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European Network of
Transmission System Operators
for Electricity

ENTSO-E EIC data exchange implementation guide

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19   The force of the following words is modified by the requirement level of the document in which
20   they are used.

21   • SHALL: This word, or the terms "REQUIRED" or "MUST", means that the definition is an
22   absolute requirement of the specification.

23   • SHALL NOT: This phrase, or the phrase "MUST NOT", means that the definition is an
24   absolute prohibition of the specification.

25   • SHOULD: This word, or the adjective "RECOMMENDED", means that there may exist valid
26   reasons in particular circumstances to ignore a particular item, but the full implications
27   must be understood and carefully weighed before choosing a different course.

28   • SHOULD NOT: This phrase, or the phrase "NOT RECOMMENDED", means that there may
29   exist valid reasons in particular circumstances when the particular behaviour is acceptable
30   or even useful, but the full implications should be understood and the case carefully
31   weighed before implementing any behaviour described with this label.

32   • MAY: This word, or the adjective "OPTIONAL", means that an item is truly optional. One
33   vendor may choose to include the item because a particular marketplace requires it or
34   because the vendor feels that it enhances the product while another vendor may omit the
35   same item. An implementation which does not include a particular option SHALL be
36   prepared to interoperate with another implementation which does include the option,
37   though perhaps with reduced functionality. In the same vein an implementation which does
38   include a particular option SHALL be prepared to interoperate with another implementation
39   which does not include the option (except, of course, for the feature the option provides.).

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40   Revision History

Version	Release	Date	Paragraph	Comments
0	0	2015-03-25		Draft release
0	1	2015-04-02		Initial release for comment of EIC group
0	2	2015-04-08		Initial release submitted to WG EDI
0	3	2015-05-06		Version updated taking into account the comments on the EIC reference manual.
1	0	2015-06-11		Updated version after the WG EDI meeting. Approved by Market Committee on 2015-06-30.

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145 INTRODUCTION

146 This document was drafted based on IEC 62325 series. In particular, the IEC 62325-450
147 methodology was applied to develop the conceptual and assembly models.

1 Scope

149 The objective of this implementation guide is to describe the way to exchange information
150 related to the energy identification coding scheme (EIC), either between an EIC participant
151 and a local issuing office (LIO), between LIO and the central issuing office (CIO) or for
152 publication.

153 The implementation guide is one of the building blocks for using UML (Unified Modelling
154 Language) based techniques in defining processes and documents for interchange between
155 the involved actors.

2 Normative references

157 The following documents, in whole or in part, are normatively referenced in this document and
158 are indispensable for its application. For dated references, only the edition cited applies. For
159 undated references, the latest edition of the referenced document (including any
160 amendments) applies.

161 IEC TS 61970-2, *Energy management system application program interface (EMS-API) – Part*
162 *2: Glossary*

163 IEC 62325-301, *Framework for energy market communications – Part 301: Common*
164 *information model (CIM) extensions for markets*

165 IEC 62325-351, *Framework for energy market communications – Part 351: CIM European*
166 *market model exchange profile*

167 IEC 62325-450, *Framework for energy market communications – Part 450: Profile and context*
168 *modeling rules*

169 IEC 62325-451-1, *Framework for energy market communications – Part 451-1:*
170 *Acknowledgement business process and contextual model for CIM European market*

171 ENTSO-E, *The energy identification coding scheme (EIC) – Reference manual*

3 The EIC process

3.1 Overall business context

174 The energy identification code (EIC) is used to enable information interchange between
175 parties for the electricity or gas energy market in Europe. It ensures a unique identification for
176 all objects related to the European markets for electricity and gas.

177 The EIC enables the identification of companies, areas, domains, metering points, accounting
178 points, as well as assets (interconnections, lines, transformers, substations, LNG plants,
179 generating units, etc.).

180 An EIC participant has to request the creation of an EIC code through a LIO.

181 The LIO manages its own registry containing all the EIC codes it has issued.

182 The CIO manages the central registry; this registry is a merge of all the international EIC
183 codes (see EIC reference manual).

184 This document deals with the information exchanged between all these parties for this
185 process.

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186   **3.2   Use case**

187   The actors involved in the EIC code business process are displayed in Figure 1:
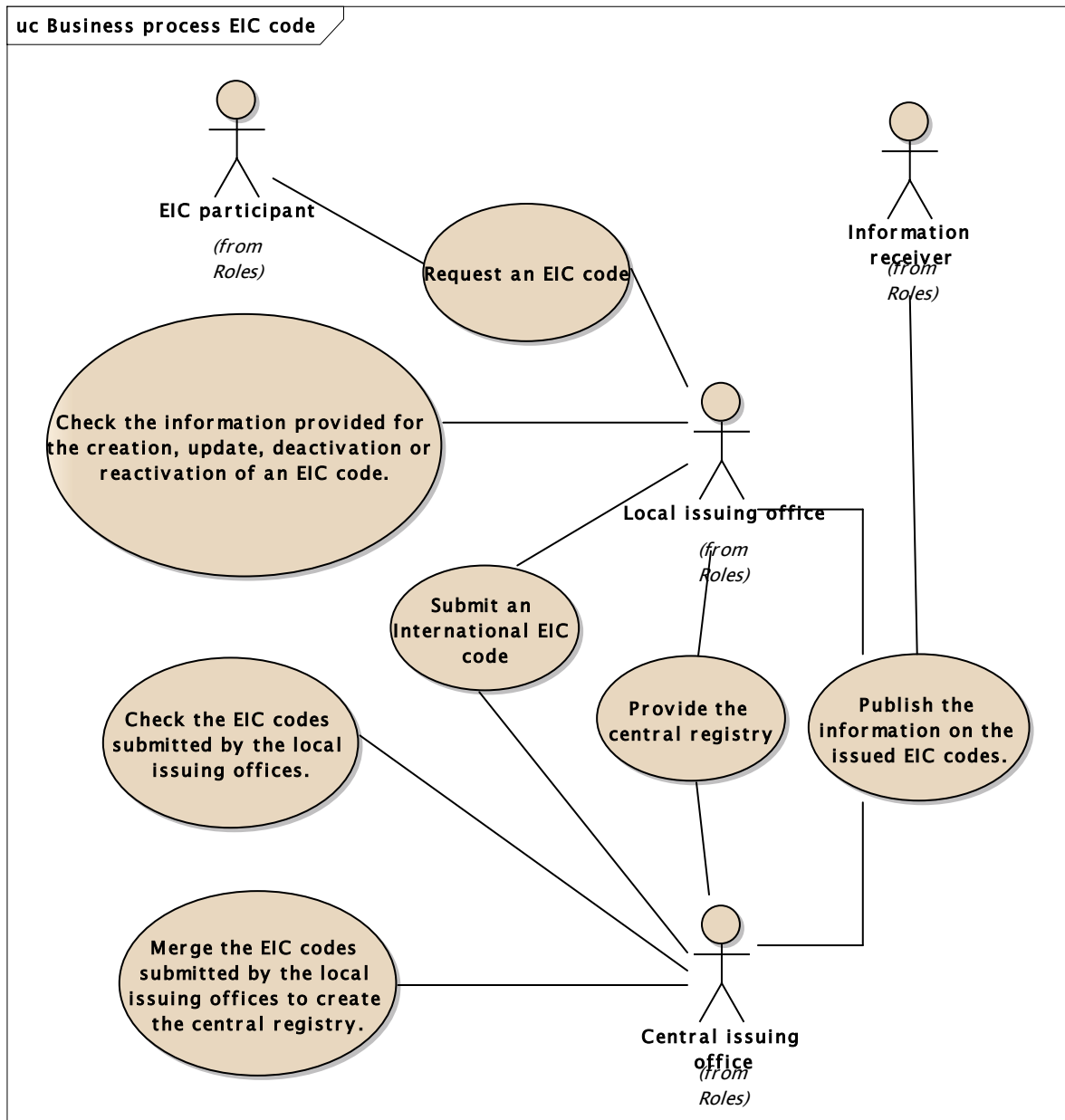
188

189   **Figure 1 – Use case for EIC business process**

190   The actors are (details are provided in the EIC reference manual):

191   • EIC participant, a physical or legal entity that applies for the allocation of an EIC code;

192   • Local issuing office (LIO), an entity managing the EIC codes that it has issued;

193   • Central issuing office (CIO), an entity managing the central registry of EIC codes.

194   The use case for the EIC business process implies the following steps:

195   • The first step covers the submission by an EIC Participant to a LIO of a form to request
196   one of the following actions:

197   a) the creation of an EIC code;

198   b) the update of information of an EIC code;

199   c) the deactivation of an EIC code;

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200   d) the reactivation of an EIC code.

201   • The second step concerns the checks carried out by the LIO to assess the EIC code
202   request. If the request is considered as valid, the LIO will process the request and update
203   the local registry accordingly.

204   • The third step is related to the International EIC code (see EIC reference manual)
205   process, in such a case the EIC code is submitted to the CIO.

206   • The fourth step concerns the checks carried out by the CIO to assess the International
207   EIC code.

208   • The fifth step is the validation of the request. If the request is valid, the CIO will update the
209   central registry accordingly.

210   • The sixth step is the CIO delivering the updated central registry to all concerned parties
211   (LIOs).

212   • The seventh step is the publication of EIC code information on web sites (CIO and LIOs),
213   either local registry information (LIO) or central registry information (CIO). This information
214   is available to the EIC Participant and to any party interested in getting information about
215   an EIC code.

216   **3.3   Workflow overview**

217   The workflow diagram is provided in Figure 2.
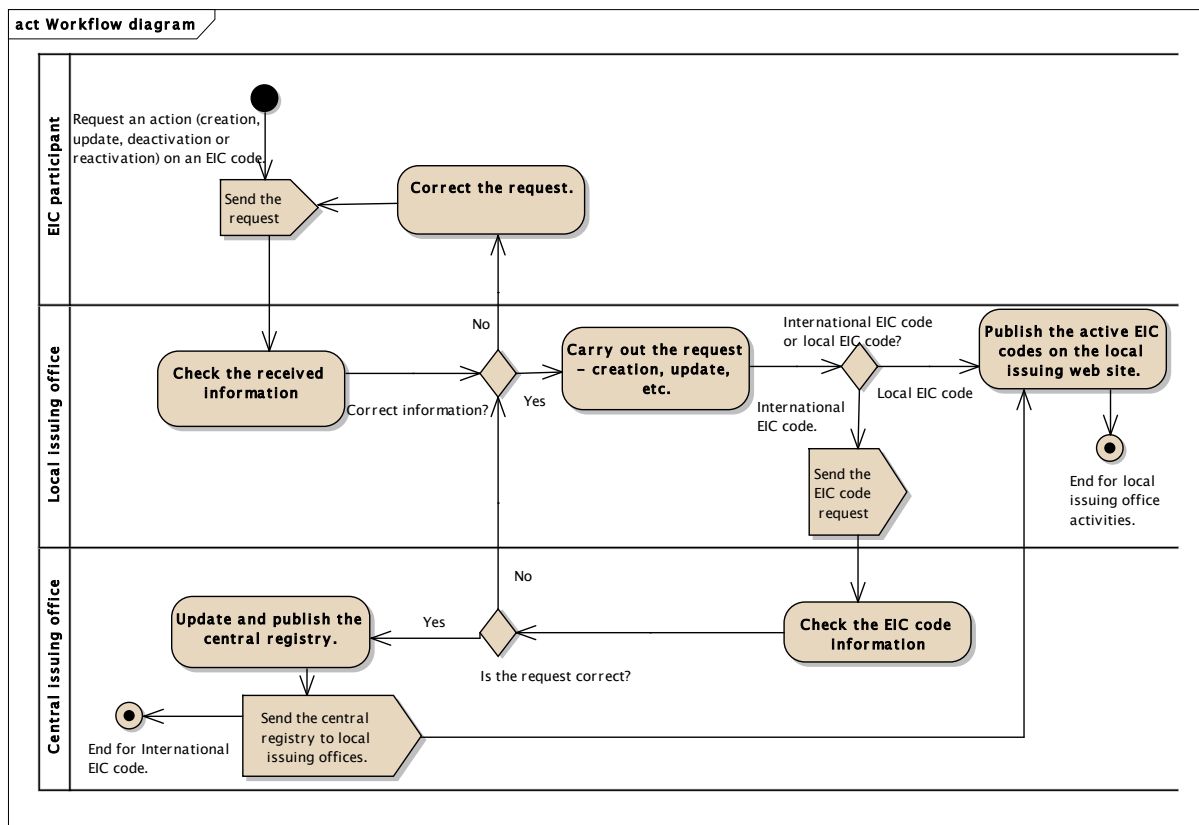
Figure 2 – Workflow overview for EIC business process

220   **3.4   Sequence diagram overview**

221   The sequence diagram is provided in Figure 3.

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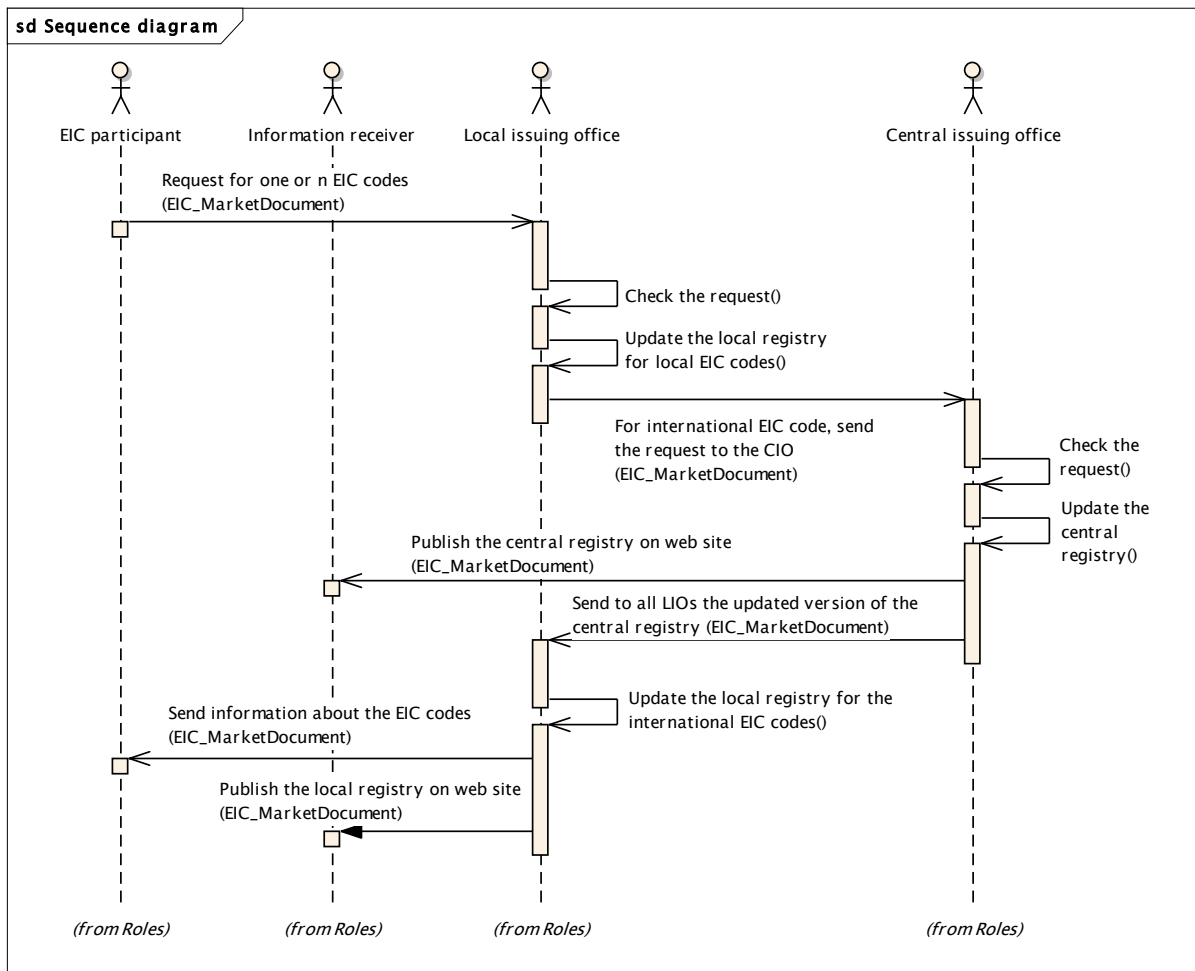
Figure 3 – Sequence diagram overview for EIC business process

4 Business rules for the EIC process

4.1 General rules

For each electronic data interchange defined in this document, an acknowledgement document, as defined in IEC 62325-451-1, should be generated either accepting the whole received document or rejecting it completely; the only exception is for the information sent either to the role "information receiver" or "EIC participant" that is creating its EIC type X code, in such case no acknowledgement is expected.

4.2 Rules for the request about an EIC code

The following rules applied whatever is the type of EIC code:

a) Creation request: all the mandatory attributes listed in the dependency table are to be provided. The EIC code is provided by the LIO; thus it is only in the creation request for an international EIC code issued by the LIO to the CIO that the EIC code is provided in the document.

b) Update request: an update request replaces the existing EIC code information (specific checks are carried out as per the EIC reference manual which concerns the VAT number and/or the ACER code); the EIC code is to be provided as well as all of the mandatory information.

c) Deactivation request: a deactivation request shall contain all the information about the EIC code (in particular the information about the contact person) to assess the validity of the request. The CIO shall set a deactivation date to indicate when the deactivation will be carried out.

245   d)   Reactivation request: a reactivation request shall contain all the information as per an
246   update request.

247   e)   As concerns the exchange of the central registry, all information available in the central
248   registry is provided by the CIO to the LIOs.

249   f)   As concerns the feedback to an EIC participant about its request, all the information
250   available in the local registry related to the EIC code object of the request is to be
251   provided.

252   g)   As concerns, the publication process, i.e. from the CIO to the role "information receiver" or
253   from the LIO to the role "information receiver", only a limited set of information is provided.
254   These are detailed in the corresponding dependency table.

255 **4.3   Rules for specific characters**

256 It is recommended not to use the characters &, #, ", < and > in all attributes values, e.g. the
257 full name of an EIC code.

258 **4.4   Constraints on the attributes of the EIC_MarketDocument**

259 Table 1 provides the constraints on the attributes of the EIC_MarketDocument.

260   **Table 1 –Constraints on the attributes**

Attribute name	Constraint
mRID	The unique identification of the document. Mandatory.
revisionNumber	A number within the range of 1 to 99 without heading zero. Mandatory.
type	B03: EIC code request B04: EIC code information (central registry exchange or information to an EIC participant) B05: EIC code publication (web site publication of a limited set of information) Mandatory
sender_MarketParticipant.mRID	The identification of the sender of the document. Mandatory except when the document concerned the creation of the EIC participant type X EIC code.
sender_MarketParticipant.marketRole.type	The identification of the role played by the sender of the document. Mandatory A42: EIC participant A40: LIO A41: CIO
receiver_MarketParticipant.mRID	The identification of the recipient of the document. Mandatory except when the document concerned the creation of an EIC code for a party that does not have an EIC code.
receiver_MarketParticipant.marketRole.type	The identification of the role played by a market player. Mandatory A42: EIC participant A40: LIO A41: CIO A33: Information receiver
createdDateTime	The date and time of the creation of the document as per ISO 8601 in UTC time, i.e. YYYY-MM-DDTHH:MM:SSZ Mandatory.

261

262 **4.5   Constraints on the attributes of the EICCode_MarketDocument**

263 Table 2 provides the constraints on the attributes of the EICCode_MarketDocument.

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264 **Table 2 –Constraints on the attributes**

Attribute name	Constraint
mRID	16 characters
status	A14: Creation of an EIC code. A15: Update of the information related to an EIC code. A16: Deactivation of an EIC code. A17: Reactivation of an EIC code. These codes are defined in the ActionStatus type list.
docStatus	A05: active EIC code. A03: Inactive EIC code. These codes are defined in the ActionStatus type list
attributeInstanceComponent.attribute	When not provided, the default value is "Local", Local: Local EIC code International: International EIC code
long_Names.name	Maximum 70 characters
display_Names.name	Maximum 16 characters
lastRequest_DateAndOrTime.date	Date, i.e. YYYY-MM-DD
deactivationRequested_DateAndOrTime.date	Date, i.e. YYYY-MM-DD
eICContact_MarketParticipant.name	Maximum 70 characters
eICContact_MarketParticipant.phone1	Maximum 15 characters
eICContact_MarketParticipant.electronicAddress	Maximum 70 characters
eICCode_MarketParticipant.streetAddress	StreetDetail.adressGeneral maximum 70 characters StreetDetail.adressGeneral2 maximum 70 characters StreetDetail.adressGeneral3 maximum 70 characters TownDetail name maximum 35 characters TownDetail country 2 characters ISO 3166-1 alpha-2 postalCode maximum10 characters
eICCode_MarketParticipant.aCERCode_Names.name	12 characters
eICCode_MarketParticipant.vATCode_Names.name	Maximum 14 characters
eICParent_MarketDocument.mRID	16 characters
eICResponsible_MarketParticipant.mRID	16 characters
description	Maximum 700 characters
Function_Names.name	Maximum 70 characters

265

4.6 Dependencies governing the EICCode_MarketDocument for EIC code request or EIC code information

266
267

268 Table 3 provides the dependency table for the different types of EIC code when used for EIC
269 code request (document type B03) or EIC code information (document type B04).

270 **Table 3 – Dependency table for the attributes of the document**

mult.	Attribute name	EIC type X	EIC type Y EIC type Z EIC type T EIC type W EIC type A EIC type V
[0..1]	mRID	The EIC code Mandatory, except when the document is related to the creation of an EIC code.	
[0..1]	status	The action requested to be carried out, e.g. creation of an EIC code, update, deactivation, reactivation. Mandatory when the document is sent from the EIC participant to the LIO or from the LIO to the CIO. Not used in the other cases.	
[0..1]	docStatus	The status of the EIC code, i.e. active or inactive. Mandatory when the document is sent from the CIO to the LIOs (central registry) or from the LIO to the EIC participant (return on the result of the request). Not used in the other cases.	
[0..1]	attributeInstanceComponent.attribute	The type of EIC code, i.e. local EIC code or international EIC code. By default, the EIC code is considered as "local". The EIC participant shall provide the value of this attribute when requesting a creation or an update.	
[1..1]	long_Names.name	The full name associated to the EIC code. Mandatory.	
[1..1]	display_Names.name	The display name or short name to be used on displays. Mandatory.	
[1..1]	lastRequest_DateAndOrTime.date	Date of the request. Mandatory.	
[0..1]	deactivationRequested_DateAndOrTime.date	Date when the deactivation will be carried out. Mandatory when the document is issued by the CIO after a request for deactivation of an international EIC code (the CIO set the deactivation date) or when the document is issued by the LIO for a local EIC code (the LIO set the deactivation date for its local EIC code). Not used in the other cases.	
[0..1]	eICContact_MarketParticipant.name	The name of the contact person for the EIC code. Mandatory	
[0..1]	eICContact_MarketParticipant.phone1	Phone number. The information about the contact person for the EIC code. Mandatory	
[0..1]	eICContact_MarketParticipant.electronicAddress	Electronic address. The information about the contact person for the EIC code. Mandatory	
[0..1]	eICCode_MarketParticipant.streetAddress	Street address. The elements streetDetail, postalCode and townDetail are to be provided in particular the country for publication Mandatory	Optional.

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mult.	Attribute name	EIC type X	EIC type Y EIC type Z EIC type T EIC type W EIC type A EIC type V
[0..1]	eICCode_MarketParticipant.aCERCode_Names.name	The ACER code associated to the EIC code of the market participant. Mandatory if the EIC participant is reporting in the framework of REMIT. Not used in the other case.	Not used.
[0..1]	eICCode_MarketParticipant.vATCode_Names.name	The VAT code associated with the EIC code of the market participant. Mandatory if available.	Not used
[0..1]	eICParent_MarketDocument.mRID	The EIC code of the parent (market participant, area, resource object, etc.) of the EIC code (see chapter 7.4). Optional.	
[0..1]	eICResponsible_MarketParticipant.mRID	Not used.	The party responsible of the object identified by the EIC code (mRID attribute). Mandatory for the EIC code of type V. Optional for the EIC Y, Z, T, W or A codes See chapter 7.5.
[0..1]	description	The description of the EIC code. If available.	
[0..*]	Function_Names.name	The function(s) of the EIC code. As per the ENTSO-E function list published on the EIC web site.	

271

272 4.7 Dependencies governing the EICCode_MarketDocument for EIC code publication

273 Table 4 provides the dependency table for the different types of EIC code when used for EIC
274 code publication (document type B05) on a web site.

275 **Table 4 – Dependency table for the attributes of the document**

mult.	Attribute name	EIC type X	EIC type Y EIC type Z EIC type T EIC type W EIC type A EIC type V
[0..1]	mRID	The EIC code. Mandatory.	
[0..1]	status	Not used.	
[0..1]	docStatus	The status of the EIC code, i.e. active or inactive. Mandatory.	
[0..1]	attributeInstanceComponent.attribute	The type of EIC code, i.e. local EIC code or international EIC code.	
[1..1]	long_Names.name	The full name associated to the EIC code. Mandatory.	
[1..1]	display_Names.name	The display name or short name to be used on displays. Mandatory.	

mult.	Attribute name	EIC type X	EIC type Y EIC type Z EIC type T EIC type W EIC type A EIC type V
[1..1]	lastRequest_DateAndOrTime.date	Date of the request. Mandatory.	
[0..1]	deactivationRequested_DateAndOrTime.date	Date when the deactivation will be carried out. Optional.	
[0..1]	eICContact_MarketParticipant.name	Not used.	
[0..1]	eICContact_MarketParticipant.phone1	Not used.	
[0..1]	eICContact_MarketParticipant.electronicAddress	Not used.	
[0..1]	eICCode_MarketParticipant.streetAddress	At least the attribute "country" shall be published.	Optional, depending upon specific requirements.
[0..1]	eICCode_MarketParticipant.aCERCode_Names.name	The ACER code associated to the EIC code of the market participant. Optional, to be used when the EIC participant is reporting in the framework of REMIT. Not used in the other case.	Not used.
[0..1]	eICCode_MarketParticipant.vATCode_Names.name	The VAT code associated with the EIC code of the market participant. Mandatory if available.	Not used.
[0..1]	eICParent_MarketDocument.mRID	The EIC code of the parent (market participant, area, resource object, etc.) of the EIC code (see chapter 7.4). Optional.	
[0..1]	eICResponsible_MarketParticipant.mRID	Not used.	The party responsible of the object identified by the EIC code (mRID attribute). Mandatory for the EIC code of type V. Optional for the EIC Y, Z, T, W or A codes See chapter 7.5.
[0..1]	description	The description of the EIC code. If available.	
[0..*]	Function_Names.name	The function(s) of the EIC code. Mandatory.	

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277 **5   Contextual and assembly models**

278 **5.1   EIC document contextual model**

279 **5.1.1   Overview of the model**

280 Figure 4 shows the model.
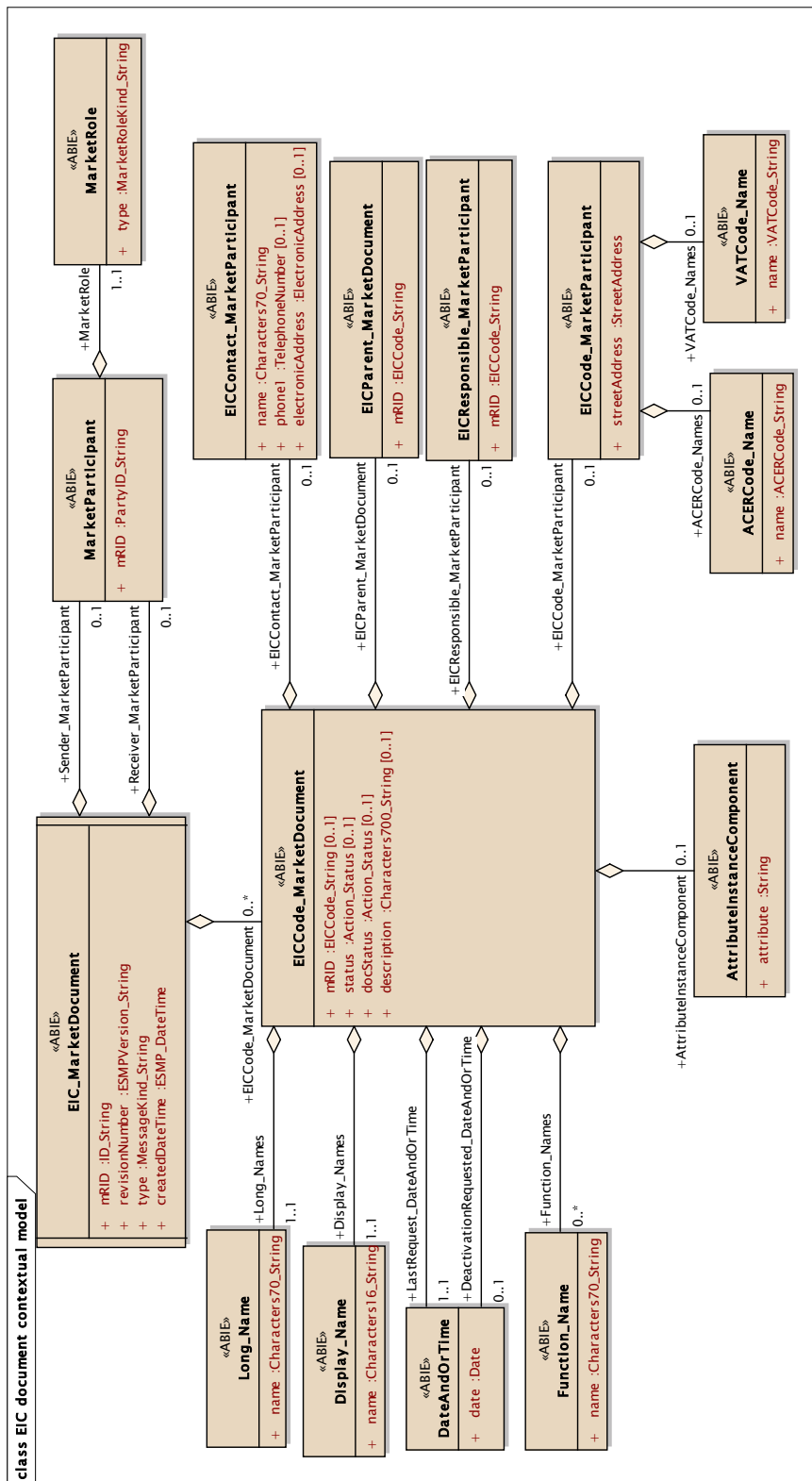
281

282 **Figure 4 – EIC document contextual model**

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283   **5.1.2   IsBasedOn relationships from the European style market profile**

284   Table 5 shows the traceability dependency of the classes used in this package towards the
285   upper level.

286   **Table 5 – IsBasedOn dependency**

Name	Complete IsBasedOn Path
ACERCode_Name	TC57CIM::IEC61970::Base::Core::Name
AttributeInstanceComponent	TC57CIM::IEC62325::MarketManagement::AttributeInstanceComponent
DateAndOrTime	TC57CIM::IEC62325::MarketManagement::DateAndOrTime
Display_Name	TC57CIM::IEC61970::Base::Core::Name
EIC_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
EICCode_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
EICCode_MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
EICContact_MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
EICParent_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
EICResponsible_MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
Function_Name	TC57CIM::IEC61970::Base::Core::Name
Long_Name	TC57CIM::IEC61970::Base::Core::Name
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
VATCode_Name	TC57CIM::IEC61970::Base::Core::Name

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288   **5.2   EIC document assembly model**

289   **5.2.1   Overview of the model**

290   Figure 5 shows the model.

291

292   **Figure 5 – EIC document assembly model**

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293   **5.2.2   IsBasedOn relationships from the European style market profile**

294   Table 6 shows the traceability dependency of the classes used in this package towards the
295   upper level.

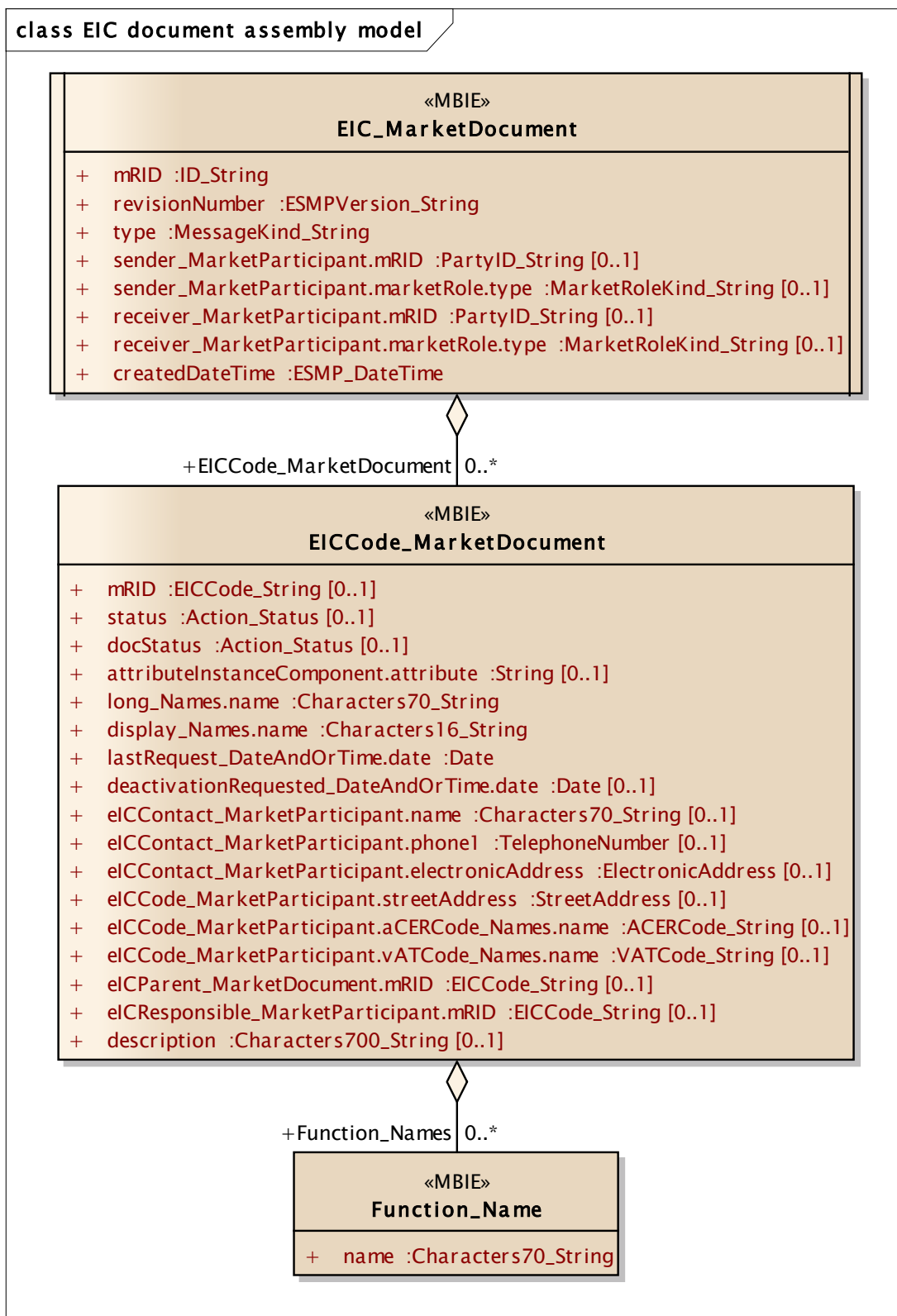296   **Table 6 – IsBasedOn dependency**

Name	Complete IsBasedOn Path
EIC_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
EICCode_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Function_Name	TC57CIM::IEC61970::Base::Core::Name

297

298   **5.2.3   Detailed EIC document assembly model**

299   **5.2.3.1   EIC_MarketDocument root class**

300   An electronic document containing the information necessary to satisfy the requirements of a
301   given business process.

302   Table 7 shows all attributes of EIC_MarketDocument.

303   **Table 7 – Attributes of EIC document assembly model::EIC_MarketDocument**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ID_String	The unique identification of the document being exchanged within a business process flow.
1	[1..1]	revisionNumber ESMPVersion_String	The identification of the version that distinguishes one evolution of a document from another.
2	[1..1]	type MessageKind_String	The coded type of a document. The document type describes the principal characteristic of the document.
3	[0..1]	sender_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The sender of the document.
4	[0..1]	sender_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- The sender of the document.
5	[0..1]	receiver_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The recipient of the document.
6	[0..1]	receiver_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- The recipient of the document.
7	[1..1]	createdDateTime ESMP_DateTime	The date and time of the creation of the document.

304

305   Table 8 shows all association ends of EIC_MarketDocument with other classes.

306   **Table 8 – Association ends of EIC document assembly model::EIC_MarketDocument**
307   **with other classes**

Order	mult.	Class name / Role	Description
8	[0..*]	EICCode_MarketDocument EICCode_MarketDocument	The information on the EIC code. Association Based On : EIC document contextual model::EICCode_MarketDocument.EICCode_MarketDocument[0..*] ----- EIC document contextual model::EIC_MarketDocument.[]

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309 5.2.3.2 EICCode_MarketDocument

310 A document describing the EIC code, which identification is provided in the mRID attribute.

311 An electronic document containing the information necessary to satisfy the requirements of a
312 given business process.

313 Table 9 shows all attributes of EICCode_MarketDocument.

314 Table 9 – Attributes of EIC document assembly model::EICCode_MarketDocument

Order	mult.	Attribute name / Attribute type	Description
0	[0..1]	mRID EICCode_String	The EIC code that is managed in the process (creation, update, deactivation, reactivation, publication).
1	[0..1]	status Action_Status	The action requested to be carried out, e.g. creation of the EIC code, update, deactivation, reactivation. Status of subject matter (e.g., Agreement, Work) this document represents. For status of the document itself, use 'docStatus' attribute.
2	[0..1]	docStatus Action_Status	The status of the EIC code document, i.e. active or inactive. This status is for publication information. The identification of the condition or position of the document with regard to its standing.
3	[0..1]	attributeInstanceComponent.attribute String	The identification of an EIC code either as local EIC code or international EIC code in order to keep either locally or to send to the central registry. The identification of an attribute for a given request component. --- This attribute states if the EIC code is either a local EIC code or an international EIC code. The default value is that the EIC code is a local EIC code; thus "no value" attribute means that the code is a local EIC code.
4	[1..1]	long_Names.name Characters70_String	Any free text that name the object. --- The long name or the "full" name of the EIC party or object being identified by the EIC code.
5	[1..1]	display_Names.name Characters16_String	Any free text that name the object. --- The display name or short name to be used on displays.
6	[1..1]	lastRequest_DateAndOrTime.date Date	The date as "YYYY-MM-DD", which conforms with ISO 8601. --- Date of the request
7	[0..1]	deactivationRequested_DateAndOrTime.date Date	The date as "YYYY-MM-DD", which conforms with ISO 8601. --- Date when the deactivation will be done.
8	[0..1]	eICContact_MarketParticipant.name Characters70_String	The name is any free human readable and possibly non unique text naming the object. --- The information about the contact person for the EIC code.
9	[0..1]	eICContact_MarketParticipant.phone1 TelephoneNumber	Phone number. --- The information about the contact person for the EIC code.
10	[0..1]	eICContact_MarketParticipant.electronicAddress ElectronicAddress	Electronic address. --- The information about the contact person for the EIC code.

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Order	mult.	Attribute name / Attribute type	Description
11	[0..1]	eICCode_MarketParticipant.streetAddress StreetAddress	Street address when the EIC code is the one of a market participant, i.e. company.. --- Additional information when the EIC code is the one of a market participant, such as company address, ACER code, VAT code.
12	[0..1]	eICCode_MarketParticipant.aCERCode_Names.name ACERCode_String	Any free text that name the object. The other codes that may be used to identify an entity. --- Additional information when the EIC code is the one of a market participant, such as company address, ACER code, VAT code. --- The ACER code associated to the EIC code of the market participant.
13	[0..1]	eICCode_MarketParticipant.vATCode_Names.name VATCode_String	Any free text that name the object. --- Additional information when the EIC code is the one of a market participant, such as company address, ACER code, VAT code. --- The VAT code associated with the EIC code of the market participant.
14	[0..1]	eICParent_MarketDocument.mRID EICCode_String	The identification of the parent for the EIC code (hierarchical description). For a market participant, the parent is the mother company. For the areas, the parent provides information about aggregation, e.g. a control block is composed of control areas, etc. --- The EIC code of the parent (market participant, area, resource object, etc.) of the EIC code.
15	[0..1]	eICResponsible_MarketParticipant.mRID EICCode_String	The identification of a party in the energy market. --- The party responsible of the object identified by the EIC code (mRID attribute).
16	[0..1]	description Characters700_String	The description of the EIC code. The description is a free human readable text describing or naming the object. It may be non unique and may not correlate to a naming hierarchy.

315

316   Table 10 shows all association ends of EICCode_MarketDocument with other classes.

317   **Table 10 – Association ends of EIC document assembly**
318   **model::EICCode_MarketDocument with other classes**

Order	mult.	Class name / Role	Description
17	[0..*]	Function_Name Function_Names	All function names of this identified object. Association Based On : EIC document contextual model::Function_Name.Function_Names[0..*] ----- EIC document contextual model::EICCode_MarketDocument.[]

319

320   5.2.3.3   Function_Name

321   The Name class provides the means to define any number of human readable names for an
322   object. A name is **not** to be used for defining inter-object relationships. For inter-object
323   relationships instead use the object identification 'mRID'.

324   Table 11 shows all attributes of Function_Name.

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325 **Table 11 – Attributes of EIC document assembly model::Function_Name**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	name Characters70_String	For the EIC code, the list of functions. Any free text that name the object.

326

327 5.2.4 Datatypes

328 The list of datatypes used for the EIC document assembly model is as follows:

329 • Action_Status compound

330 • ElectronicAddress compound

331 • StreetAddress compound

332 • StreetDetail compound

333 • TelephoneNumber compound

334 • TownDetail compound

335 • ACERCode_String datatype

336 • Characters10_String datatype

337 • Characters15_String datatype

338 • Characters16_String datatype

339 • Characters2_String datatype

340 • Characters35_String datatype

341 • Characters70_String datatype

342 • Characters700_String datatype

343 • EICCode_String datatype

344 • ESMP_DateTime datatype

345 • ESMPVersion_String datatype

346 • ID_String datatype

347 • MarketRoleKind_String datatype, codelist RoleTypeList

348 • MessageKind_String datatype, codelist MessageTypeList

349 • PartyID_String datatype, codelist CodingSchemeTypeList

350 • Status_String datatype, codelist StatusTypeList

351 • VATCode_String datatype

352 6 XML schema

353 6.1 Restrictions on datatypes

354 6.1.1 Overview of the datatypes used for the EIC document

355 Figure 6 shows the overview.

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class Datatypes_specific
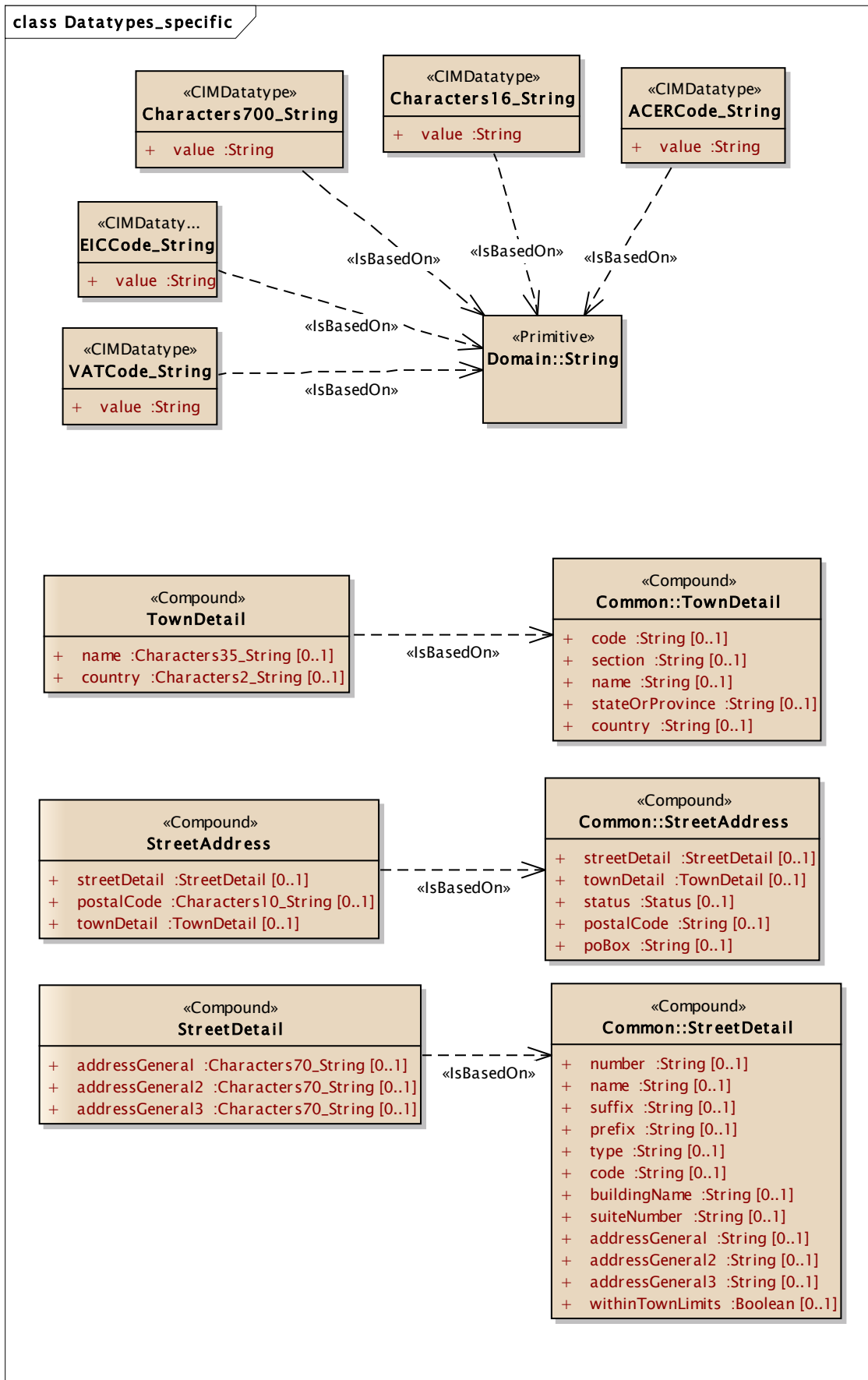
Figure 6 – Overview of the datatypes used for the EIC document

356

357

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358 **6.1.2   IsBasedOn relationships from the European style market profile**

359 Table 12 shows the traceability dependency of the classes used in this package towards the
360 upper level.

361 **Table 12 – IsBasedOn dependency**

Name	Complete IsBasedOn Path
ACERCode_String	TC57CIM::IEC61970::Base::Domain::String
Characters16_String	TC57CIM::IEC61970::Base::Domain::String
Characters700_String	TC57CIM::IEC61970::Base::Domain::String
EICCode_String	TC57CIM::IEC61970::Base::Domain::String
StreetAddress	TC57CIM::IEC61968::Common::StreetAddress
StreetDetail	TC57CIM::IEC61968::Common::StreetDetail
TownDetail	TC57CIM::IEC61968::Common::TownDetail
VATCode_String	TC57CIM::IEC61970::Base::Domain::String

362

363 **6.1.3   Detailed Datatypes_specific**

364 **6.1.3.1   StreetAddress compound**

365 General purpose street address information.

366 Table 13 shows all attributes of StreetAddress.

367 **Table 13 – Attributes of Datatypes_specific::StreetAddress**

mult.	Attribute name / type	Description
[0..1]	streetDetail StreetDetail	Street detail.
[0..1]	postalCode Characters10_String	Postal code for the address.
[0..1]	townDetail TownDetail	Town detail.

368

369 **6.1.3.2   StreetDetail compound**

370 Street details, in the context of address.

371 Table 14 shows all attributes of StreetDetail.

372 **Table 14 – Attributes of Datatypes_specific::StreetDetail**

mult.	Attribute name / type	Description
[0..1]	addressGeneral Characters70_String	First line of a free form address or some additional address information (for example a mail stop).
[0..1]	addressGeneral2 Characters70_String	If applicable, second line of a free form address (unstructured address).
[0..1]	addressGeneral3 Characters70_String	If applicable, third line of a free form address (unstructured address).

373

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374 **6.1.3.3   TownDetail compound**

375   Town details, in the context of address.

376   Table 15 shows all attributes of TownDetail.

377   **Table 15 – Attributes of Datatypes_specific::TownDetail**

mult.	Attribute name / type	Description
[0..1]	name Characters35_String	Town name.
[0..1]	country Characters2_String	Name of the country (ISO 3166 2 character code identification).

378

379   **6.1.3.4   ACERCode_String datatype**

380   An ACER code, i.e. length of 12 characters.

381   Table 16 shows all attributes of ACERCode_String.

382   **Table 16 – Attributes of Datatypes_specific::ACERCode_String**

mult.	Attribute name / type	Description
[1..1]	value String	Main Core value Space.

383

384   Table 17 shows all restrictions applied to the attributes of ACERCode_String.

385   **Table 17 – Restrictions of attributes for Datatypes_specific::ACERCode_String**

Name	Constraint	Type	Expression of constraint
value	length	OCL	inv: self->Length(12)
value	pattern	OCL	inv: self->Pattern(([A-Za-z0-9_]+\.[A-Z][A-Z]))

386

387   **6.1.3.5   Characters10_String datatype**

388   A string consisting of a sequence of 8 bit characters. The character encoding is UTF-8.

389   The string length is restricted to 10 characters.

390   Table 18 shows all attributes of Characters10_String.

391   **Table 18 – Attributes of ESMPDataTypes::Characters10_String**

mult.	Attribute name / type	Description
[1..1]	value String	The string length is restricted to 10 characters.

392

393   Table 19 shows all restrictions applied to the attributes of Characters10_String.

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394 **Table 19 – Restrictions of attributes for ESMPDataTypes::Characters10_String**

Name	Constraint	Type	Expression of constraint
value	maxLength	OCL	inv: self->MaxLength(10)

395

6.1.3.6   Characters16_String datatype

397 A string consisting of a sequence of 8 bit characters. The character encoding is UTF-8.

398 The string length is restricted to 16 characters string.

399 Table 20 shows all attributes of Characters16_String.

400 **Table 20 – Attributes of Datatypes_specific::Characters16_String**

mult.	Attribute name / type	Description
[1..1]	value String	Main Core value Space.

401

402 Table 21 shows all restrictions applied to the attributes of Characters16_String.

403 **Table 21 – Restrictions of attributes for Datatypes_specific::Characters16_String**

Name	Constraint	Type	Expression of constraint
value	maxLength	OCL	inv: self->MaxLength(16)
value	pattern	OCL	inv: self->Pattern(([A-Z\-\+_0-9]+))

404

6.1.3.7   Characters2_String datatype

406 A string consisting of a sequence of 8 bit characters. The character encoding is UTF-8.

407 The string length is restricted to 2 alphabetic characters.

408 Table 22 shows all attributes of Characters2_String.

409 **Table 22 – Attributes of ESMPDataTypes::Characters2_String**

mult.	Attribute name / type	Description
[1..1]	value String	The string length is restricted to 2 alphabetic characters for the ISO country code (ISO 3166-1).

410

411 Table 23 shows all restrictions applied to the attributes of Characters2_String.

412 **Table 23 – Restrictions of attributes for ESMPDataTypes::Characters2_String**

Name	Constraint	Type	Expression of constraint
value	length	OCL	inv: self->Length(2)
value	pattern	OCL	inv: self->Pattern([A-Z]*)

413

414 **6.1.3.8   Characters35_String datatype**

415 A string consisting of a sequence of 8 bit characters. The character encoding is UTF-8.

416 The string length is restricted to 35 characters.

417 Table 24 shows all attributes of Characters35_String.

418 **Table 24 – Attributes of ESMPDataTypes::Characters35_String**

mult.	Attribute name / type	Description
[1..1]	value String	The string length is restricted to 35 characters.

419

420 Table 25 shows all restrictions applied to the attributes of Characters35_String.

421 **Table 25 – Restrictions of attributes for ESMPDataTypes::Characters35_String**

Name	Constraint	Type	Expression of constraint
value	maxLength	OCL	inv: self->MaxLength(35)

422

423 **6.1.3.9   Characters70_String datatype**

424 A string consisting of a sequence of 8 bit characters. The character encoding is UTF-8.

425 The string has 70 characters.

426 Table 26 shows all attributes of Characters70_String.

427 **Table 26 – Attributes of ESMPDataTypes::Characters70_String**

mult.	Attribute name / type	Description
[1..1]	value String	The string length is restricted to 70 characters.

428

429 Table 27 shows all restrictions applied to the attributes of Characters70_String.

430 **Table 27 – Restrictions of attributes for ESMPDataTypes::Characters70_String**

Name	Constraint	Type	Expression of constraint
value	maxLength	OCL	inv: self->MaxLength(70)

431

432 **6.1.3.10   Characters700_String datatype**

433 A string consisting of a sequence of 8 bit characters. The character encoding is UTF-8.

434 The string length is restricted to 700 characters string.

435 Table 28 shows all attributes of Characters700_String.

436   **Table 28 – Attributes of Datatypes_specific::Characters700_String**

mult.	Attribute name / type	Description
[1..1]	value String	Main Core value Space.

437

438   Table 29 shows all restrictions applied to the attributes of Characters700_String.

439   **Table 29 – Restrictions of attributes for Datatypes_specific::Characters700_String**

Name	Constraint	Type	Expression of constraint
value	maxLength	OCL	inv: self->MaxLength(700)

440

6.1.3.11   EICCode_String datatype

442   An EIC code, the length is of 16 characters.

443   Table 30 shows all attributes of EICCode_String.

444   **Table 30 – Attributes of Datatypes_specific::EICCode_String**

mult.	Attribute name / type	Description
[1..1]	value String	Main Core value Space.

445

446   Table 31 shows all restrictions applied to the attributes of EICCode_String.

447   **Table 31 – Restrictions of attributes for Datatypes_specific::EICCode_String**

Name	Constraint	Type	Expression of constraint
value	length	OCL	inv: self->Length(16)
value	pattern	OCL	inv: self->Pattern(([A-Z0-9]{2}(([A-Z0-9]|[-]){13})[A-Z0-9]))

448

6.1.3.12   VATCode_String datatype

450   A VAT code, i.e. length of 14 characters.

451   Table 32 shows all attributes of VATCode_String.

452   **Table 32 – Attributes of Datatypes_specific::VATCode_String**

mult.	Attribute name / type	Description
[1..1]	value String	Main Core value Space.

453

454   Table 33 shows all restrictions applied to the attributes of VATCode_String.

455 **Table 33 – Restrictions of attributes for Datatypes_specific::VATCode_String**

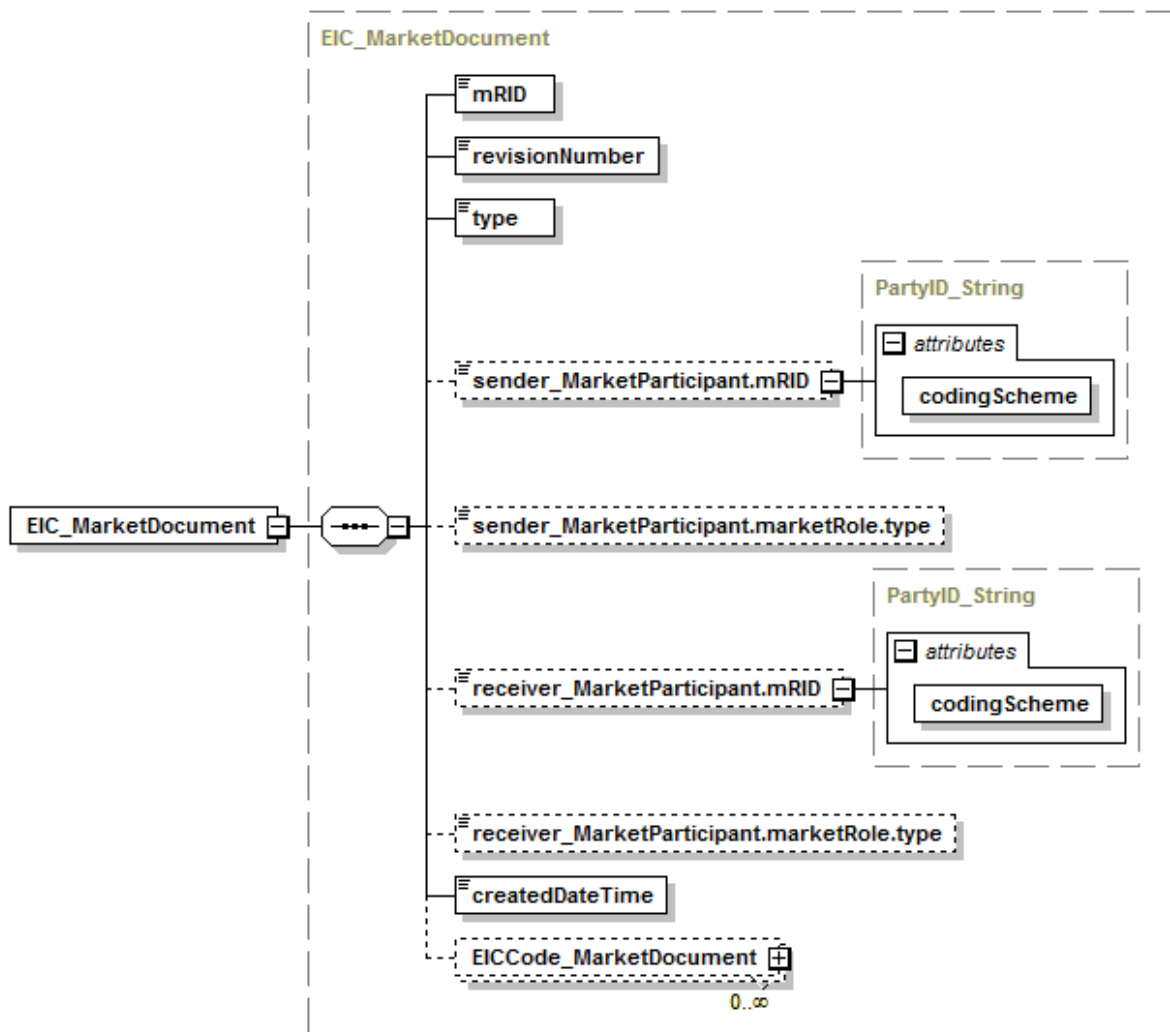| Name	Constraint	Type	Expression of constraint
value	maxLength	OCL	inv: self->MaxLength(14)
value	pattern	OCL	inv: self->Pattern(([A-Z0-9]+))

456

457

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458 **6.2   Schema structure**

459   Figure 7 and Figure 8 display the schema structure.

460

461   **Figure 7 – EIC document schema – 1/2**

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462
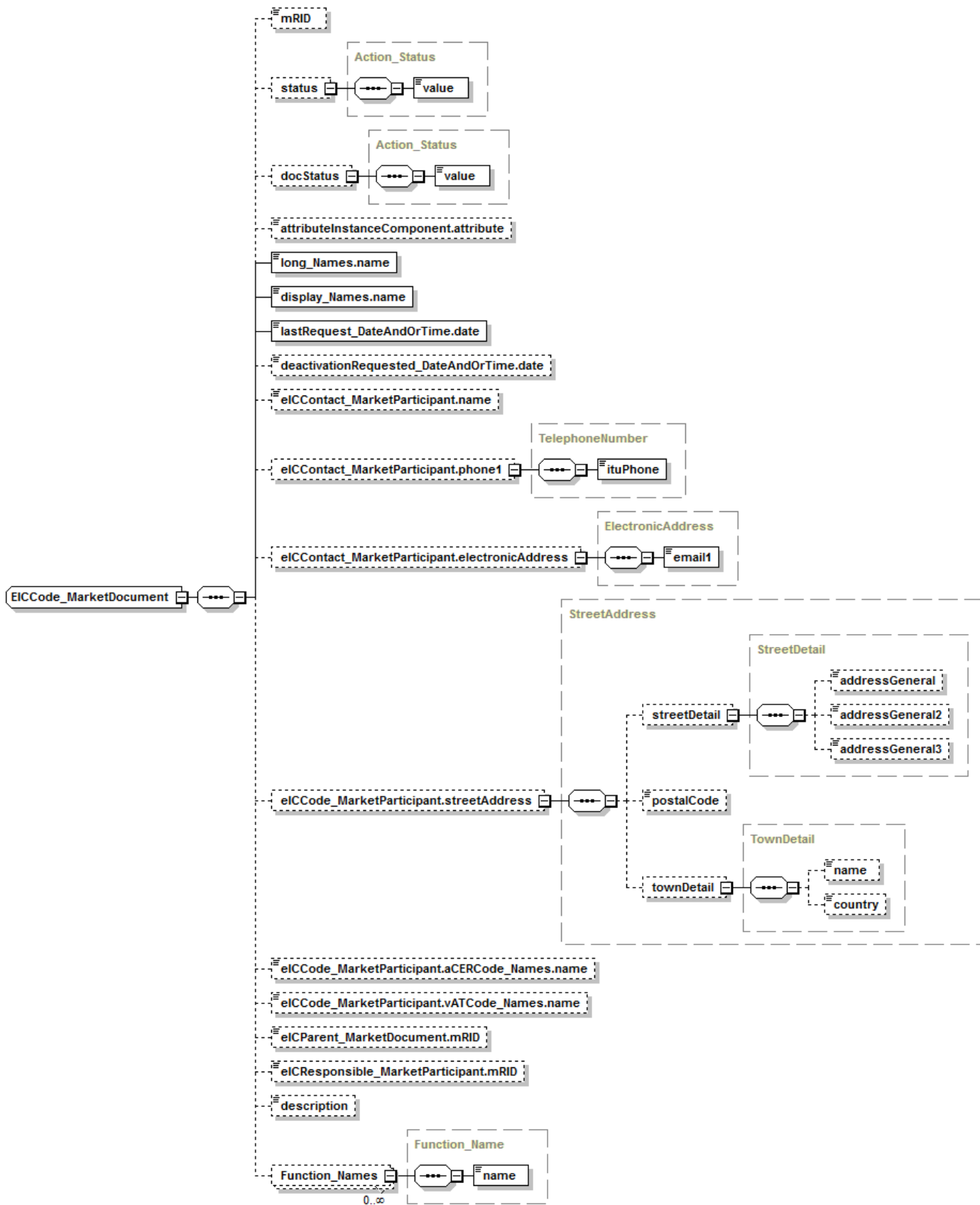
463   **Figure 8 – EIC document schema – 2/2**

464

465 ## 7   Additional information on the EIC coding scheme

466 ### 7.1   The ENTSO-E check character algorithm

467 The ENTSO-E algorithm verifies the validity of the EIC code. The EIC code is encoded with a
468 "check character".

469 A check character is a character added to the end of the code that validates the authenticity
470 of the code. A simple algorithm is applied to the other digits or letters of the code which yields
471 the check character. By running the algorithm and comparing the check character, one could
472 assess with the check character encoded in the EIC code, if the EIC code is correct or
473 erroneous.

474 The algorithm deriving from this document may only be used for the purpose of checking the
475 validity of an allocated EIC code, unless used by an authorised LIO when allocating EIC
476 codes. Any other use of the ENTSO-E algorithm is expressly prohibited.

477 ### 7.2   The Energy Identification code

478 The EIC code is based on fixed length alphanumeric codes. The codes provide information
479 about the LIO as well as information of what kind of object is identified.

480 EIC codes are based on a 16 character alphanumeric code. The last character of the coding
481 scheme is the check character that is calculated from the other characters using the ENTSO-
482 E algorithm.

483 An example of an area is 11Y123456789012**T**. The last character of each of this EIC code
484 (i.e. T) is the check character of the EIC code.

485 ### 7.3   Calculation of the check character

486 #### 7.3.1   Step 1

487 The first 15 characters of the code are individualised as follows

1	1	X	R	W	E	N	E	T	1	2	3	4	5	-

488 #### 7.3.2   Step 2

489 Where alphabetic characters are present, they are replaced by a numeric value as extracted
490 from the following table:

CODE	0	1	2	3	4	5	6	7	8	9
VALUE	0	1	2	3	4	5	6	7	8	9

491

CODE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
VALUE	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

492

CODE	S	T	U	V	W	X	Y	Z	-
VALUE	28	29	30	31	32	33	34	35	36

493

494 as follows :

1	1	33	27	32	14	23	14	29	1	2	3	4	5	36

495

496 **7.3.3   Step 3**

497 Then, the positions are again weighted, beginning with the greatest value to the left and
498 ending with a one at the far right.

1	1	33	27	32	14	23	14	29	1	2	3	4	5	36
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2

499 **7.3.4   Step 4**

500 Each digit is multiplied by its position weight

16	15	462	351	384	154	230	126	232	7	12	15	16	15	72

501 **7.3.5   Step 5**

16	15	462	351	384	154	230	126	232	7	12	15	16	15	72

502 The products are then summed to give a total value: 2107

503 **7.3.6   Step 6**

504 Apply a modulo 37 (which corresponds to the total number of characters available) to the
505 value 2107 with the formula (36 – MOD ((2107-1), 37)).

506 The result is **2** that, since it is inferior to 10, the check character for the EIC code is the same.
507 Had it been superior to 9 it would have to be converted to a letter using the same mechanism
508 as in Step 2.Thus the EIC code is: 11XRWENET12345-**2**.

509 **If the check character generated is the "-" character (result of the calculation equal to**
510 **36), one of the characters in the proposedEIC code shall be changed in order to obtain**
511 **a result which does not give a value of 36.**

512 **7.3.7   Strengths**

513 Like any consecutive weighting system, this scheme detects 100% of all single digit errors
514 and all transposition errors. Thus the system would detect that the EIC code
515 10Z317973010277**Q** was incorrect.

516 The proposed algorithm is very beneficial insofar as it enables the use of the alphabet that
517 significantly expands the potential limit of numbers available for use.

518 **7.4   Use of the EIC parent**

519 The EIC parent allows an issuing office to define a hierarchy of parties, units or areas. Placing
520 the EIC code of the parent entity in the field "EIC parent" of the child entity is a necessary
521 step to create the parent-child relationship between the two EIC codes. Refer to Figure 9 for
522 an example of its use.

523 EIC Parents define a relationship between two EIC codes of the same type (e.g. a company
524 with its subsidiary, a production unit with its generating unit, an area with a subarea, etc.)
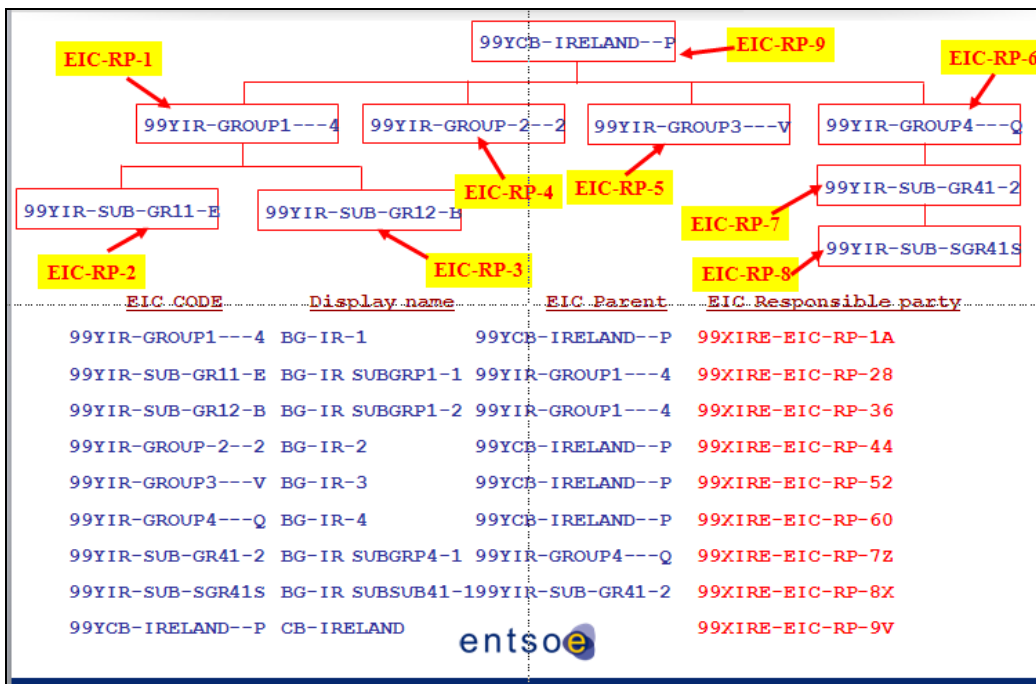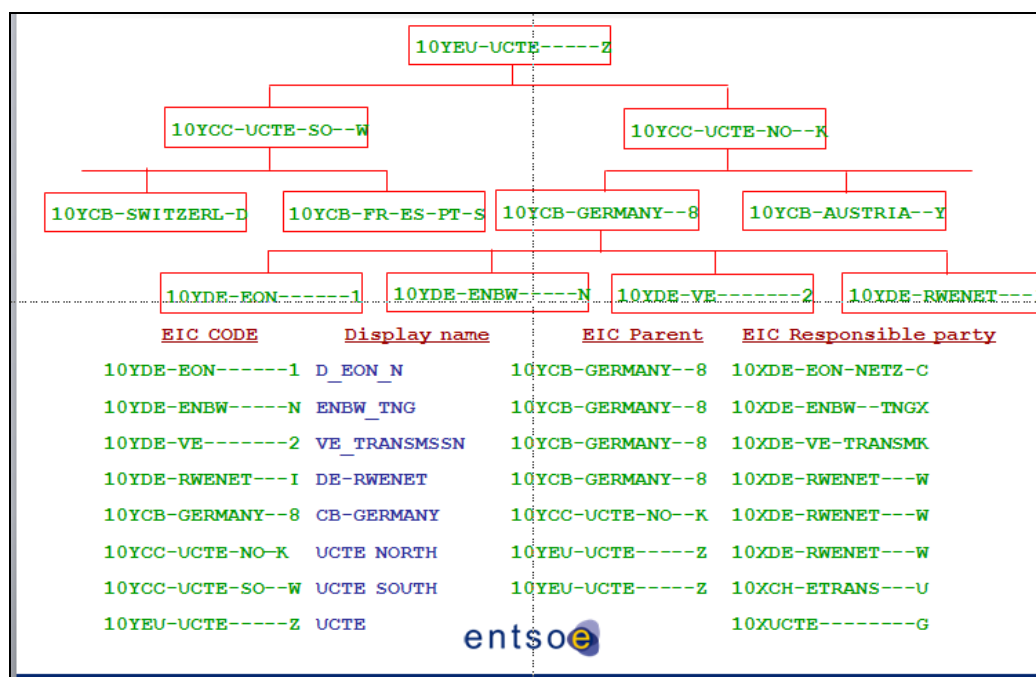
525

526 **Figure 9 – EIC parent use**

527 **7.5   Use of the EIC responsible party**

528 In the case where domains, such as balance groups or balance areas, are defined it is useful
529 to provide the identification of the party responsible for its management.

530 The EIC Responsible party defines a relationship between an object and an X code, e.g. a
531 production unit and its owner, an area and its owner etc. The EIC responsible party is not to
532 be used between two EIC codes of type X.

533 In order to identify the party responsible for a domain for example, it is sufficient to enter the
534 EIC Party type X code in the EIC responsible party field. Figure 10 shows an example of its
535 use.

536

537 **Figure 10 – EIC responsible party use**

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538 In the case of Location ("V") codes it is required to enter the identification of the organisation
539 that is responsible for the location in the EIC responsible party field. Figure 11 shows an
540 example of its use.
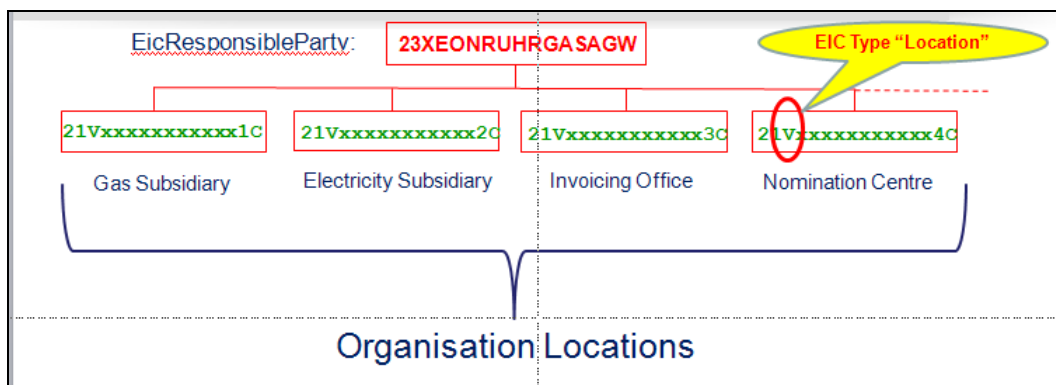
541

542 **Figure 11 – EIC responsible party for locations**