

European Network of Transmission System Operators for Electricity

# ENTSO-E XML NAMESPACE REFERENCE DOCUMENT

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## **Revision History**

Version	Release	Date	Comments
1	0	2011-03-16	First version of the document. Document approval by the Market Committee
2	0	2012-10-11	New harmonized approach for defining the namespace as well as the management of extension/restriction of code list.  Document approved by the Market Committee on 2012-10-23.
3	0	2016-04-19	Cancellation of the use of the "restricted codelist". Thus all the codes defined in the ENTSO-E codelist or added in the "local extension" could be used in an exchange if this is agreed between the parties.
			"VersionRelease" referring to the version of the ENTSO-E core component has been removed as the ENTSO-E core component are freezed. This is as per decision of ENTSO-E to use standards based on CIM and published as European norm (IEC/EN norms).
			Added note in the overview chapter stating that ENTSO-E schemas based on ENTSO-E components are freezed.



#### 49 1 Overview

- 50 XML namespace is the method to qualify element and attribute names used in XML Schema
- 51 through their association with a unique reference that is identified by a URI (Uniform Resource
- 52 Identifier) reference.
- 53 XML namespace use is defined in the W3C document "Namespaces in XML" (Third Edition) and
- can be located at the following URL: <a href="http://www.w3.org/TR/xml-names/">http://www.w3.org/TR/xml-names/</a>
- URIs are defined in the document RFC (Request For Comments) 3986 published by the IETF
- 56 (Internet Engineering Task Force) and can be located at the following URL: http://www.rfc-
- 57 editor.org/rfc/rfc3986.txt
- 58 Please note that as ENTSO-E's WG EDI work products are standardised in the IEC and
- reflected in the IEC 62325 series, the International Standard IEC 62325-450 "Profile and
- 60 context modelling rules" has become the reference for modelling purposes, methodology
- 61 wise. Thus, ENTSO-E schemas based on ENTSO-E components are freezed. XSLT
- 62 (EXtensible Stylesheet Language) to convert ENTSO-E schemas into instances based on
- 63 CIM are available on ENTSO-E web site.

#### 2 Introduction

- 65 With the introduction of the possibility of extend ENTSO-E code lists in addition to the increasing
- 66 use of web services and its requirement for WSDL (Web Services Description Language),
- 67 ENTSO-E WG EDI agreed that time has come to introduce namespace use within the ENTSO-
- 68 E XML Schema.

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- 69 The principle objective of these namespaces will be to identify each electronic document in a
- 70 manner that ensures its uniqueness.
- 71 An XML namespace is identified by a URI reference. All schema element and attribute names
- may be placed in an XML namespace.
- 73 The element name taken in isolation (for example "DocumentIdentification") is known as a local
- 74 name. However, in order to completely understand the meaning behind a local name it is
- 75 necessary to know to which namespace (i.e. environment where the word is used) it belongs.
- 76 The combination of both names (i.e. the local name and namespace name) is known as an
- 77 expanded name<sup>1</sup>.
- 78 To understand an XML element name it is necessary to prefix the namespace name to the local
- 79 name (for example, "ScheduleDocument:DocumentIdentification"; where "ScheduleDocument"
- 80 corresponds to the namespace name and "DocumentIdentification" corresponds to the element
- 81 name). However, since namespace names can be very long and can even contain characters
- not allowed in names, a "prefix" is used in their place to represent them. The combination of
- 83 the prefix and the local name is known as a qualified name<sup>2</sup>.
- 84 The prefix, usually of three characters, appears in the place of the namespace name (for
- 85 example, ess:DocumentIdentification where "ess" has been associated with the namespace
- 86 "ScheduleDocument").
- 87 The use of namespaces may also allow a TSO to tailor a specific codelist to a specific set of
- 88 exchanges. Consequently the TSO has the possibility to give different meanings to the internal
- 89 code "Z01" in a codelist for different information exchanges.

#### 90 **3 URI**

- 91 A Uniform Resource Identifier (URI) provides a simple and extensible means for identifying a
- 92 resource. The term "resource" is used here in a general sense for whatever might be identified
- 93 by a URI. In the case of ENTSO-E it will be used to identify the different contexts in which XML

<sup>&</sup>lt;sup>1</sup> Definition: An **expanded name** is a pair consisting of a <u>namespace name</u> and a <u>local name</u>.

<sup>&</sup>lt;sup>2</sup> Definition: A **qualified name** is a name subject to namespace interpretation.



- 94 names are declared. This, more specifically enables the definition of a namespace for each of
- 95 the ENTSO-E processes.
- 96 It is important to note that the URI only provides identification of a resource; access to the
- 97 resource is neither guaranteed nor is it implied by the presence of a URI.
- 98 In order to provide a generic and stable means of declaring a URI for ENTSO-E it will be
- 99 composed in the following manner:
- 100 urn:entsoe.eu:<ENTSO-E Domain>[:<process>][:<document>][:<Version>[:<Release>]]
- 101 where:
- 102 *urn:entsoe.eu* shall be the stem of all ENTSO-E namespaces.
- <ENTSO-E Domain> identifies the organisation or group of organisations within ENTSO-E that owns the object being referenced. In the case of WG EDI this shall be "wgedi". In the case of a TSO it could be "ree", "rte", "ceps", "seps", etc.
- process> when possible identifies the specific process within the ENTSO-E Domain where the object is situated. In the case of WG EDI this shall be the processes for which electronic documents have been defined (for example, ess, ecan, errp, etc.).
- 109 **<document>** optionally identifies the electronic document.
- 110 *Version* optionally identifies the version of the document.
- 111 < Release > optionally identifies the release of the document.
- 112 Examples of specific instances of ENTSO-E URIs:
- urn:entsoe.eu:wgedi:acknowledgement:acknowledgementdocument:6:1
- urn:entsoe.eu:wgedi:errp:activationdocument:4:0
- urn:entsoe.eu:wgedi:esp:energyaccountreport:1:1
- urn:entsoe.eu:wgedi:ess:schedulingimplementationguide:4:0
- urn:entsoe.eu:wgedi:components
- 118 urn:entsoe.eu:wgedi:codelists
- 119 etc.
- 120 It is to be noted that for simplicity and to avoid naming conflicts all the characters used in a
- 121 namespace shall be in lower case. A namespace name is case sensitive and this will avoid
- 122 problems due to the wrong use of a character case.

#### 123 4 targetNamespace

- 124 Within an XML Schema a targetNamespace is used to specify to which namespace all the
- schema constructs belong (e.g. element declarations, attribute declaration and type definitions).
- 126 This in fact enables one to define the namespace of the schema that can be used for validation.
- 127 The targetNamespace attribute can be used to place the elements and attributes of the schema
- 128 into a specific namespace. This ensures that their use and meaning is qualified by the schema
- 129 in which they belong.
- 130 The default XML namespace will be used within the ENTSO-E XML schema to ensure that all
- the elements defined in the schema document are restricted to it by default. Consequently they
- 132 will not require a specific namespace prefix.
- 133 For example in the ScheduleDocument XML schema the information will be as presented as
- 134 outlined in Figure 1.

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```
The namespace defining the URI of the XML Schema components
  <?xml version="1.0" encoding="UTF-8"?>
<xsd:schema</p>
    xmlns:ecc="urn:entsoe.eu:wgedi:components"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"
                                                                           The attribute defining the URI to be used for the components of this document
    xmlns="urn:entsoe.eu:wgedi:ess:scheduledocument:4:2"
    targetNamespace="urn:entsoe.eu:wgedi:ess:scheduledocument:4:2"
                                                                                The attribute indicating where the core components may be found
     elementFormDefault="qualified"
    attributeFormDefault="unqualified">
    <xsd:import namespace="urn:entsoe.eu:wgedi:components" schemaLocation="../../core/urn-entsoe-eu-wgedi-components.xsd"/><xsd:element name="ScheduleDocument">
        <xsd:complexType>
           <xsd:annotation>
            <xsd:documentation/>
          </xsd:annotation>
           xsd:sequence
             xsd:e ement name="DocumentIdentification" type: ecc:IdentificationType">
                <xsd:annotation>
                  <xsd:documentation/>
                </xsd:annotation>
                                                            This is to be found in the document itself
             </xsd:element>
             <xsd:element name="DocumentVersion" type=</pre>
                                                             ersionType">
             <xsd:element name="ScheduleTimeSeries" typ</p>
                                                              "ScheduleTimeSeries_Type" minOccurs="0" maxOccurs="unbounded"/>
          </xsd:sequence>
        </xsd:complexType>
     </xsd:element>
```

Figure 1 - XML Schema extract

137 The default XML namespace may be used within the ENTSO-E XML instance documents. 138 Elements belonging to that namespace would not require a specific namespace prefix.

The introduction of a Namespace slightly changes the beginning of the XML instance document to take the new attributes requirements into account. An example of such an instance document is shown in Figure 2.

```
Hint regarding the location of schema relevant for validation
 <?xml version="1.0" encoding="UTF-8"?>
<ScheduleDocument xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"</p>
    xsi:schemaLocation="urn:entsoe.eu:wgedi:ess:scheduledocument:4;2 urn-entsoe-eu-wgedi-ess-scheduledocument-4-2.xsd"
    xmlns="urn:entsoe.eu:wgedi:ess:scheduledocument:4:2">
    <DocumentIdentification v="a"/>
    <DocumentVersion v="1"/>
    <DocumentType v="A94"/>
    <ProcessType v="A39"/>
    <ScheduleClassificationType v="A01"/>
```

Figure 2 - Instance document respecting the XML Schema in Figure 1

The XML instance header information changes in two basic manners:

- a) The optional introduction of the attribute "schemaLocation" to provide a hint of where the 145 XML Schema file that can be used to validate xml elements associated with the provided namespace can be found.
- 148 b) The introduction of a default namespace definition to indicate that elements without a prefix 149 belong to the provided namespace.

#### Electronic document instance files 5

- 151 In the creation of an instance document that is strictly compliant with the XML Schema it is necessary to identify the namespace being used, generally through the use of the default 152 153 namespace in the heading of the instance document as indicated in Figure 2.
- 154 However, prefixes should not be used for the elements since a default ENTSO-E namespace is provided. 155



- Prefixes could be used for local purposes not explicitly described in ENTSO-E namespace recommendation. In this case an agreement is required.
- 158 It may also be helpful to identify the location of the schema with the xsi:schemaLocation
- instruction as can also be seen in Figure 2.
- The use of the xsi:schemaLocation generally provides the receiver of the document with a "hint"
- of where the schema for a specific namespace itself may be found. For example the instruction
- 162 as shown in Figure 2:
- 163 xsi:schemaLocation="urn:entsoe.eu:wgedi:ess:scheduledocument:4:2 urn-entsoe-eu-wgedi-ess-
- 164 scheduledocument-4-2.xsd"
- 165 Implies that the schema itself may perhaps be found at:
- "urn-entsoe-eu-wgedi-ess-scheduledocument-4-2.xsd".
- However this is not always the case and in general an agreement is required.
- In order to enable flexibility, it is recommended that the schema location instruction (and xsi definition) in the schema compliant instance should not be used.
- 170 Removing such instructions from the instance document results in an XML document that does
- 171 not specifically identify a location for the XML Schema to which it is compliant. It is consequently
- up to the receiving party to use the appropriate schema that defines the provided namespace
- 173 to validate the information instance.

```
<?xml version="1.0" encoding="UTF-8"?>

<ScheduleDocument xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns="urn:entsoe.eu:wgedi:ess:scheduledocument:4:2">

    CocumentIdentification v="a"/>
    CocumentVersion v="1"/>
    CocumentType v="A94"/>
    CocumentType v= A94"/>
    CocumentType v= A94
```

Figure 3 - Recommended structure of an instance document

### 176 6 File naming convention

- 177 In order to facilitate in a consistent manner the way files containing schemas should be named
- 178 it is recommended to make use of the URI that is defined for the schema in question. However
- 179 since the colon (":") cannot be used in a filename it is recommended to replace each colon and
- 180 dot (".") with a dash ("-").
- 181 Consequently the file name for the schema with the URI
- 182 "urn:entsoe.eu:wgedi:ess:scheduledocument:4:2" would be "urn-entsoe-eu-wgedi-ess-scheduledocument-4-
- 183 2.xsd".

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### 7 ENTSO-E electronic document Conformity

Document Schema
(urn-entsoe-eu-wgedi-xyz-electronicdocument-n-m xsd)

import

Core Components
(um-entsoe-eu-wgedi-components xsd)

import

Code Lists
(um-entsoe-eu-wgedi-codelists xsd)

"A01", "A02", "A03"...

Note: the term "xyz-electronicdocument-n-m" should be replaced by the specific process and name, version and release of the document in question.

#### Figure 4 - ENTSO-E Compliant schema

The standard ENTSO-E electronic document XML schema is composed of the following standardized elements as outlined in Figure 4:

- a) The "Document Schema" itself that has been automatically generated from the UML model as described in the implementation guide. The electronic document XML schema file is named "urn-entsoe-eu-wgedi-xyz-electronicdocument-n-m.xsd" where "xyz-electronicdocument" corresponds to the process and name of the electronic document and "n-m" corresponds to the version and release of the document in question.
- b) The "Document Schema" imports the basic set of ENTSO-E "Core Components" in order to provide the complete set of XML datatypes that are required within the ENTSO-E environment. This Schema is a generic schema that is valid for all ENTSO-E electronic document schemas. The core component xml schema file is named "urn-entsoe-wgedicomponents.xsd".
- c) The "Core Components" schema itself imports the set of codelists that have been approved within ENTSO-E. This Schema is a generic schema that is valid for all ENTSO-E electronic document schemas. The code list xml schema file is named "urn-entsoe-eu-wgedicodelists.xsd".

The Document Schema defines an electronic document that has been clearly documented within an ENTSO-E process (ESS, ESP, ERRP, etc.).

An electronic document instance shall be considered ENTSO-E compliant if it respects the information provided by the above "Document Schema".

– Page 9 of 15 –

#### 7.1 ENTSO-E Schema additions to cater for Local variations

Document Schema
(urn-entsoe-eu-wgedi-xyz-electronicdocument-n-m.xsd)

Local Extension
(urn-entsoe-eu-local-extension-types.xsd)
"Z01", "Z02","Z03"

import

Core Components
(um-entsoe-eu-wgedi-components.xsd)

import

Code Lists
(um-entsoe-eu-wgedi-codelists xsd)
"A01", "A02", "A03"...

Figure 5 - ENTSO-E Document extensions

An ENTSO-E local variation consists of an ENTSO-E provided schema with additional new valid local codes to satisfy local market needs. The specific local codes are defined in the Local extension. No other changes are permitted.

#### 7.2 Core Component Schema

The Core Component Schema defines all the data types that are used within the ENTSO-E environment. No ENTSO-E electronic document can be generated using data types that are not referenced in the Core Component Schema. This ensures that all ENTSO-E electronic documents make use of a consistent set of information blocks.

- 222 The Core Component Schema is divided into two parts:
  - a) A set of unqualified data types that have no specific constraints applied to the information content other than the basic structural rules within their definition.
  - b) A set of qualified data types that represent the complete set of code lists defined for use within ENTSO-E electronic documents. The codelists are in general of a qualifying nature and provide additional consistent semantics to the electronic document content. These codelists are defined in the Standard ENTSO-E codelist set package.

The Core Component Schema along with the ENTSO-E standard codelist set comprise the basic building blocks necessary for the creation of all ENTSO-E electronic documents.

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#### 241 7.3 **Code List Schema**

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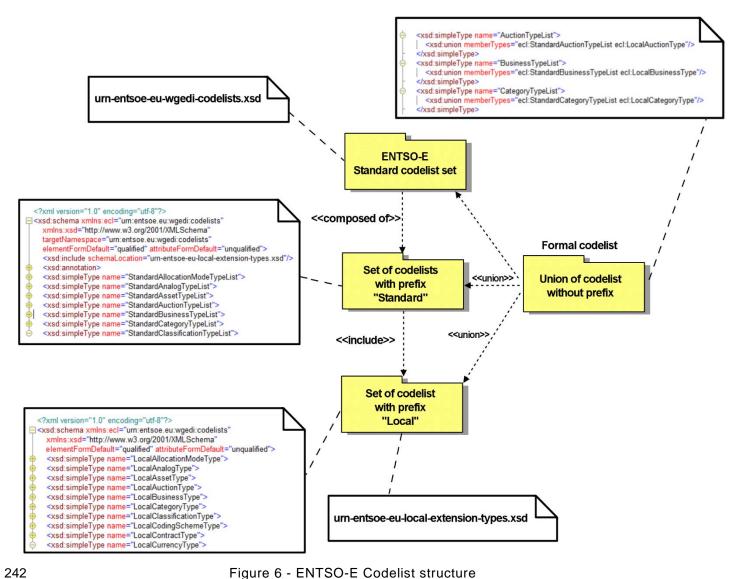


Figure 6 - ENTSO-E Codelist structure

243 As can be seen in Erreur! Source du renvoi introuvable, the standard codelist set is itself 244 divided into two basic parts:

- The list of "standard" codelists that consists of all the codes that have been approved within
  - b) A list of "local" codelists that are assigned by individual System Operators for internal local market use. These codes are local to a given market and are managed by the local System Operator in order to satisfy local market constraints. These codes cannot be used outside the market in which they have been designed.

In order to provide a stable core component library, ENTSO-E makes available the library structure that includes an "empty" local set of codelists. This "empty" set of codelists in fact contains by default the first "standard" code that can be found within the "standard" codelist. This ensures that within the value space of the "local" codelist there is no possibility of validating codes that do not exist. This local codelist schema has a standardised name within the ENTSO-E environment which is "urn-entsoe-eu-local-extension-types.xsd".

Each System Operator then replaces the "empty" local set of codelists with the "local" codelists that are needed within its local marketplace. It is also the responsibility of the System Operator to ensure the distribution of the "local" codelist to the Market Participants within the local market area.



- The ENTSO-E XML Schema environment "merges" the two codelist sets in order to provide at
- the electronic document level the complete set of codes possible (i.e. the union of the "standard"
- and "local" codes).

#### 264 7.4 Local code list extensions.

- 265 The "Code List" XML Schema is composed of all the codes for each individual ENTSO-E codelist
- 266 (BusinessTypes, ProcessTypes, etc). Within the XML Schema, each of the codelists is named
- with the prefix "Standard" (StandardBusinessType, StandardProcessType, etc.).
- 268 The "Code List" Schema also includes an XML Schema with an equivalent set of local codelists
- that may be defined for specific local use. Within the local schema they have the prefix "Local"
- 270 (LocalBusinessType, LocalProcessType, etc.).
- The standard "Code List" XML schema has in addition one other entry that provides the junction
- of the standard and local codelists. The name of the codelist has no prefix (BusinessType,
- 273 ProcessType, etc.) and it merely consists of the union of the local and the standard codelists
- 274 (e.g. StandardBusinessType, LocalBusinessType).
- 275 The complete codelist is always considered to be the union of the local and the standard
- 276 codelist.
- 277 ENTSO-E shall always provide a local code list under the name "urn-entsoe-eu-local-extension-
- 278 types.xsd" that contains all the codelists as found in the standard file, with the prefix "Local"
- 279 (LocalBusinessType, LocalProcessType, etc.).
- 280 By default, every local entry has a single enumeration that corresponds to the first entry that is
- 281 found in the standard codelist.
- 282 If a local code is to be defined for the local entry, the default entry shall be replaced by the local
- 283 entry. It is local market responsibility to maintain this electronic document and to ensure that it
- 284 remains up to date.
- A local extension of the code list would require the replacement of one standard entry:

#### By the local requirement:

```
294
             <xsd:simpleType name="LocalAllocationModeType">
295
                    <xsd:restriction base="xsd:NMTOKEN">
296
                           <xsd:minLength value="3"/>
297
                           <xsd:maxLength value="3"/>
298
                           <xsd:enumeration value="Z01"/>
299
                           <xsd:enumeration value="Z02"/>
300
                    </xsd:restriction>
301
             </xsd:simpleType>
```

Every time the ENTSO-E codelist is updated it will be necessary to replace the standard "urnentsoe-eu-local-extension-types.xsd" by the locally managed one to ensure that the local codes are integrated into the extended codelist.

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#### 309 7.5 Local Document use overview

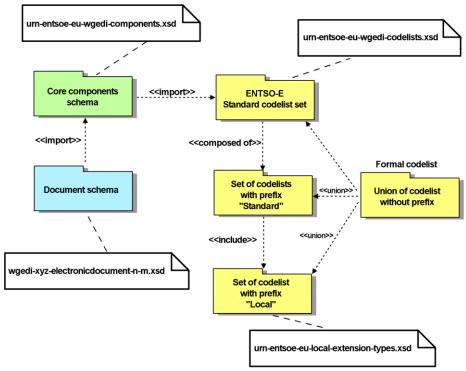
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Note: The term "xyz-electronicdocument" should be replaced by the specific process and name of the document in question

Figure 7 - Overall picture of local code use

The diagram in Figure 7 provides the overall picture of the use of standard and local codelists within the ENTSO-E environment. Where there are XML schema files the standardised format of the filenames has been highlighted.



#### 315 8 Annex 1: Modifications to the schemas defined before 2012

- 316 XML Schemas developed prior to the introduction of namespaces will require the changes as
- 317 outlined in the following paragraphs.

#### 318 8.1 Etso-code-lists.xsd

- 319 The name of the xsd file will be changed to "urn-entsoe-eu-wgedi-codelists.xsd" to bring it into
- 320 line with the file naming convention as outlined in section 6.
- 321 There are no other changes other than the modification of the specific core component
- 322 namespace which is within the codelist schema.

#### 323 8.2 Etso-core-cmpts.xsd

- 324 The name of the xsd file will be changed to "urn-entsoe-eu-wgedi-components.xsd" to bring it
- into line with the file naming convention as outlined in section 6.
- 326 There are no other changes other than the modification of the specific core component
- 327 namespace.

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#### 8.3 Electronic document Schemas

The only change required is to the schema heading as follows:

```
330
      <xsd:schema</pre>
331
         xmlns:ecc="urn:entsoe.eu:wgedi:components"
332
         xmlns:xsd="http://www.w3.org/2001/XMLSchema"
333
         xmlns="urn:entsoe.eu:wgedi:ess:scheduledocument:4:0"
334
         targetNamespace="urn:entsoe.eu:wgedi:ess:scheduledocument:4:0"
335
         elementFormDefault="qualified"
336
         attributeFormDefault="unqualified"
337
         ecc:VersionRelease="19.0">
338
             <xsd:import namespace=</pre>
339
      "urn:entsoe.eu:wgedi:components" schemaLocation="../../urn-entsoe-eu-wgedi-
340
      components.xsd"/>
341
             <xsd:include schemaLocation="urn-entsoe-eu-wgedi-scheduledocument-4-0-</pre>
342
      restricted-codes.xsd"/>
```

The schema heading will contain the targetNamespace and with it the URI identifying the electronic document. It also requires the introduction of a default namespace (xmlns="urn:entsoe.eu:wgedi:ess:scheduledocument:4:0") in order to ensure the connection with the elements that are specific to the XML Schema in question. In addition the core component namespace is aligned with the new namespace specification.

- There are no other changes required to the electronic document schemas.
- It should be noted that the introduction of a default namespace in the instance document that corresponds to the default namespace in the XML schema will also ensure that a specific
- 351 namespace prefix is not required. This does not preclude its use if necessary and is agreed
- 352 between the parties.

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#### 9 Annex 2: Latest version of entso-e schemas

In the latest version of the entso-e schemas the following actions have been taken place:

- Cancellation of the use of the "restricted codelist". Thus all the codes defined in the ENTSO-E codelist or added in the "local extension" could be used in an exchange if this is agreed between the parties.
  - "VersionRelease" referring to the version of the ENTSO-E core component has been removed as the ENTSO-E core component are freezed. This is as per decision of ENTSO-E to use standards based on CIM and published as European norm (IEC/EN norms).

These changes are reflected in the following fragment using bold text:

```
364
365
       <xsd:schema</pre>
366
          xmlns:ecc="urn:entsoe.eu:wgedi:components"
367
          xmlns:xsd="http://www.w3.org/2001/XMLSchema"
368
          xmlns="urn:entsoe.eu:wgedi:ess:scheduledocument:4:2"
369
          targetNamespace="urn:entsoe.eu:wgedi:ess:scheduledocument:4:2"
370
         elementFormDefault="qualified"
371
         attributeFormDefault="unqualified"
372
          ecc:VersionRelease="19.0">
373
             <xsd:import namespace=</pre>
374
       "urn:entsoe.eu:wgedi:components" schemaLocation="../../urn-entsoe-eu-wgedi-
375
       components.xsd"/>
376
       <xsd:include schemaLocation="urn-entsoe-eu-wgedi-scheduledocument-4-0-restricted-</pre>
377
       codes.xsd"/>
```