements that are used under the specific procedure
proc-jurisdiction	OPTIONAL	Query Parameter	The jurisdiction of the procedure, express as a ISO 3166-2 country code, used to filter only the requirements that are used under the specific member state for procedure implemention

The following table summarizes the REST API Operation for getting the list of requirements:

API Operation Attribtures and Parameters	Value
URI Template	**api/v1/requirements**{**?proc-id=**<*procedure-identifier*>&**proc-jurisdiction**=<*country-code*>}
Method	GET
Request Body	N/A
Successful Response Schema	SDG AP Evidence Broker Profile - XML Representation
Error Response Schema	application/problem+xml [RFC8707 - Appendix A]

The query responses contains the list of requirements, with each requirement correlated to one or more procedure national implementations. The following example shows a response using the SDG Application Profile XML Representation.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<RequirementList xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">

    <Requirement xsi:type="CriterionType">
        <!-- Minimum Dataset can have more optional fields -->
        <RequirementName>Proof of Birth</RequirementName>

        <Reference>
            <Title languageID="en">Procedure X - Annex II of SDG</Title>
            <Description languageID="en"> Procedure 5 of Annex II of the Regulation (EU) 2018/1724
                of the European Parliament and of the Council of 2 October 2018 establishing a
single digital gateway
                to provide access to information, to procedures and to assistance and problem-
solving services and amending Regulation (EU) No 1024/2012
            </Description>
            <JurisdictionLevelCode>BE</JurisdictionLevelCode>
        </Reference>
    </Requirement>

    <Requirement xsi:type="CriterionType">
        <RequirementName>Proof of Adulthood</RequirementName>

        <Reference>
            <Title languageID="en">Procedure X - Annex II of SDG</Title>
            <Description languageID="en"> Procedure 5 of Annex II of the Regulation (EU) 2018/1724
                of the European Parliament and of the Council of 2 October 2018 establishing a
single digital gateway
                to provide access to information, to procedures and to assistance and problem-
solving services and amending Regulation (EU) No 1024/2012
            </Description>
            <JurisdictionLevelCode>EL</JurisdictionLevelCode>
        </Reference>
    </Requirement>

    <Requirement xsi:type="CriterionType">
        <RequirementName>Proof of Birth</RequirementName>

        <Reference>
            <Title languageID="en">Procedure X - Annex II of SDG</Title>
            <Description languageID="en"> Procedure 5 of Annex II of the Regulation (EU) 2018/1724
                of the European Parliament and of the Council of 2 October 2018 establishing a
single digital gateway
                to provide access to information, to procedures and to assistance and problem-
solving services and amending Regulation (EU) No 1024/2012
            </Description>
            <JurisdictionLevelCode>EE</JurisdictionLevelCode>
        </Reference>
    </Requirement>

</RequirementList>
```

Get Evidence Evidence Types for Requirement Query

This query returns the list of evidence types that prove a specific requirement. It must contain the Identifier of the requirement, that can be extracted using the "Get List of Requirements" query if not known. The supported parameters and query filters, are listed in the following table:

Parameter	Requirement	Location	Description
requirement-id	MANDATORY	Resource Path	The id of the requirement we request the evidence types for
country-code	OPTIONAL	Resource Path	The country code of the mapped evidence under request
jurisdiction-admin-l2	OPTIONAL	Query Parameter	The level two administration level code for the jurisdiction of the evidence type, expressed using NUTS code. It MUST be combined with `country-code`
jurisdiction-admin-l3	OPTIONAL	Query Parameter	The level three administration level code for the jurisdiction of the evidence type, expressed using LAU code. It MUST be combined with `country-code`

The following table summarizes the REST API Operation for getting the list of requirements:

API Operation Attribtures and Parameters	Value
URI Template	**api/v1/requirements/**<*requirement-id*>/**evidence-types** /{<*country-code*>**?jursidiction-admin-l2=**<*nuts-code*>**jursidiction-admin-l3=**<*lau-code*>}
Method	GET
Request Body	N/A
Successful Response Schema	SDG AP Evidence Broker Profile - XML Representation
Error Response Schema	application/problem+xml [RFC8707 - Appendix A]

The query response contains the list of evidence types that fulfill the specific requirement of the query, filtered by the jurisdiction level code. The following example shows a response using the SDG Application Profile XML Representation

```xml
1   <?xml version="1.0" encoding="UTF-8"?>
2   <Requirement xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="CriterionType">
3
4       <RequirementId>315cfd75-6605-49c4-b0fe-799833b41099</RequirementId>
5       <RequirementName>Proof of Birth</RequirementName>
6
7       <ReferenceFramework>
8
9           <!-- Procedure Identifier -->
10          <Identifier>118fd444-6443-42be-a084-c9fbfd1f674d</Identifier>
11          <Title languageID="en">Procedure 5 - Annex II of SDG as Implemented in the Spanish
    Portal</Title>
12          <Description languageID="en"> Procedure 5 of Annex II of the Regulation (EU) 2018/1724
13              of the European Parliament and of the Council of 2 October 2018 establishing a single
    digital gateway
14              to provide access to information, to procedures and to assistance and problem-solving
    services and amending Regulation (EU) No 1024/2012
15          </Description>
16
17          <!-- The Identifier of the SDGR Procedure which this procedure relates to -->
18          <RelatesTo>http://data.europa.eu/eli/reg/2018/1724/oj#AnnexII-5</RelatesTo>
19
20          <!-- Requirement is used in the implementation of Procedure 5 in Spain -->
21          <Jurisdiction>
22              <AdminUnitLevel1>ES</AdminUnitLevel1>
23          </Jurisdiction>
24
25      </ReferenceFramework>
26
27      <ReferenceFramework>
28
29          <!-- Procedure Identifier -->
30          <Identifier>03b82e6a-3227-4751-a815-b570a9c0aeb4</Identifier>
31          <Title languageID="en">Procedure 5 - Annex II of SDG as Implemented in Belgian Portal</
    Title>
32          <Description languageID="en"> Procedure 5 of Annex II of the Regulation (EU) 2018/1724
33              of the European Parliament and of the Council of 2 October 2018 establishing a single
    digital gateway
34              to provide access to information, to procedures and to assistance and problem-solving
    services and amending Regulation (EU) No 1024/2012
35          </Description>
36
37          <!-- The Identifier of the SDGR Procedure which this procedure relates to -->
38          <RelatesTo>http://data.europa.eu/eli/reg/2018/1724/oj#AnnexII-5</RelatesTo>
39
40          <!-- Requirement is used in the implementation of Procedure 5 in Belgium -->
41          <Jurisdiction>
42              <AdminUnitLevel1>BE</AdminUnitLevel1>
43          </Jurisdiction>
44      </ReferenceFramework>
45
46      <EvidenceTypeList>
47          <!-- Example structure of an evidence type having national coverage area / jurisdiction --
    >
```

```
48              <EvidenceType>
49                  <!-- Code from a codelist -->
50                  <EvidenceTypeId>ES-EV1223</EvidenceTypeId>
51                  <Description>certificado de nacimiento</Description>
52                  <Jurisdiction>
53                      <!-- ISO code -->
54                      <AdminUnitLevel1>ES</AdminUnitLevel1>
55                      <!-- NUTS Code -->
56                      <AdminUnitLevel2>ES211</AdminUnitLevel2>
57                      <!-- LAU Code -->
58                      <AdminUnitLevel3>01001</AdminUnitLevel3>
59                  </Jurisdiction>
60              </EvidenceType>
61          </EvidenceTypeList>
62
63          <!-- Example structure of an evidence type having national coverage area / jurisdiction -->
64          <EvidenceTypeList>
65              <EvidenceType>
66                  <!-- Code from a codelist -->
67                  <EvidenceTypeId>DE-EV001</EvidenceTypeId>
68                  <Description>Geburtsurkunde</Description>
69                  <Jurisdiction>
70                      <!-- Country - Mandatory -->
71                      <AdminUnitLevel1>DE</AdminUnitLevel1>
72                      <!-- Regional Code not applicable for DE (Common Evidence for all country) -->
73                  </Jurisdiction>
74              </EvidenceType>
75          </EvidenceTypeList>
76  </Requirement>
```

API Error Response

The API Error responses adhere to the "Problem Details for HTTP APIs" IETF RFC 7807, using the XML represention as described in the Appendix A of the RFC. The RFC further enriches the Response Status codes defined by HTTP, by providing a canonical model for problem details. The following table provides the list of possible errors, expressed as problem details:

#	Title	Type	Status	Detail
1	Requirement list is empty	urn:sdg:eb:problem:reqlist-empty	404	Returned when the request to get a list of requirements requested is empty
2	Requirement not found	urn:sdg:eb:problem:req-not-found	404	The requirement requested, represented by the requirement id, does not exist
3	Unknown Juridsiction Level Code	urn:sdg:eb:problem:uknown-jlc	400	Returned when the value of the jurisdiction level code query parameter is invalid or unknown

#	Title	Type	Status	Detail
4	Unknown procedure	urn:sdg:eb:problem:uknown-proc	400	Returned when the value of the procedure-id query parameter is invalid or unknown
5	Unknown procedure implementation country	urn:sdg:eb:problem:uknown-proc-impl-country	400	Returned when the value of the procedure implementation country query parameter is invalid or unknown

The following example shows a response using the problem+xml schema of "Problem Details for HTTP APIs" IETF RFC 7807:

```xml
1  <?xml version="1.0" encoding="UTF-8"?>
2  <problem xmlns="urn:ietf:rfc:7807">
3    <type>urn:sdg:eb:problem:req-not-found</type>
4    <title>Requirement not found</title>
5    <detail>The requirement requested, represented by the requirement id, does not exist</detail>
6    <status>404</status>
7  </problem>
```