

Evidence Broker (EB) - OOTS

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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

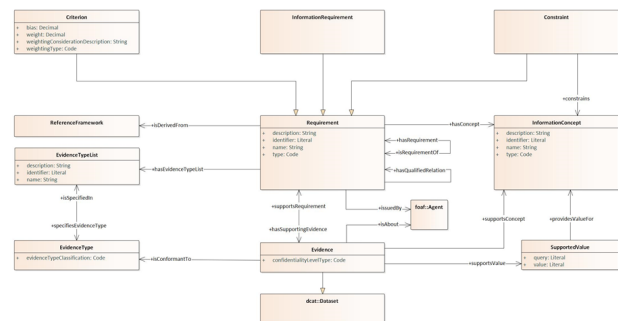
The EB Information Model is based on the ISA² SEMIC Core Criterion and Core Evidence Vocabulary (CCCEV) v2.0. The CCCEV is designed to support the exchange of information between organisations defining requirements and organisations responding to these requirements by means of evidence types.

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 or 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 jurisdiction 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. Conceptually, 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 based on the OASIS ebXML RegRep V4 standard. This standard has multiple protocol bindings that can be used to execute queries. Since the EB queries have only simple, single-value parameters, the REST binding is used to implement the EB query interface. This implies that the query

transaction is executed as an HTTP GET request with the URL representing the query to execute and the HTTP response carrying the query response as an XML document. This section further profiles the [REST binding as specified in the OASIS RegRep standard](#) for use by the EB.

The RegRep Query Request

The URL pattern for parameterised query invocation is defined as follows in the OASIS RegRep REST binding:

```
«server base url»/rest/search?queryId={the query id}(&{param-name}={param-value})*
```

The EB query interface consists of two simple pre-defined parameterised queries which are detailed below. The RegRep standard defines a set of canonical queries and query parameters that can be used. As the Evidence Broker is not a full implementation of a RegRep server it is NOT REQUIRED to support these canonical queries and query parameters. Clients therefore SHOULD only use the queries and query parameters specified by this specification. When the canonical queries or parameters are used the EB MAY return an error.

The RegRep Successful Response

As specified by the RegRep REST binding the EB MUST always return a RegRep QueryResponse document which MUST either contain an Exception or RegistryObjectList element with zero or more RegistryObjects.

An example response with response-specific details omitted is provided in the following table:

1	<code><query:QueryResponse xmlns="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:4.0"</code>
2	<code> xmlns:lcm="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:4.0"</code>
3	<code> xmlns:query="urn:oasis:names:tc:ebxml-regrep:xsd:query:4.0"</code>
4	<code> xmlns:rim="urn:oasis:names:tc:ebxml-regrep:xsd:rim:4.0"</code>
5	<code> xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:4.0"</code>
6	<code> xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:4.0" totalResultCount="1" startIndex="0" status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success"></code>
7	<code> <!-- depending on the count of results returned, the totalResultCount attribute should reflect the number of the datasets returned --></code>
8	<code> <rim:RegistryObjectList></code>
9	<code> <!-- One registry object per Requirement --></code>
10	<code> <rim:RegistryObject id="RE238912378"></code>
11	<code> <rim:Slot name="Requirement"></code>
12	<code> <rim:SlotValue xsi:type="rim:AnyValueType"></code>
13	<code> <Requirement xmlns="https://data.europa.eu/sdg/xml#"></code>
14	<code> <!-- Omitted for clarity --></code>
15	<code> </Requirement></code>
16	<code> </rim:SlotValue></code>
17	<code> </rim:Slot></code>
18	<code> </rim:RegistryObject></code>
19	<code> </rim:RegistryObjectList></code>
20	<code></query:QueryResponse></code>

When an error occurs during the execution of the query, the EB returns an exception as defined in the EB Query Interface Specification. The exception has the following properties that are profiled for each expected error of the query.

- **xsi:type:** The type of the error, selectable from a predefined set of error classes of the Query Interface of the EB
- **severity:** The severity of the error, selectable from a predefined set of error classes of the Query Interface of the EB
- **message:** A string describing the error in Human Readable form.
- **code:** A code for the error, specified by the EB Technical Design documents

An Example for an empty result set is provided below:

```
<?xml version="1.0" encoding="UTF-8"?>
<query:QueryResponse xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:4.0"
  xmlns:rjm="urn:oasis:names:tc:ebxml-regrep:xsd:rjm:4.0"
  xmlns:query="urn:oasis:names:tc:ebxml-regrep:xsd:query:4.0"
  status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Failure">

  <rs:Exception
    xsi:type="rs:ObjectNotFoundException"
    severity="urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Error"
    message="No Evidence Providers were found based on the given parameters"
    code="EB:ERR:0001">
  </rs:Exception>
</query:QueryResponse>
```

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	Description
queryId	MUST	This parameter MUST have value urn:oats:eb:ebxml-regrep:queries:requirements-by-procedure-and-jurisdiction .
proc-identifier	OPTIONAL	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	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 implementation

The query response 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.

```

1 <query:QueryResponse xmlns="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:4.0"
2   xmlns:lcm="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:4.0"
3   xmlns:query="urn:oasis:names:tc:ebxml-regrep:xsd:query:4.0"
4   xmlns:rim="urn:oasis:names:tc:ebxml-regrep:xsd:rim:4.0"
5   xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:4.0"
6   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:4.0" totalResultCount="2" startIndex="0" status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success">
7
8   <rim:RegistryObjectList>
9     <!-- One registry object per dataset -->
10    <rim:RegistryObject id="315cfd75-6605-49c4-b0fe-799833b41099">
11      <Requirement xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="Criterion
12      Type">
13
14        <RequirementId>315cfd75-6605-49c4-b0fe-799833b41099</RequirementId>
15        <RequirementName>Proof of Birth</RequirementName>
16
17        <ReferenceFramework>
18
19          <!-- Procedure Identifier -->
20          <Identifier>118fd444-6443-42be-a084-c9fbfd1f674d</Identifier>
21          <Title languageID="en">Procedure 5 - Annex II of SDG as Implemented in the
22          Spanish Portal</Title>
23          <Description languageID="en"> Procedure 5 of Annex II of the Regulation (EU)
24          2018/1724
25
26            of the European Parliament and of the Council of 2 October 2018
27            establishing a single digital gateway
28            to provide access to information, to procedures and to assistance and
29            problem-solving services and amending Regulation (EU) No 1024/2012
30          </Description>
31
32          <!-- The Identifier of the SDGR Procedure which this procedure relates to -->
33          <RelatesTo>http://data.europa.eu/eli/reg/2018/1724/oj#AnnexII-5</RelatesTo>
34
35          <!-- Requirement is used in the implementation of Procedure 5 in Spain -->
36          <Jurisdiction>
37            <AdminUnitLevel1>ES</AdminUnitLevel1>
38          </Jurisdiction>
39
40        </ReferenceFramework>
41
42        <ReferenceFramework>
43
44          <!-- Procedure Identifier -->
45          <Identifier>03b82e6a-3227-4751-a815-b570a9c0aeb4</Identifier>
46          <Title languageID="en">Procedure 5 - Annex II of SDG as Implemented in Belgian
47          Portal</Title>
48          <Description languageID="en"> Procedure 5 of Annex II of the Regulation (EU)
49          2018/1724
50
51            of the European Parliament and of the Council of 2 October 2018
52            establishing a single digital gateway
53            to provide access to information, to procedures and to assistance and
54            problem-solving services and amending Regulation (EU) No 1024/2012

```

```

44         </Description>
45
46         <!-- The Identifier of the SDGR Procedure which this procedure relates to -->
47         <RelatesTo>http://data.europa.eu/eli/reg/2018/1724/oj#AnnexII-5</RelatesTo>
48
49         <!-- Requirement is used in the implementation of Procedure 5 in Belgium -->
50         <Jurisdiction>
51             <AdminUnitLevel1>BE</AdminUnitLevel1>
52         </Jurisdiction>
53     </ReferenceFramework>
54 </Requirement>
55 </rim:RegistryObject>
56
57 <rim:RegistryObject id="315cfd75-6605-49c4-b0fe-799833b41099">
58     <Requirement xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="Criterion
Type">
59
60         <RequirementId>315cfd75-6605-49c4-b0fe-799833b41099</RequirementId>
61         <RequirementName>Proof of Death</RequirementName>
62
63         <ReferenceFramework>
64
65             <!-- Procedure Identifier -->
66             <Identifier>118fd444-6443-42be-a084-c9fbfd1f674d</Identifier>
67             <Title languageID="en">Procedure 5 - Annex II of SDG as Implemented in the
Spanish Portal</Title>
68             <Description languageID="en"> Procedure 5 of Annex II of the Regulation (EU)
2018/1724
69                 of the European Parliament and of the Council of 2 October 2018
70                 establishing a single digital gateway
71                 to provide access to information, to procedures and to assistance and
72                 problem-solving services and amending Regulation (EU) No 1024/2012
73             </Description>
74             <!-- The Identifier of the SDGR Procedure which this procedure relates to -->
75             <RelatesTo>http://data.europa.eu/eli/reg/2018/1724/oj#AnnexII-5</RelatesTo>
76
77             <!-- Requirement is used in the implementation of Procedure 5 in Spain -->
78             <Jurisdiction>
79                 <AdminUnitLevel1>EL</AdminUnitLevel1>
80             </Jurisdiction>
81         </ReferenceFramework>
82
83         <ReferenceFramework>
84
85             <!-- Procedure Identifier -->
86             <Identifier>03b82e6a-3227-4751-a815-b570a9c0aeb4</Identifier>
87             <Title languageID="en">Procedure 5 - Annex II of SDG as Implemented in Belgian
Spanish Portal</Title>
88             <Description languageID="en"> Procedure 5 of Annex II of the Regulation (EU)
2018/1724
89                 of the European Parliament and of the Council of 2 October 2018
90                 establishing a single digital gateway
91                 to provide access to information, to procedures and to assistance and
92                 problem-solving services and amending Regulation (EU) No 1024/2012

```

```

91         </Description>
92
93         <!-- The Identifier of the SDGR Procedure which this procedure relates to -->
94         <RelatesTo>http://data.europa.eu/eli/reg/2018/1724/oj#AnnexII-5</RelatesTo>
95
96         <!-- Requirement is used in the implementation of Procedure 5 in Belgium -->
97         <Jurisdiction>
98             <AdminUnitLevel1>BE</AdminUnitLevel1>
99         </Jurisdiction>
100        </ReferenceFramework>
101        </Requirement>
102    </rim:RegistryObject>
103
104    </rim:RegistryObjectList>
105 </query:QueryResponse>

```

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	Description
queryId	MANDATORY	urn:oots:eb:ebxml-regrep:queries:evidence-types-by-requirement-and-jurisdiction
requirement-id	MANDATORY	The id of the requirement we request the evidence types for
country-code	OPTIONAL	The country code of the mapped evidence under request
jurisdiction-admin-l2	OPTIONAL	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	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 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

```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <query:QueryResponse xmlns="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:4.0"
3   xmlns:lcm="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:4.0"
4   xmlns:query="urn:oasis:names:tc:ebxml-regrep:xsd:query:4.0"
5   xmlns:rims="urn:oasis:names:tc:ebxml-regrep:xsd:rims:4.0"
6   xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:4.0"
7   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:4.0" totalResultCount="2" startIndex="0" status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success">
8
9   <rims:RegistryObjectList>
10     <!-- One registry object per dataset -->
11     <rims:RegistryObject id="315cfd75-6605-49c4-b0fe-799833b41099">
12       <Requirement xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="Criterion
13         Type">
14
15         <RequirementId>315cfd75-6605-49c4-b0fe-799833b41099</RequirementId>
16         <RequirementName>Proof of Birth</RequirementName>
17
18         <ReferenceFramework>
19
20           <!-- Procedure Identifier -->
21           <Identifier>118fd444-6443-42be-a084-c9fbfd1f674d</Identifier>
22           <Title languageID="en">Procedure 5 - Annex II of SDG as Implemented in the
23             Spanish Portal</Title>
24           <Description languageID="en"> Procedure 5 of Annex II of the Regulation (EU)
25             2018/1724
26               of the European Parliament and of the Council of 2 October 2018
27             establishing a single digital gateway
28               to provide access to information, to procedures and to assistance and
29             problem-solving services and amending Regulation (EU) No 1024/2012
30           </Description>
31
32           <!-- The Identifier of the SDGR Procedure which this procedure relates to -->
33           <RelatesTo>http://data.europa.eu/eli/reg/2018/1724/oj#AnnexII-5</RelatesTo>
34
35           <!-- Requirement is used in the implementation of Procedure 5 in Spain -->
36           <Jurisdiction>
37             <AdminUnitLevel1>ES</AdminUnitLevel1>
38           </Jurisdiction>
39
40         </ReferenceFramework>
41
42         <ReferenceFramework>
43
44           <!-- Procedure Identifier -->
45           <Identifier>03b82e6a-3227-4751-a815-b570a9c0aeb4</Identifier>
46           <Title languageID="en">Procedure 5 - Annex II of SDG as Implemented in Belgian
47             Portal</Title>
48           <Description languageID="en"> Procedure 5 of Annex II of the Regulation (EU)
49             2018/1724
50               of the European Parliament and of the Council of 2 October 2018
51             establishing a single digital gateway

```



```

44         to provide access to information, to procedures and to assistance and
problem-solving services and amending Regulation (EU) No 1024/2012
45         </Description>
46
47         <!-- The Identifier of the SDGR Procedure which this procedure relates to -->
48         <RelatesTo>http://data.europa.eu/eli/reg/2018/1724/oj#AnnexII-5</RelatesTo>
49
50         <!-- Requirement is used in the implementation of Procedure 5 in Belgium -->
51         <Jurisdiction>
52             <AdminUnitLevel1>BE</AdminUnitLevel1>
53         </Jurisdiction>
54     </ReferenceFramework>
55
56     <EvidenceTypeList>
57         <!-- Example structure of an evidence type having national coverage area /
jurisdiction -->
58         <EvidenceType>
59             <!-- Code from a codelist -->
60             <EvidenceTypeId>ES-EV1223</EvidenceTypeId>
61             <Description>certificado de nacimiento</Description>
62             <Jurisdiction>
63                 <!-- ISO code -->
64                 <AdminUnitLevel1>ES</AdminUnitLevel1>
65                 <!-- NUTS Code -->
66                 <AdminUnitLevel2>ES211</AdminUnitLevel2>
67                 <!-- LAU Code -->
68                 <AdminUnitLevel3>01001</AdminUnitLevel3>
69             </Jurisdiction>
70         </EvidenceType>
71     </EvidenceTypeList>
72
73     <!-- Example structure of an evidence type having national coverage area /
jurisdiction -->
74     <EvidenceTypeList>
75         <EvidenceType>
76             <!-- Code from a codelist -->
77             <EvidenceTypeId>DE-EV001</EvidenceTypeId>
78             <Description>Geburtsurkunde</Description>
79             <Jurisdiction>
80                 <!-- Country - Mandatory -->
81                 <AdminUnitLevel1>DE</AdminUnitLevel1>
82                 <!-- Regional Code not applicable for DE (Common Evidence for all
country) -->
83             </Jurisdiction>
84         </EvidenceType>
85     </EvidenceTypeList>
86 </Requirement>
87 </rim:RegistryObject>
88 </rim:RegistryObjectList>
89 </query:QueryResponse>

```

API Error Response

Query Error Responses

The following table provides the list of the error responses defined for the query:

#	Error Title	Type	code	Message
1	Requirement list is empty	rs:ObjectNotFoundExceptionType	EB:ERR:0001	list of requirements requested is empty
2	Requirement not found	rs:ObjectNotFoundExceptionType	EB:ERR:0002	The requirement requested, represented by the requirement id, does not exist
3	Unknown Jurisdiction Level Code	rs:InvalidRequestExceptionType	EB:ERR:0003	The jurisdiction level code query parameter is invalid or unknown
4	Unknown procedure	rs:InvalidRequestExceptionType	EB:ERR:0004	The value of the procedure-id query parameter is invalid or unknown
5	Unknown procedure implementation country	rs:InvalidRequestExceptionType	EB:ERR:0005	The value of the procedure implementation country query parameter is invalid or unknown
6	Unknown Query	rs:InvalidRequestExceptionType	EB:ERR:0004	The requested Query does not exist

Example for an empty result set:

```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <query:QueryResponse xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
3     xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:4.0"
4     xmlns:rjm="urn:oasis:names:tc:ebxml-regrep:xsd:rjm:4.0"
5     xmlns:query="urn:oasis:names:tc:ebxml-regrep:xsd:query:4.0"
6     status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Failure">
7
8   <rs:Exception
9     xsi:type="rs:ObjectNotFoundExceptionType"
10    severity="urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Error"
11    message="list of requirements requested is empty"
12    code="EB:ERR:0001">
13 </rs:Exception>
14 </query:QueryResponse>

```