



## BSI Technical Guideline 03125

### Preservation of Evidence of Cryptographically Signed Documents

#### **Appendix to Annex TR-ESOR-E: Concretisation of the Interfaces based on the eCard API Framework**

Designation	General Specification <b>ETSI TS119512 TR-ESOR Transformator</b>
Abbreviation	BSI TR-ESOR-TRANS
Version	1.3
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# 1. Summary

The present document specifies the BSI Transformator component 'ETSI TS119512 TR-ESOR Transformator', which maps a suitably profiled instance of the Preservation API defined in [ETSI TS 119 512] to the TR-S.4 interface defined in [TR-ESOR-E], version 1.3.

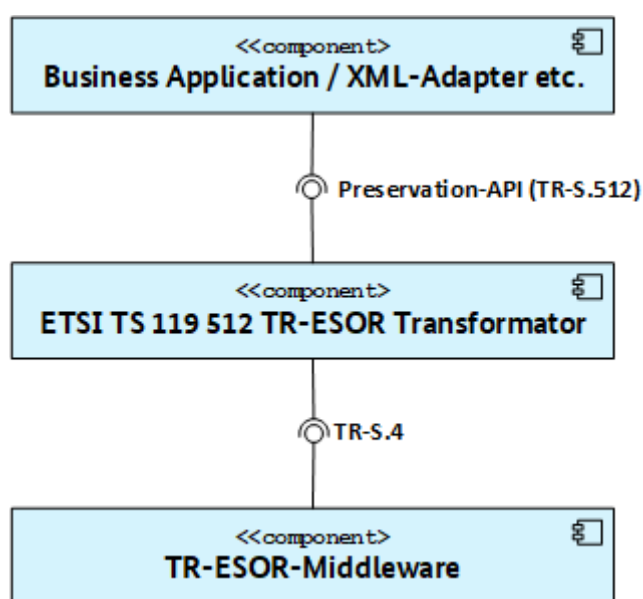
## 2. Objective

The Federal Office for Information Security (BSI) is the German government agency responsible for secure information processing and competence centre for electronic signatures.

Acting in these capacities, the BSI has developed a Technical Guideline for the 'Preservation of Evidence of Cryptographically Signed Documents' (TR-03125/TR-ESOR), which encompasses in particular the TR-S.4 interface defined in [TR-ESOR-E], version 1.3.

From the starting-point of the TR-S.4 interface, the BSI has also supported the standardisation of Preservation Services at ETSI ESI, with the Preservation API defined in [ETSI TS 119 512] being a key product of this work.

Working from this basis, an 'ETSI TS119512 TR-ESOR Transformator' has been developed and released as open source following the completion of the project. The Transformator maps calls to the Preservation API developed by ETSI ESI (also called as TR-S.512 for short) to corresponding calls to the TR-S.4 interface. In this way, the ETSI TS119512 TR-ESOR Transformator ensures that version 1.3 TR-ESOR middleware products already supporting the TR-S.4 interface can also offer a suitable Preservation API profile without any need for changing the TR-ESOR product. The designation 'TS 119 512 Transformator' or 'TR-ESOR Transformator' is also used as a short form for the ETSI TS119512 TR-ESOR Transformator, as is the case with the following Figure 1, for example.



**Figure 1** System with the ETSI TS119512 TR-ESOR Transformator

## 3. Specification

### 3.1 RetrieveInfo

The `RetrieveInfo` function according to [ETSI TS 119 512] returns a statically defined `Profile` element which corresponds to the range of functions of the TR-S.512 interface in use.

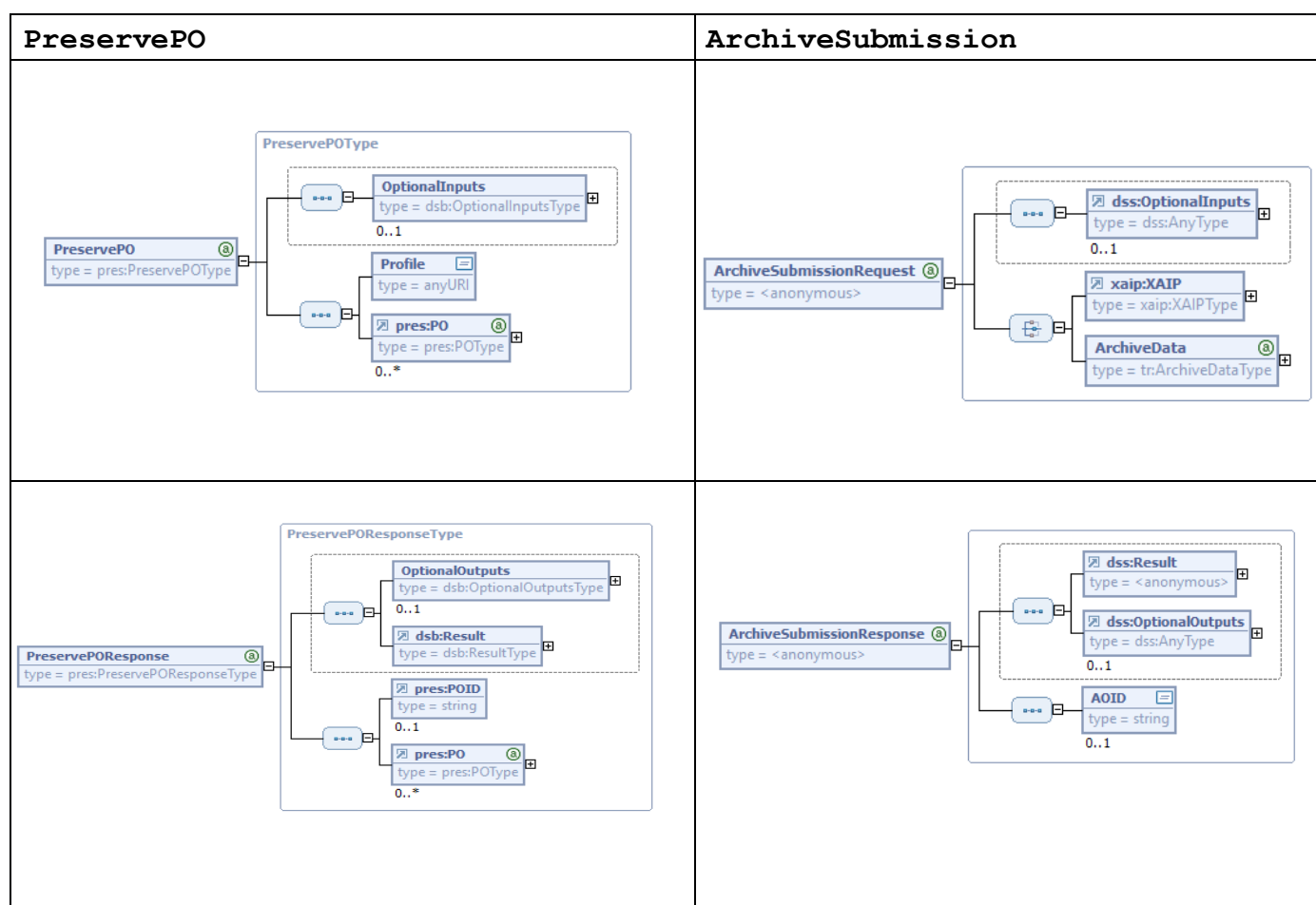
The `Profile` element has the following child elements (c.f. [ETSI TS 119512], section 5.4.7):

- `ProfileIdentifier` – <http://www.bsi.bund.de/tr-esor/V1.3/profile/preservation-api/V1.1.2>
- `Specification` – URL-based references to the published specification documents [TR-ESOR-E] and [ETSI TS 119 512]
- `Operation` – specifies the relevant information regarding the supported functions and formats (see following sections for details, note that the statically defined profile has to reflect the range of functions supported by the used TR-S.4 interface)
- `Policy/PolicyByRef/PolicyID` – URL-based reference to the policy to be defined
- `SchemeIdentifier` – <http://uri.etsi.org/19512/scheme/pds+pgd+aug+wst+ers>
- `ProfileValidityPeriod/ValidFrom` – configurable date
- `PreservationStorageModel` – in this case predefined fixed as `WithStorage`
- `PreservationGoal`
  - <http://uri.etsi.org/19512/goal/pds>
  - <http://uri.etsi.org/19512/goal/pgd>
  - <http://uri.etsi.org/19512/goal/aug>
- `EvidenceFormat`
  - `urn:ietf:rfc:4998:EvidenceRecord` (this value, where applicable, is assumed as the default value if the `EvidenceFormat` element is not specified)
  - `urn:ietf:rfc:6283:EvidenceRecord`

The return codes can be found in [ETSI TS 119 512], section 5.3.2.2.1.

### 3.2 PreservePO ↔ ArchiveSubmission

Following a call to `PreservePO` from [ETSI TS 119 512], the input parameter `PreservePO` from [ETSI TS 119 512] is mapped to an input parameter `ArchiveSubmissionRequest` defined in [TR-ESOR-E] and, conversely, the return parameter from `ArchiveSubmissionResponse` defined in [TR-ESOR-E] is mapped to the return parameter `PreservePOResponse` from [ETSI TS 119 512].



**Figure 2** PreservePO/ArchiveSubmission – request and response

### 3.2.1 PreservePO → ArchiveSubmissionRequest

Here, the parameters in PreservePO are handled as follows:

- OptionalInputs – the OptionalInputs (AOID, ReturnVerificationReport and ImportEvidence) defined in [TR-ESOR-E] are passed on to the TR-S.4 interface if they were passed in the PreservePO request. Other OptionalInputs trigger a corresponding error<sup>1</sup>.
- Profile – expects <http://www.bsi.bund.de/tr-esor/V1.3/profile/preservation-api/V1.1.2><http://www.bsi.bund.de/tr-esor/V1.2.2/profile/preservation-api/V1.1.2>, which clarifies the fact that the profile specified in this document (see also section 3.1) is being requested.
- PO – contains exactly one ‘preservation object’, which is passed in the ArchiveSubmissionRequest. The following formats are supported here:
  - XAIP v1.3 as defined in [TR-ESOR-F], section 3.1 and as defined in [ETSI TS 119 512], Annexes A1.5 and A.3.2 (<http://www.bsi.bund.de/tr-esor/xaip/1.3>) is passed in ArchiveSubmissionRequest/XAIP.

<sup>1</sup> <http://uri.etsi.org/19512/error/notSupported>



- LXAIP as defined in [TR-ESOR-F], section 3.2 and as defined in [ETSI TS 119 512] Annex A.3.2 (<http://www.bsi.bund.de/tr-esor/lxaip/1.3>) is passed in ArchiveSubmissionRequest/XAIP.
- ASiC-ERS as defined in [TR-ESOR-F], section 3.3 and as defined in [ETSI TS 119 512] Annex A.3.1 (<http://uri.etsi.org/ades/ASiC/type/ASiC-ERS>) is passed in ArchiveSubmissionRequest/ArchiveData as a binaryData element as defined in [BSI TR-03125-E], section 3.1.1.
- CAdES as defined in [ETSI TS 119 512] Annex A.1.1 (<http://uri.etsi.org/ades/CAdES>) is passed in ArchiveSubmissionRequest/ArchiveData as a binaryData element as defined in [TR-ESOR-E], section 3.1.1. If a MIME type is not set, [application/cms](#) is used as the default.
- XAdES as defined in [ETSI TS 119 512] Annex A.1.2 (<http://uri.etsi.org/ades/XAdES>) is passed in ArchiveSubmissionRequest/ArchiveData as a binaryData element as defined in [TR-ESOR-E], section 3.1.1. If a MIME type is not set, [application/xml](#) is used as the default.
- PAdES as defined in [ETSI TS 119 512] Annex A.1.3 (<http://uri.etsi.org/ades/PAdES>) is passed in ArchiveSubmissionRequest/ArchiveData as a binaryData element as defined in [TR-ESOR-E], section 3.1.1. If a MIME type is not set, [application/pdf](#) is used as the default.
- ASiC-S as defined in [ETSI TS 319 162] (<http://uri.etsi.org/ades/ASiC/type/ASiC-S>) is passed in ArchiveSubmissionRequest/ArchiveData as a binaryData element as defined in [TR-ESOR-E], section 3.1.1. If a MIME type is not set, [application/vnd.etsi.asic-s+zip](#) is used as the default.
- ASiC-E as defined in [ETSI TS 119 512] Annex A.1.4 (<http://uri.etsi.org/ades/ASiC/type/ASiC-E>) is passed in ArchiveSubmissionRequest/ArchiveData as a binaryData element as defined in [TR-ESOR-E], section 3.1.1. If a MIME type is not set, [application/vnd.etsi.asic-e+zip](#) is used as the default.
- DigestList as defined in [ETSI TS 119 512] Annex A.1.6 (<http://uri.etsi.org/19512/format/DigestList>) is passed in ArchiveSubmissionRequest/ArchiveData as a binaryData element as defined in [TR-ESOR-E], section 3.1.1. <https://www.iana.org/assignments/media-types/application/vnd.etsi.asic-e+zip><https://www.iana.org/assignments/media-types/application/vnd.etsi.asic-e+zip>

### 3.2.2 ArchiveSubmissionResponse → PreservePOResponse

- `dss2:Result` – is mapped to `dsb3:Result`, as explained in more detail below.

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<sup>2</sup> Namespace 'dss' is resolved to 'urn:oasis:names:tc:dss:1.0:core:schema'.

<sup>3</sup> Namespace 'dsb' is resolved to 'http://docs.oasis-open.org/dss-x/ns/base'.

- OptionalOutputs – the VerificationReport element pursuant to [TR-ESOR-E], section 3.1.2 potentially returned in OptionalOutputs is passed on to the element of the same name in the Preservation API.
- AOID – is mapped to POID.

The error codes are constructed from a general prefix and a specific suffix, and are mapped as follows:

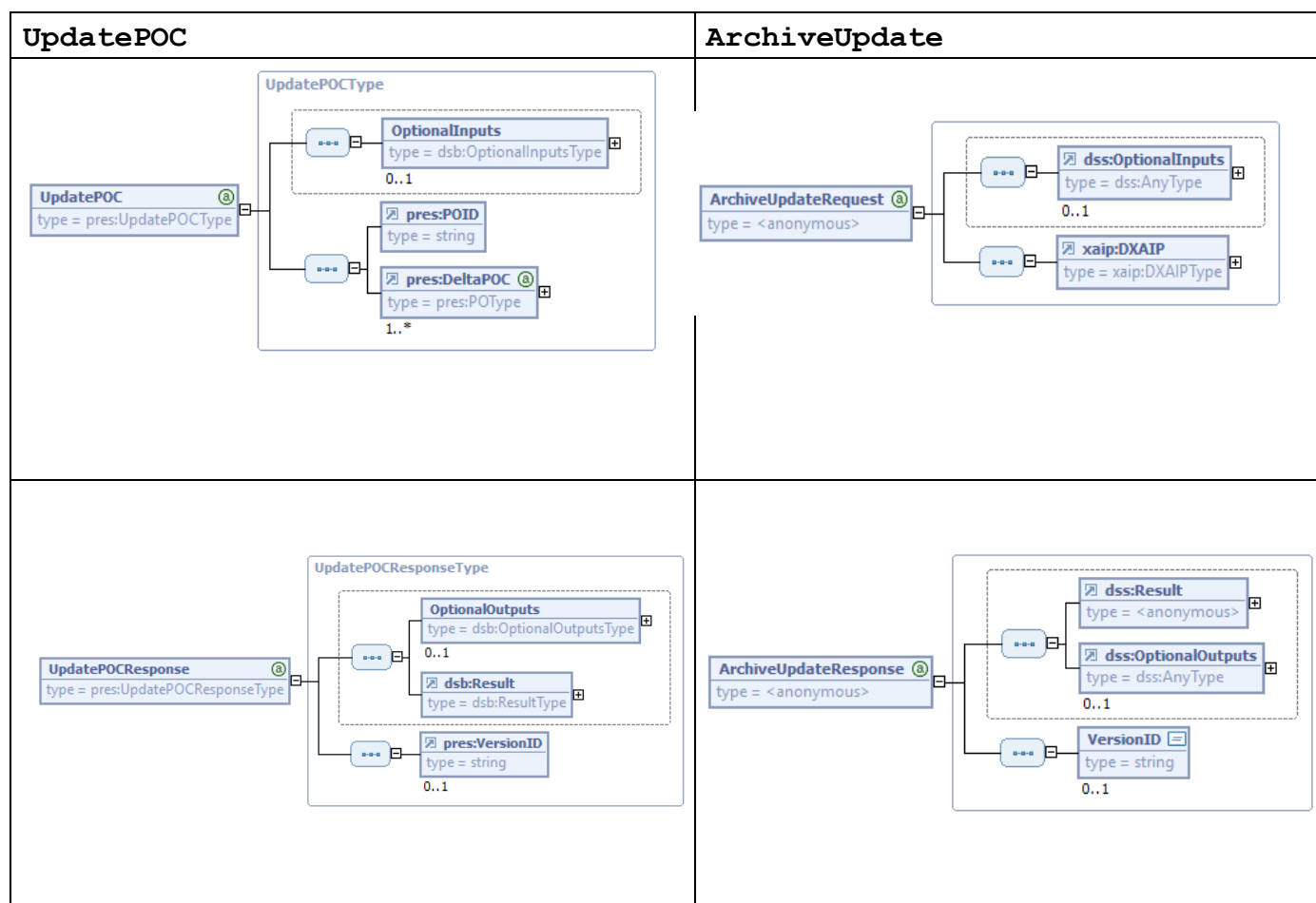
ETSI TS 119 512	BSI TR-03125-E
:Success	#ok #warning
:resultmajor:RequesterError :resultmajor:ResponderError	#error
:resultmajor:InsufficientInformation	-
<b>Prefix for ResultMinor</b>	
<a href="http://uri.etsi.org/19512">http://uri.etsi.org/19512</a>	<a href="http://www.bsi.bund.de/tr-esor/api/1.3/resultminor">http://www.bsi.bund.de/tr-esor/api/1.3/resultminor</a>
<b>Suffixes for ResultMinor</b>	
/error/noPermission	/al/common#noPermission
/error/internalError	/al/common#internalError
/error/externalServiceUnavailable	
/error/parameterError	/al/common#parameterError
/error/noSpaceError	/arl/noSpaceError
/warning/lowSpace	/arl/lowSpaceWarning
/error/notSupported	/arl/notSupported
/error/unknownPOFormat	/arl/unknownArchiveDataType
/error/POFormatError	/arl/XAIP_NOK /arl/XAIP_NOK_EXPIRED /arl/XAIP_NOK_SUBMTIME /arl/XAIP_NOK_SIG /arl/XAIP_NOK_ER
/error/existingAOID <sup>4</sup>	/resultminor/arl/existingAOID

**Table 1** Return codes for PreservePO/ArchiveSubmission

### 3.3 UpdatePOC ↔ ArchiveUpdate

The function UpdatePOC from [ETSI TS 119 512] is mapped to the function ArchiveUpdate defined in [TR-ESOR-E]. The input parameter UpdatePOC as defined in [ETSI TS 119 512] is correspondingly mapped to the input parameter ArchiveUpdateRequest as defined in [TR-ESOR-E] and, conversely, the return parameter ArchiveUpdateResponse as defined in [TR-ESOR-E] is mapped to the return parameter UpdatePOCResponse from [ETSI TS 119 512].

<sup>4</sup> This error code does not exist in [ETSI TS 119 512] and arises because of the addition of OptionalInputs/AOID.



**Figure 3** UpdatePOC/ArchiveUpdate – request and response

### 3.3.1 UpdatePOC → ArchiveUpdateRequest

Here, the parameters in UpdatePOC are handled as follows:

- OptionalInputs – the OptionalInputs (in particular ReturnVerificationReport and ImportEvidence) defined in [TR-ESOR-E] are passed to the TR-S.4 interface via dss:OptionalInputs. Other OptionalInputs trigger a corresponding error<sup>5</sup>.
- POID – must be identical to DXAIP/PackageHeader/AOID. Used for consistency checking and returns a corresponding error if no match is found<sup>6</sup>.
- DeltaPOC – is passed in an ArchiveUpdateRequest/DXAIP element and must either be a
  - Delta-XAIP element as defined in [TR-ESOR-F] section 3.1.6 (FormatId=<http://www.bsi.bund.de/tr-esor/dxaip/1.37>) or a

<sup>5</sup> <http://uri.etsi.org/19512/error/notSupported>

<sup>6</sup> <http://uri.etsi.org/19512/error/DeltaPOCInternalProblem>

<sup>7</sup> This URL must be added in a future version of ETSI TS 119 512.

- Delta-LXAIP element as defined in **[TR-ESOR-F]** section 3.2.4 (FormatId=<http://www.bsi.bund.de/tr-esor/dlxaip/1.3><sup>8</sup>).

### 3.3.2 ArchiveUpdateResponse → UpdatePOCResponse

- `dss:Result` – is mapped to `dsb:Result`, as explained in more detail below.
- `OptionalOutputs` – the `VerificationReport` element pursuant to **[TR-ESOR-E]**, section 3.2.2 potentially returned in `dss:OptionalOutputs` is passed on to the element of the same name in the Preservation API.
- `VersionID` – is mapped to the element of the same in the Preservation API.

The error codes are constructed from a general prefix and a specific suffix, and are mapped as follows:

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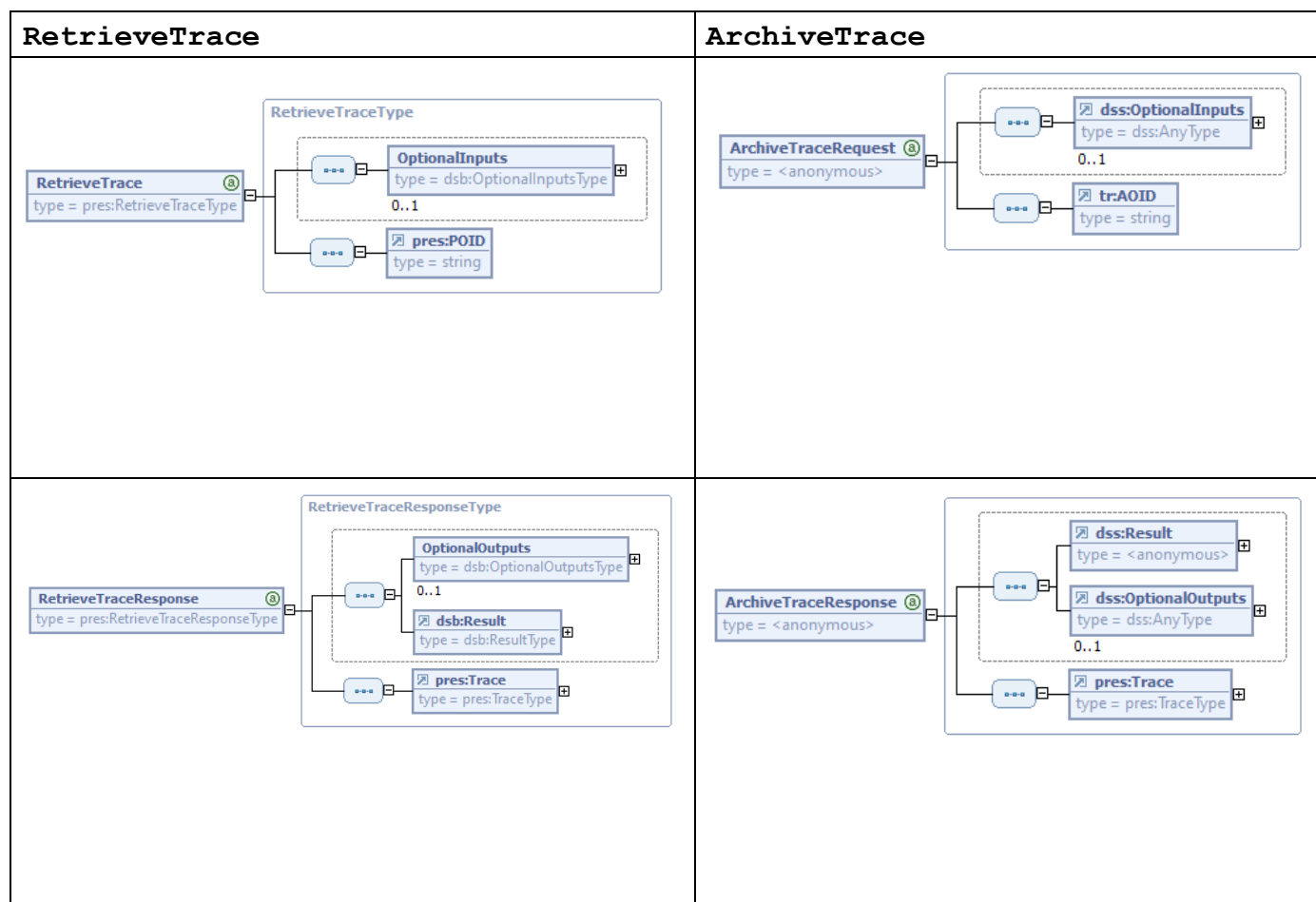
<sup>8</sup> This URL must be added in a future version of ETSI TS 119 512.

ETSI TS 119 512	BSI TR-03125-E
<b>Prefix for ResultMajor</b>	
urn:oasis:names:tc:dss:1.0:resultmajor	<a href="http://www.bsi.bund.de/tr-esor/api/1.3/resultmajor">http://www.bsi.bund.de/tr-esor/api/1.3/resultmajor</a>
<b>Suffixes for ResultMajor</b>	
:Success	#ok #warning
:resultmajor:RequesterError :resultmajor:ResponderError	#error
:resultmajor:InsufficientInformation	-
<b>Prefix for ResultMinor</b>	
http://uri.etsi.org/19512	<a href="http://www.bsi.bund.de/tr-esor/api/1.3/resultminor">http://www.bsi.bund.de/tr-esor/api/1.3/resultminor</a>
<b>Suffixes for ResultMinor</b>	
/error/noPermission	/arl/common#noPermission
/error/internalError	/arl/common#internalError
/error/externalServiceUnavailable	
/error/parameterError	
/error/transferError	/arl/notSupported
/error/notSupported	
/error/unknownDeltaPOCType	
/error/noSpaceError	/arl/noSpaceError
/error/unknownPOID	/arl/DXAIP_NOK_AOID
/error/DeltaPOCInternalProblem	/arl/existingPackageInfoWarning /arl/DXAIP_NOK /arl/DXAIP_NOK_EXPIRED /arl/DXAIP_NOK_SUBMTIME /arl/DXAIP_NOK_SIG /arl/DXAIP_NOK_ID /arl/DXAIP_NOK_Version
/error/POFormatError	/arl/XAIP_NOK_ER
/warning/lowSpace	/arl/lowSpaceWarning

**Table 2** Return codes for UpdatePOC/ArchiveUpdate

### 3.4 RetrieveTrace ↔ ArchiveTrace

The function `RetrieveTrace` from [ETSI TS 119 512] is mapped to the function `ArchiveTrace` defined in [TR-ESOR-E]. The input parameter `RetrieveTrace` as defined in [ETSI TS 119 512] is correspondingly mapped to the input parameter `ArchiveTraceRequest` as defined in [TR-ESOR-E] and, conversely, the return parameter `ArchiveTraceResponse` as defined in [TR-ESOR-E] is mapped to the return parameter `RetrieveTraceResponse` from [ETSI TS 119 512].



**Figure 4** RetrieveTrace/ArchiveTrace – request and response

### 3.4.1 RetrieveTrace → ArchiveTraceRequest

Here, the parameters in RetrieveTrace are handled as follows:

- OptionalInputs – any optional input element in OptionalInputs is provided to the TR-S.4 interface via dss:OptionalInputs. As there are no optional input elements defined in [TR-ESOR-E] any optional input element will trigger a corresponding error<sup>9</sup>.
- pres:POID – will be mapped to tr:AOID.

### 3.4.2 ArchiveTraceResponse → RetrieveTraceResponse

- dss:Result – is mapped to dsb:Result, as explained in more detail below.
- OptionalOutputs – any optional output element from dss:OptionalOutputs is passed on to the element of the same name in the Preservation API.
- pres:Trace – is mapped to the element of the same name in the Preservation API.

The error codes are constructed from a general prefix and a specific suffix, and are mapped as follows:

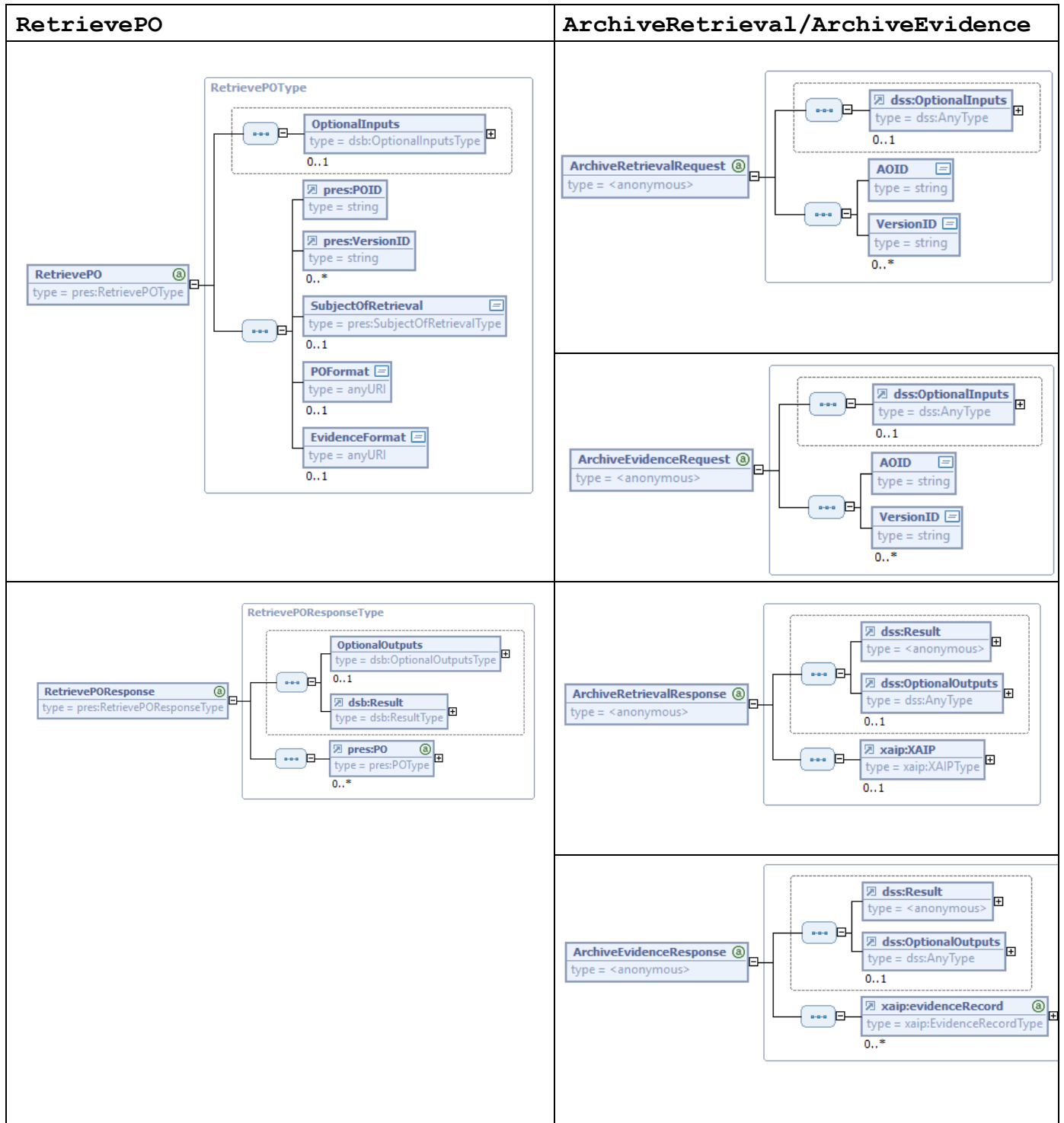
<sup>9</sup> <http://uri.etsi.org/19512/error/notSupported>

ETSI TS 119 512	BSI TR-03125-E
<b>Prefix for ResultMajor</b>	
urn:oasis:names:tc:dss:1.0:resultmajor	<a href="http://www.bsi.bund.de/tr-esor/api/1.3/resultmajor">http://www.bsi.bund.de/tr-esor/api/1.3/resultmajor</a>
<b>Suffixes for ResultMajor</b>	
:Success	#ok #warning
:resultmajor:RequesterError :resultmajor:ResponderError	#error
:resultmajor:InsufficientInformation	-
<b>Prefix for ResultMinor</b>	
http://uri.etsi.org/19512	<a href="http://www.bsi.bund.de/tr-esor/api/1.3/resultminor">http://www.bsi.bund.de/tr-esor/api/1.3/resultminor</a>
<b>Suffixes for ResultMinor</b>	
/error/noPermission	/al/common#noPermission
/error/internalError	/al/common#internalError
/error/externalServiceUnavailable	
/error/parameterError	/al/common#parameterError
/error/transferError	
/error/notSupported	/arl/notSupported

**Table 3** Return codes for RetrieveTrace/ArchiveTrace

### 3.5 RetrievePO ↔ ArchiveRetrieval/ArchiveEvidence

The RetrievePO call from [ETSI TS 119 512] is mapped to the calls ArchiveRetrieval and ArchiveEvidence as defined in [TR-ESOR-E]. The input parameter RetrievePO as defined in [ETSI TS 119 512] is accordingly mapped to the corresponding ArchiveRetrievalRequest or ArchiveEvidenceRequest parameter as defined in [TR-ESOR-E]. Conversely, the return parameter ArchiveRetrievalResponse or ArchiveEvidenceResponse as defined in [TR-ESOR-E] is mapped to the return parameter RetrievePOResponse from [ETSI TS 119 512].



**Figure 5** RetrievePO/ArchiveRetrieval/EvidenceRetrieval – request and response

### 3.5.1 RetrievePO → ArchiveRetrievalRequest/ ArchiveEvidenceRequest

Here, the child elements of RetrievePO are handled as follows:

- OptionalInputs lead to an error when calling RetrievePO<sup>10</sup>.

<sup>10</sup> <http://uri.etsi.org/19512/error/notSupported>



- POID is mapped to ArchiveRetrievalRequest/AOID or ArchiveEvidenceRequest/AOID: the choice of ArchiveEvidenceRequest or ArchiveRetrievalRequest is made based on the SubjectOfRetrieval parameter.
- VersionID is mapped to ArchiveRetrievalRequest/VersionID or ArchiveEvidenceRequest/VersionID.
- SubjectOfRetrieval specifies whether ArchiveRetrievalRequest or ArchiveEvidenceRequest is called and is one of the following:
  - PO – to retrieve the (L)XAIP or ASiC-ERS without a corresponding Evidence Record, so that ArchiveRetrievalRequest is called
  - Evidence – to retrieve Evidence Records, so that ArchiveEvidenceRequest is called. Here, the Evidence Record is returned as an xaip:evidenceRecord element as defined in [TR-ESOR-F], section 3.1.5 of the type xaip:EvidenceRecordType, which must also contain the attributes AOID and VersionID.
  - POwithEmbeddedEvidence – to retrieve the (L)XAIP or ASiC-ERS with corresponding Evidence Record, which is implemented by a call to ArchiveRetrievalRequest while utilising the OptionalInputs/IncludeERS from [TR-ESOR-E], section 3.3.1. This value is assumed as the default value if the SubjectOfRetrieval element is not specified.
  - POwithDetachedEvidence – is not supported and returns an error<sup>11</sup>.
- POFormat is mapped to ArchiveRetrievalRequest/OptionalInputs/POFormat from [TR-ESOR-E], section 3.3.1 and is one of the following:
  - <http://www.bsi.bund.de/tr-esor/xaip/1.3> for XAIP v1.3 as defined in [TR-ESOR-F], section 3). This value is assumed as the default value if the POFormat element is not specified.
  - <http://www.bsi.bund.de/tr-esor/lxaip/1.3> for LXAIP as defined in [TR-ESOR-F], section 3.2
  - <http://uri.etsi.org/ades/ASiC/type/ASiC-ERS> for ASiC-ERS

Please note: within the scope of TR-S.4, an XAIP or LXAIP is returned in the ArchiveRetrievalResponse/XAIP element and an ASiC-AIP is returned in an ArchiveRetrievalResponse/OptionalOutputs/PO.

- EvidenceFormat is one of the following:
  - urn:ietf:rfc:4998:EvidenceRecord (This value, where applicable, is assumed as the default value if the EvidenceFormat element is not specified.)
  - urn:ietf:rfc:6283:EvidenceRecord<sup>12</sup>

At the TR-S.4 interface, this corresponds to ArchiveEvidenceRequest/OptionalInputs/ERSFormat (see [TR-ESOR-E], section 3.4.1) or ArchiveRetrievalRequest/OptionalInputs/IncludeERS (see [TR-ESOR-E], section 3.3.1). The EvidenceRecord is returned as an xaip:evidenceRecord element as defined in [TR-ESOR-F], section 3.5 or [TR-ESOR-E], sections 3.3.1 and 3.4.2 of the type xaip:EvidenceRecordType.

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<sup>11</sup> <http://uri.etsi.org/19512/error/notSupported>

<sup>12</sup> In this context, note that the corresponding URI defined in [BSI TR-03125-E] is urn:ietf:rfc:6283.

## 3.5.2 ArchiveRetrievalResponse → RetrievePOResponse

- `dss:Result` – is mapped to `dsb:Result`, as explained in more detail below.
- `OptionalOutputs` – the PO Element (cf. [TR-ESOR-E], section 3.3.2) potentially returned in `OptionalOutputs` is returned with a base64Binary-coded ASiC-AIP in the `RetrievePOResponse/PO` element.
- XAIP – with an XAIP or LXAIP, mapping to the `RetrievePOResponse/PO` element takes place.

The error codes are constructed from a general prefix and a specific suffix, and are mapped as follows:

ETSI TS 119 512	BSI TR-03125-E
<b>Prefix for ResultMajor</b>	
<code>urn:oasis:names:tc:dss:1.0:resultmajor</code>	<code>http://www.bsi.bund.de/tr-esor/api/1.3/resultmajor</code>
<b>Suffixes for ResultMajor</b>	
<code>:Success</code>	<code>#ok</code> <code>#warning</code>
<code>:resultmajor:RequesterError</code> <code>:resultmajor:ResponderError</code>	<code>#error</code>
<code>:resultmajor:InsufficientInformation</code>	–
<b>Prefix for ResultMinor</b>	
<code>http://uri.etsi.org/19512</code>	<code>http://www.bsi.bund.de/tr-esor/api/1.3/resultminor</code>
<b>Suffixes for ResultMinor</b>	
<code>/error/noPermission</code>	<code>/al/common#noPermission</code>
<code>/error/internalError</code>	<code>/al/common#internalError</code>
<code>/error/parameterError</code>	<code>/al/common#parameterError</code>
<code>/error/transferError<sup>13</sup></code>	
<code>/error/notSupported</code>	<code>/arl/notSupported</code>
<code>/error/unknownPOFormat</code>	<code>/arl/unknownPOFormat</code>
<code>/error/unknownPOID</code>	<code>/arl/unknownAOID</code>
<code>/error/unknownVersionID</code>	<code>/arl/unknownVersionID</code>
<code>/warning/requestOnlyPartlySuccessful</code>	<code>/arl/requestOnlyPartlySuccessfulWarning</code>

**Table 4** Return codes for RetrievePO/ArchiveRetrieval

<sup>13</sup> This error code is not currently present in [ETSI TS 119 512] for `RetrievePOResponse`. It might be advisable to add this error code as appropriate at some point in the future.

## 3.5.3 ArchiveEvidenceResponse → RetrievePOResponse

- `dss:Result` – is mapped to `dsb:Result`, as explained in more detail below.
- `OptionalOutputs` – not present in `ArchiveEvidenceResponse` as defined in [TR-ESOR-E] (cf. section 3.4.2) and trigger a corresponding error<sup>14</sup> at the Preservation API as defined in [ETSI TS 119 512].
- `evidenceRecord` – is mapped to the `RetrievePOResponse/PO` element, whereby the format for the Evidence Record returned is reflected in the `FormatId` attribute of the `PO` element.

The error codes are constructed from a general prefix and a specific suffix, and are mapped as follows:

ETSI TS 119 512	BSI TR-03125-E
<b>Prefix for ResultMajor</b>	
<code>urn:oasis:names:tc:dss:1.0:resultmajor</code>	<code>http://www.bsi.bund.de/tr-esor/api/1.3/resultmajor</code>
<b>Suffixes for ResultMajor</b>	
<code>:Success</code>	<code>#ok</code> <code>#warning</code>
<code>:resultmajor:RequesterError</code> <code>:resultmajor:ResponderError</code>	<code>#error</code>
<code>:resultmajor:InsufficientInformation</code>	-
<b>Prefix for ResultMinor</b>	
<code>http://uri.etsi.org/19512</code>	<code>http://www.bsi.bund.de/tr-esor/api/1.3/resultminor</code>
<b>Suffixes for ResultMinor</b>	
<code>/error/noPermission</code>	<code>/al/common#noPermission</code>
<code>/error/internalError</code>	<code>/al/common#internalError</code>
<code>/error/parameterError</code>	<code>/al/common#parameterError</code>
<code>/error/notSupported</code>	<code>/arl/notSupported<sup>15</sup></code>
<code>/error/unknownEvidenceFormat</code>	
<code>/error/unknownPOID</code>	<code>/arl/unknownAOID</code>
<code>/error/unknownVersionID</code>	<code>/arl/unknownVersionID</code>
<code>/warning/requestOnlyPartlySuccessful</code>	<code>/arl/requestOnlyPartlySuccessfulWarning</code>

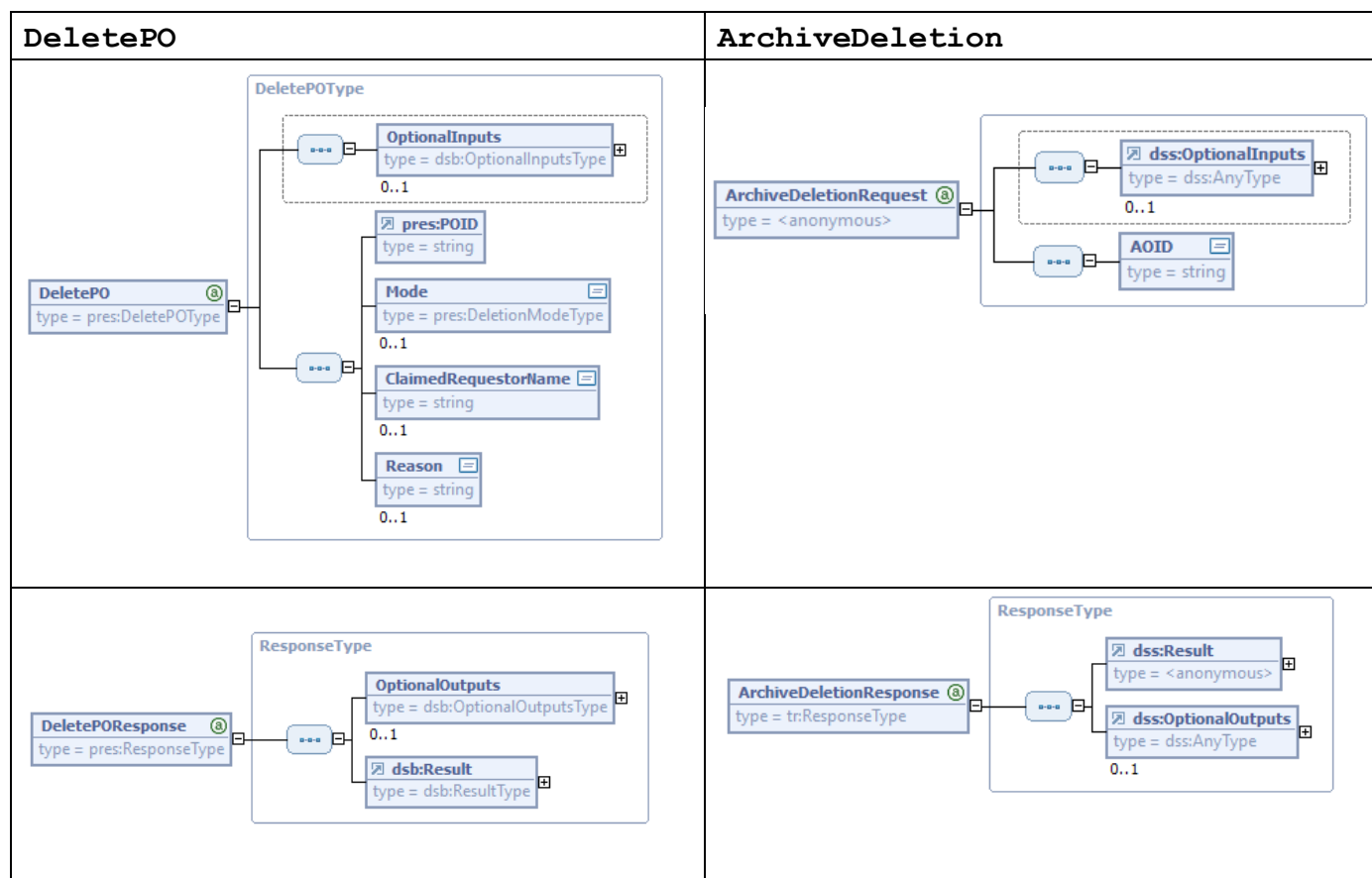
<sup>14</sup> <http://uri.etsi.org/19512/error/notSupported>

<sup>15</sup> As an alternative, one option in the future would be to add a specific error code `.../arl/unknownEvidenceFormat` for `ArchiveEvidenceResponse` in [TR-ESOR-E].

**Table 5** Return codes for RetrievePO/ArchiveEvidence

### 3.6 DeletePO ↔ ArchiveDeletion

The call to DeletePO from [ETSI TS 119 512] is mapped to a call to ArchiveDeletion as defined in [TR-ESOR-E]. The input parameter DeletePO as defined in [ETSI TS 119 512] is correspondingly mapped to the input parameter ArchiveDeleteRequest as defined in [TR-ESOR-E] and, conversely, the return parameter ArchiveDeletionResponse as defined in [TR-ESOR-E] is mapped to the return parameter DeletePOResponse from [ETSI TS 119 512].


**Figure 6** DeletePO/ArchiveDeletion – request and response

#### 3.6.1 DeletePO → ArchiveDeletionRequest

Here, the child elements of DeletePO are mapped as follows:

- OptionalInputs lead to an error when calling DeletePO<sup>16</sup>.
- POID is mapped to ArchiveDeletionRequest/AOID.
- Mode shall equal SubDOSAndEvidence or shall not be present. In the case of a request using correct syntax, but where mode is equal to OnlySubDOSs, deletion is not performed and an error<sup>17</sup> is returned.

<sup>16</sup> <http://uri.etsi.org/19512/error/notSupported>

<sup>17</sup> <http://uri.etsi.org/19512/error/notSupported>

- ClaimedRequestorName is mapped to ArchiveDeletionRequest/OptionalInputs/ReasonOfDeletion/RequestorName.
- Reason is mapped to ArchiveDeletionRequest/OptionalInputs/ReasonOfDeletion/RequestInfo.

### 3.6.2 ArchiveDeletionResponse → DeletePOResponse

- dss:Result – is mapped to dsb:Result, as explained in more detail below.
- OptionalOutputs – not present in ArchiveDeletionResponse as defined in [TR-ESOR-E] (cf. section 3.5.2) and trigger a corresponding error<sup>18</sup> at the Preservation API as defined in [ETSI TS 119 512].

The error codes are constructed from a general prefix and a specific suffix, and are mapped as follows:

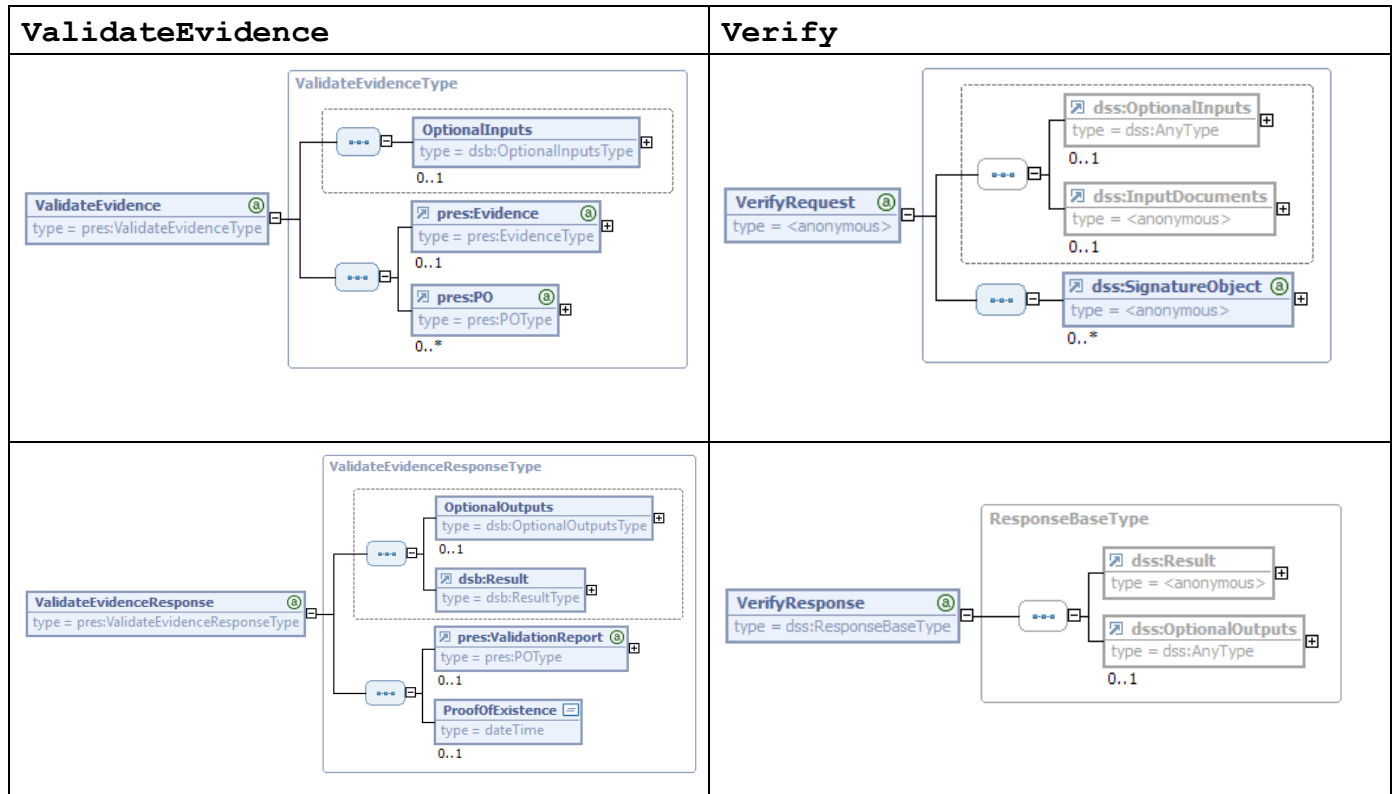
ETSI TS 119 512	BSI TR-03125-E
<b>Prefix for ResultMajor</b>	
urn:oasis:names:tc:dss:1.0:resultmajor	http://www.bsi.bund.de/tr-esor/api/1.3/resultmajor
<b>Suffixes for ResultMajor</b>	
:Success	#ok #warning
:resultmajor:RequesterError :resultmajor:ResponderError	#error
:resultmajor:InsufficientInformation	-
<b>Prefix for ResultMinor</b>	
http://uri.etsi.org/19512	http://www.bsi.bund.de/tr-esor/api/1.3/resultminor
<b>Suffixes for ResultMinor</b>	
/error/noPermission	/al/common#noPermission
/error/internalError	/al/common#internalError
/error/parameterError	/al/common#parameterError /arl/missingReasonOfDeletion
/error/notSupported	/arl/notSupported
/error/unknownPOID	/arl/unknownAOID

**Tabelle 6** Return codes for DeletePO/ArchiveDeletion

<sup>18</sup> <http://uri.etsi.org/19512/error/notSupported>

### 3.7 ValidateEvidence ↔ Verify

The function `ValidateEvidence` from [ETSI TS 119 512] is mapped to the function `Verify` defined in [TR-ESOR-E] (section 3.7). The input parameter `ValidateEvidence` as defined in [ETSI TS 119 512] is mapped to the input parameter `VerifyRequest` as defined in [TR-ESOR-E] and the return parameter `VerifyResponse` as defined in [TR-TR-ESOR-E] is mapped to the return parameter `ValidateEvidenceResponse` as defined in [ETSI TS 119 512].



**Figure 7** ValidateEvidence/Verify – request and response

#### 3.7.1 ValidateEvidence → VerifyRequest

Here, the child elements of `ValidateEvidence` are mapped as follows:

- `OptionalInputs` – the `OptionalInputs` (`VerifyUnderSignaturePolicy` and `ReturnVerificationReport`) defined in [TR-ESOR-E], section 3.7.1 are passed on to the TR-S.4 interface. Other `OptionalInputs` trigger a corresponding error<sup>19</sup>.
- `Evidence` – is mapped to the corresponding child element of `VerifyRequest/SignatureObject` if present, whereby the details depend on the format of the Preservation Evidence as defined in Annex A.2 of [ETSI TS 119 512]:
  - An Evidence Record as defined in RFC 4998 (A.2.2) or RFC 6283 (A.2.3) is mapped to a `VerifyRequest/SignatureObject/Other/EvidenceRecord` element. If the Evidence Record passed references a Preservation Object Container (see `PO` below), the Evidence Record must be passed as an `xaip:evidenceRecord` element as defined in [TR-ESOR-F, section 3.1.5] or [TR-ESOR-E], sections 3.3.1, 3.4.2) of the type `xaip:EvidenceRecordType`.

<sup>19</sup> <http://uri.etsi.org/19512/error/notSupported>

- A CAdES signature as defined in [ETSI TS 119 122-3], which contains an Evidence Record as defined in RFC 4998, is mapped to a `VerifyRequest/SignatureObject/Base64Signature` element. The `FormatId` attribute of the Evidence element is the same as the `http://uri.etsi.org/ades/CAdES/EvidenceRecord` in this case.
- Other Preservation Evidences are not supported and trigger an error<sup>20</sup>
- PO is either a simple binary data object, that is protected by the Evidence passed separately and is mapped to `VerifyRequest/InputDocuments/Document/Base64Data`, or is a supported Preservation Object Container. The following formats are supported here:
  - XAIP v1.3 as defined in [TR-ESOR-F], section 3) (<http://www.bsi.bund.de/tr-esor/xaip/1.3>) is passed in `VerifyRequest/InputDocuments/Document/InlineXML`
  - LXAIP as defined in [TR-ESOR-F], section 3.2 (<http://www.bsi.bund.de/tr-esor/lxaip/1.3>) is passed in `VerifyRequest/InputDocuments/Document/InlineXML`
  - ASiC-ERS as defined in [TR-ESOR-F], section 3.3 and as defined in [ETSI TS 119512] Annex A.3.1 and A.3.1.3 (<http://uri.etsi.org/ades/ASiC/type/ASiC-ERS>) is passed in `VerifyRequest/InputDocuments/Document/Base64Data`
  - CAdES as defined in [ETSI TS 119 512] Annex A.1.1 (<http://uri.etsi.org/ades/CAdES>) is passed in `VerifyRequest/InputDocuments/Document/Base64Data`. If a MIME type is not set, `application/cms` is used.
  - XAdES as defined in [ETSI TS 119 512] Annex A.1.2 (<http://uri.etsi.org/ades/XAdES>) is passed in `VerifyRequest/InputDocuments/Document/Base64Data`. If a MIME type is not set, `application/xml` is used as the default.
  - PAdES as defined in [ETSI TS 119 512] Annex A.1.3 (<http://uri.etsi.org/ades/PAdES>) is passed in `VerifyRequest/InputDocuments/Document/Base64Data`. If a MIME type is not set, `application/pdf` is used as the default.
  - ASiC-S as defined in [ETSI TS 319 162] (<http://uri.etsi.org/ades/ASiC/type/ASiC-S>) is passed in `VerifyRequest/InputDocuments/Document/Base64Data`. If a MIME type is not set, `application/vnd.etsi.asic-s+zip` is used as the default.
  - ASiC-E as defined in [ETSI TS 119 512] Annex A.1.4 (<http://uri.etsi.org/ades/ASiC/type/ASiC-E>) is passed in `VerifyRequest/InputDocuments/Document/Base64Data`. If a MIME type is not set, `application/vnd.etsi.asic-e+zip` is used as the default.
  - DigestList as defined in [ETSI TS 119 512] Annex A.1.6 (<http://uri.etsi.org/19512/format/DigestList>) is passed in `VerifyRequest/InputDocuments/Document/Base64Data`. If a MIME type is not set, `application/xml` is used as the default.

---

<sup>20</sup> <http://uri.etsi.org/19512/error/notSupported>

## 3.7.2 VerifyResponse → ValidateEvidenceResponse

- `dss:Result` – is mapped to `dsb:Result`, as explained in more detail below.
- `OptionalOutputs` – potentially contains a `VerificationReport` as defined in [TR-ESOR-VR], which is mapped to the `pres:ValidationEvidenceReport/ValidationReport` element. If successful, the element `ProofOfExistence` is also filled.

The error codes are constructed from a general prefix and a specific suffix, and are mapped as follows:

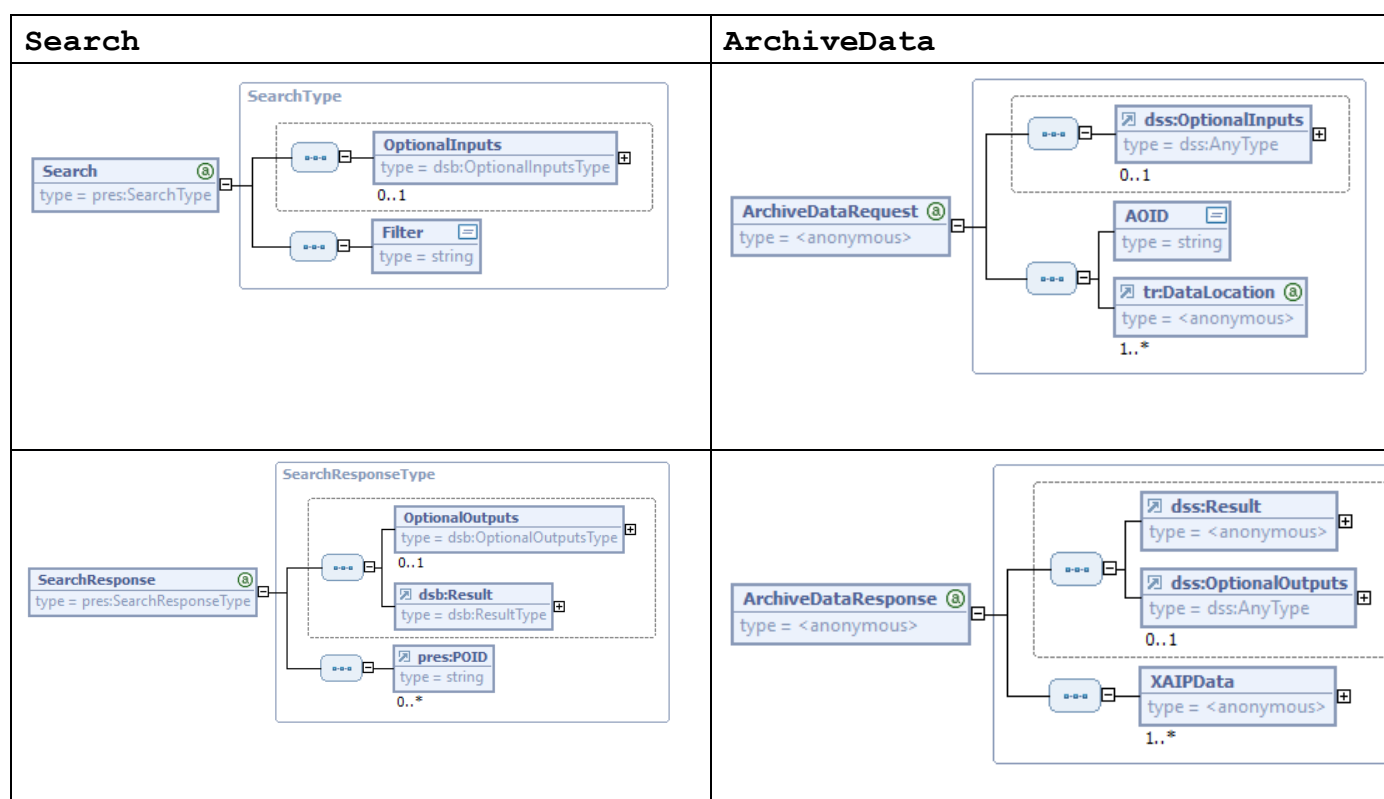
ETSI TS 119 512	BSI TR-03125-E
<b>Prefix for ResultMajor</b>	
<code>urn:oasis:names:tc:dss:1.0:resultmajor</code>	<code>http://www.bsi.bund.de/tr-esor/api/1.3/resultmajor</code>
<b>Suffixes for ResultMajor</b>	
<code>:Success</code>	<code>#ok</code> <code>#warning</code>
<code>:resultmajor:RequesterError</code> <code>:resultmajor:ResponderError</code>	<code>#error</code>
<code>:resultmajor:InsufficientInformation</code>	-
<b>Prefix for ResultMinor</b>	
<code>http://uri.etsi.org/19512</code>	<code>http://www.bsi.bund.de/tr-esor/api/1.3/resultminor</code>
<b>Suffixes for ResultMinor</b>	
<code>/error/noPermission</code>	<code>/al/common#noPermission</code>
<code>/error/internalError</code>	<code>/al/common#internalError</code>
<code>/error/parameterError</code>	<code>/al/common#parameterError</code> <code>/arl/missingReasonOfDeletion</code>
<code>/error/notSupported</code>	<code>/arl/notSupported</code>

**Table 7** Return codes for `ValidateEvidence/Verify`

## 3.8 Search ↔ ArchiveData

The function `Search` from [ETSI TS 119 512] is mapped to the function `ArchiveData` defined in [TR-ESOR-E], section 3.6. The input parameter `Search` from [ETSI TS 119 512] is mapped to the input parameter `ArchiveDataRequest` from [TR-ESOR-E] and the return parameter `ArchiveDataReponse` from [TR-ESOR-E] is mapped to the return parameter `SearchResponse` from [ETSI TS 119 512].





**Figure 8** Search/ArchiveData – request and reponse

### 3.8.1 Search → ArchiveDataRequest

Here, the child elements of Search are mapped as follows to ArchiveDataRequest:

- Filter – contains a structure defined by the following JSON schema:

```

"FilterType": {
  "type": "object",
  "properties": {
    "AOID": {
      "type": "string"
    },
    "XPath": {
      "type": "string"
    }
  },
  "required": ["AOID", "XPath"]
}

```

The parameters make use of the following semantics:

- AOID – identifies a specific Preservation Object and is mapped to the ArchiveDataRequest/AOID element.
- XPathFilter – specifies the data object within the XAIP that is addressed by the AOID and is mapped to the ArchiveDataRequest/DataLocation. Here, it is assumed that the ArchiveDataRequest implementation for the integrated TR-ESOR middleware at least offers support for simple XPath expressions that allow the request of a data element, which is referenced by an ID in the XML structure of the XAIP addressed by the AOID.

## 3.8.2 ArchiveDataResponse → SearchResponse

- dss:Result – is mapped to dsb:Result, as explained in more detail below
- OptionalOutputs – are not present and trigger an error<sup>21</sup>
- XAIPData – is mapped to SearchResponse/OptionalOutputs/Other/XAIPData

The error codes are constructed from a general prefix and a specific suffix, and are mapped as follows:

ETSI TS 119 512	BSI TR-03125-E
<b>Prefix for ResultMajor</b>	
urn:oasis:names:tc:dss:1.0:resultmajor	http://www.bsi.bund.de/tr-esor/api/1.3/resultmajor
<b>Suffixes for ResultMajor</b>	
:Success	#ok #warning
:resultmajor:RequesterError :resultmajor:ResponderError	#error
:resultmajor:InsufficientInformation	-
<b>Prefix for ResultMinor</b>	
http://uri.etsi.org/19512	http://www.bsi.bund.de/tr-esor/api/1.3/resultminor
<b>Suffixes for ResultMinor</b>	
/error/noPermission	/al/common#noPermission
/error/internalError	/al/common#internalError
/error/parameterError	/al/common#parameterError
	/arl/unknownLocation
	/arl/unknownAOID
/error/notSupported	/arl/notSupported

**Table 8** Return codes for Search/ArchiveData

<sup>21</sup> <http://uri.etsi.org/19512/error/notSupported>

## 4. References

- [TR-ESOR-E] BSI: Preservation of Evidence of Cryptographically Signed Documents, Annex TR-ESOR-E, Concretisation of the Interfaces on the Basis of the eCard API Framework, version 1.3, [www.bsi.bund.de/EN/tr-esor](http://www.bsi.bund.de/EN/tr-esor) or <https://www.bsi.bund.de/tr-esor>
- [TR-ESOR-F] BSI: Preservation of Evidence of Cryptographically Signed Documents, Annex TR-ESOR-F, Formats, version 1.3, [www.bsi.bund.de/EN/tr-esor](http://www.bsi.bund.de/EN/tr-esor) or <https://www.bsi.bund.de/tr-esor>
- [TR-ESOR-VR] BSI: Preservation of Evidence of Cryptographically Signed Documents, BSI TR-03125, Annex TR-ESOR-VR: Verification Reports for Selected Data Structures, Version 1.3, [https://www.bsi.bund.de/SharedDocs/Downloads/DE/BSI/Publikationen/TechnischeRichtlinien/TR03125/BSI\\_TR\\_03125\\_Anlage\\_VR\\_V1\\_3.pdf](https://www.bsi.bund.de/SharedDocs/Downloads/DE/BSI/Publikationen/TechnischeRichtlinien/TR03125/BSI_TR_03125_Anlage_VR_V1_3.pdf)
- [eCard-2] BSI: eCard API Framework – Part 2 – eCard Interface, BSI TR-03112-2
- [ETSI TS 119 122-3] ETSI TS 119122-3: Electronic Signatures and Infrastructures (ESI); CAdES digital signatures; Part 3: Incorporation of Evidence Record Syntax (ERS) mechanisms in CAdES, V1.1.1
- [ETSI TS 119 512] ETSI TS 119512: Electronic Signatures and Infrastructures (ESI); Protocols for trust service providers providing long-term data preservation services, V1.1.2