



European Network of  
Transmission System Operators  
for Electricity

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# ENTSO-E EIC DATA EXCHANGE IMPLEMENTATION GUIDE

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2024-02-08

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APPROVED DOCUMENT  
VERSION 1.2

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

- 20 • **SHALL:** This word, or the terms "REQUIRED" or "MUST", means that the definition is an  
21 absolute requirement of the specification.
- 22 • **SHALL NOT:** This phrase, or the phrase "MUST NOT", means that the definition is an  
23 absolute prohibition of the specification.
- 24 • **SHOULD:** This word, or the adjective "RECOMMENDED", means that there may exist valid  
25 reasons in particular circumstances to ignore a particular item, but the full implications must  
26 be understood and carefully weighed before choosing a different course.
- 27 • **SHOULD NOT:** This phrase, or the phrase "NOT RECOMMENDED", means that there may  
28 exist valid reasons in particular circumstances when the particular behaviour is acceptable  
29 or even useful, but the full implications should be understood and the case carefully weighed  
30 before implementing any behaviour described with this label.
- 31 • **MAY:** This word, or the adjective "OPTIONAL", means that an item is truly optional.

## 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.
1	1	2021-09-15		Schema was moved to EIC document uml model and schema. Dependency tables were updated to state that both VAT numbers or identification codes can be used in eICCode_MarketParticipant.vATCode_Names.name.  Approved by MC
1	2	2024-02-08		This new version aligns with EIC market document v1.2: <ul style="list-style-type: none"> <li>Function_Names.name cardinality was changed to 1..1</li> <li>Long_Names.name maximum length enlarged from 70 to 100 characters.</li> </ul> Approved by ICTC

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86

## 87 1 Scope

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

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

94

## 95 2 References

### 96 2.1 Normative references

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

- 101 • [IEC 62325-301:2018, Framework for energy market communications – Part 301:  
102 Common information model \(CIM\) extensions for markets;](#)
- 103 • [IEC 62325-351:2016, Framework for energy market communications – Part 351: CIM  
104 European market model exchange profile;](#)
- 105 • [IEC 62325-450:2013, Framework for energy market communications – Part 450: Profile  
106 and context modelling rules;](#)
- 107 • [IEC 62325-451-1:2017, Framework for energy market communications – Part 451-1:  
108 Acknowledgement business process and contextual model for CIM European market;](#)

### 109 2.2 Other references

- 110 • [The Harmonised Electricity Market Role Model;](#)
- 111 • EIC document UML model and schema

112

## 113 3 Terms and definitions

114 **Central Issuing Office (CIO):** The CIO is currently under the direct responsibility of ENTSO-E.  
115 It ensures the management of the central registry and the acceptance of LIOs.

116 **EIC participant:** It means a physical or legal entity which is allocated one or several EIC code(s)  
117 by an authorised LIO. The quality of “EIC Participant” applies as soon as an entity applies to  
118 be allocated an EIC code

119 **Local Issuing Office (LIO):** Each country, which directly or indirectly is a part of the European  
120 energy network, can have one or more LIO for issuing EIC codes. In addition, an energy  
121 association, (such as ENTSO-E, EFET, BDEW, DVGW, etc.) can also become a LIO. The LIO  
122 shall manage the EIC codes it allocates and maintains a local registry.

## 123 **4 The EIC Process**

### 124 **4.1 Overall business context**

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

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

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

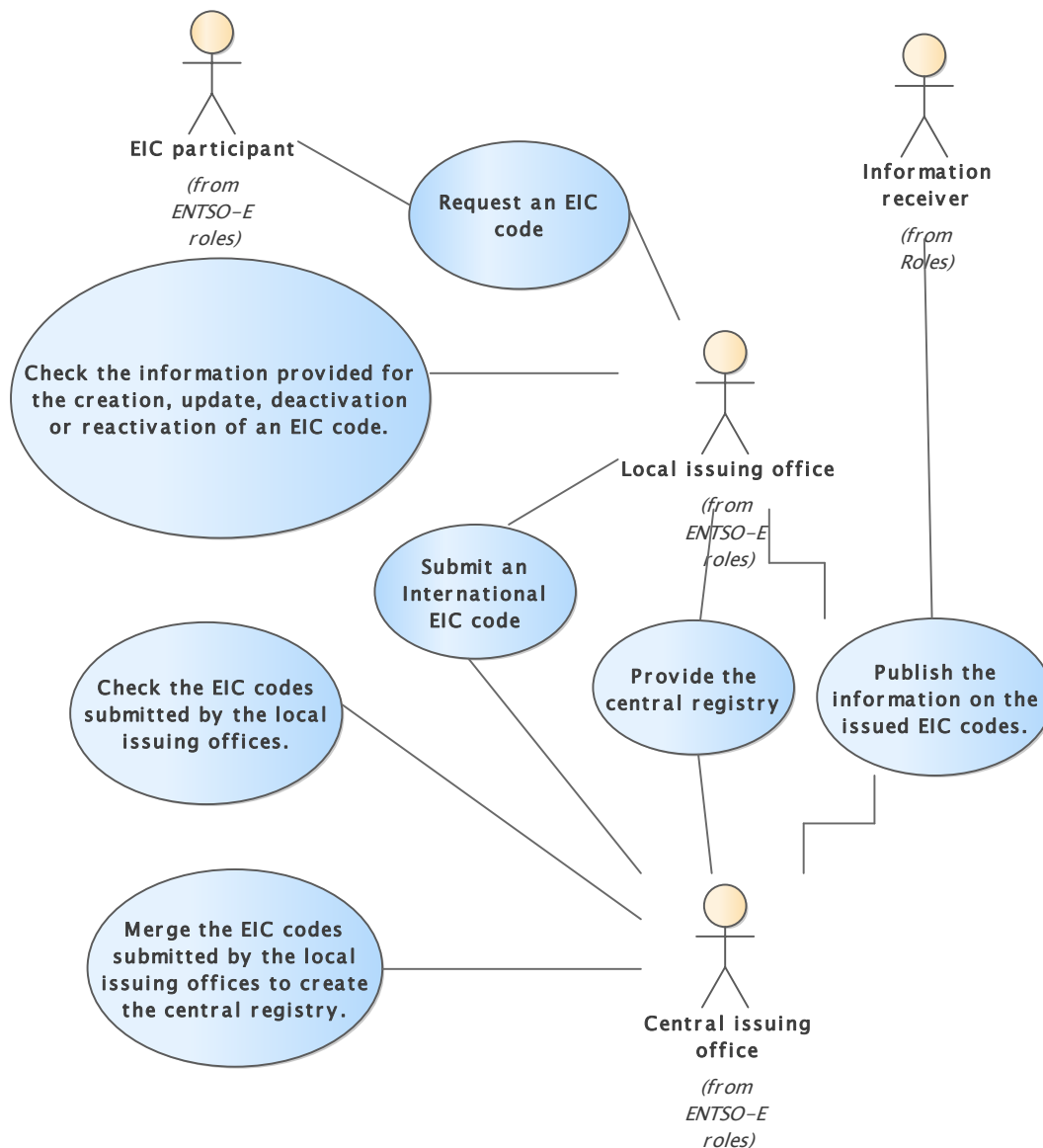
132 The LIO manages its own registry containing all the EIC codes it has issued.

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

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

136

137 4.2 Use cases



138

139

**Figure 1 – EIC data exchange use case diagram**

140

141 Table 1 gives a list of roles involved in the EIC business process.

142

143

**Table 1 - Role labels and descriptions**

Role Label	Role Description
EIC participant	A physical or legal entity that applies for the allocation of an EIC code;
Local Issuing Office operator (LIO)	An entity managing the EIC codes that it has issued
Central Issuing Office operator (CIO)	An entity managing the central registry of EIC codes

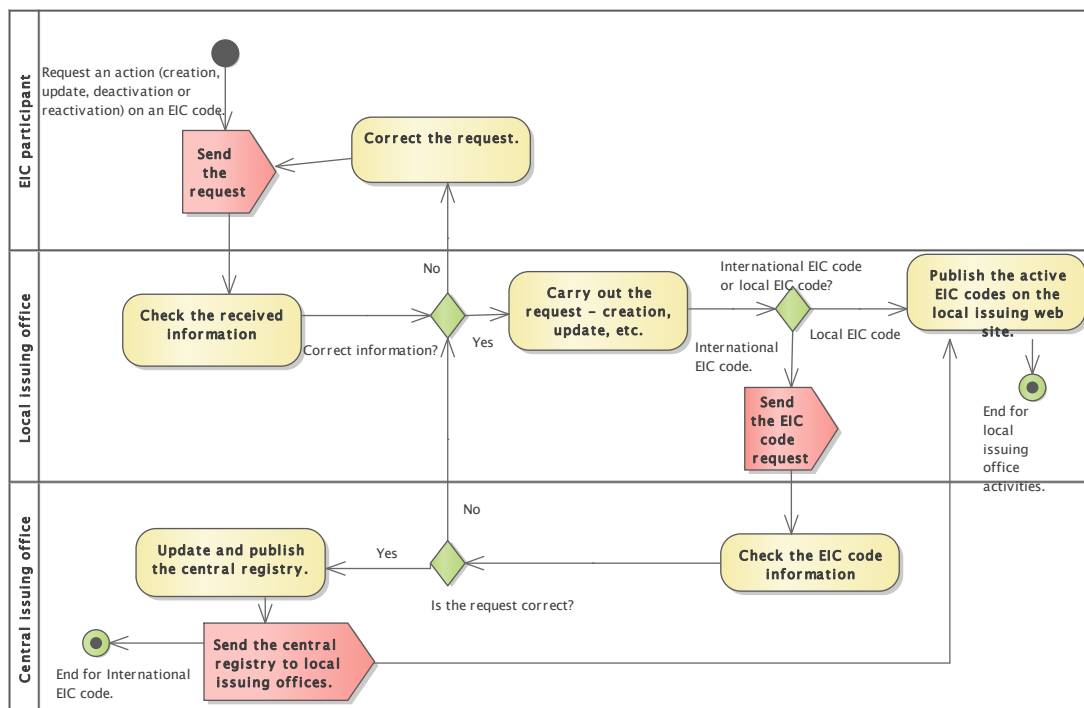
144 The use case for the EIC business process implies the following steps:

- 145 • The first step covers the submission by an EIC Participant to a LIO of a form to
- 146 request one of the following actions:
- 147 ○ the creation of an EIC code;
- 148 ○ the update of information of an EIC code;



- 149 ○ the deactivation of an EIC code;
- 150 ○ the reactivation of an EIC code.
- 151 • The second step concerns the checks carried out by the LIO to assess the EIC code
- 152 request. If the request is considered as valid, the LIO will process the request and
- 153 update the local registry accordingly.
- 154 • The third step is related to the International EIC code (see EIC reference manual)
- 155 process, in such a case the EIC code is submitted to the CIO.
- 156 • The fourth step concerns the checks carried out by the CIO to assess the International
- 157 EIC code.
- 158 • The fifth step is the validation of the request. If the request is valid, the CIO will
- 159 update the central registry accordingly.
- 160 • The sixth step is the CIO delivering the updated central registry to all concerned
- 161 parties (LIOs).
- 162 • The seventh step is the publication of EIC code information on web sites (CIO and
- 163 LIOs), either local registry information (LIO) or central registry information (CIO). This
- 164 information is available to the EIC Participant and to any party interested in getting
- 165 information about an EIC code.
- 166

167 **4.3 Workflow overview**



168 **Figure 2 – EIC data exchange workflow diagram**

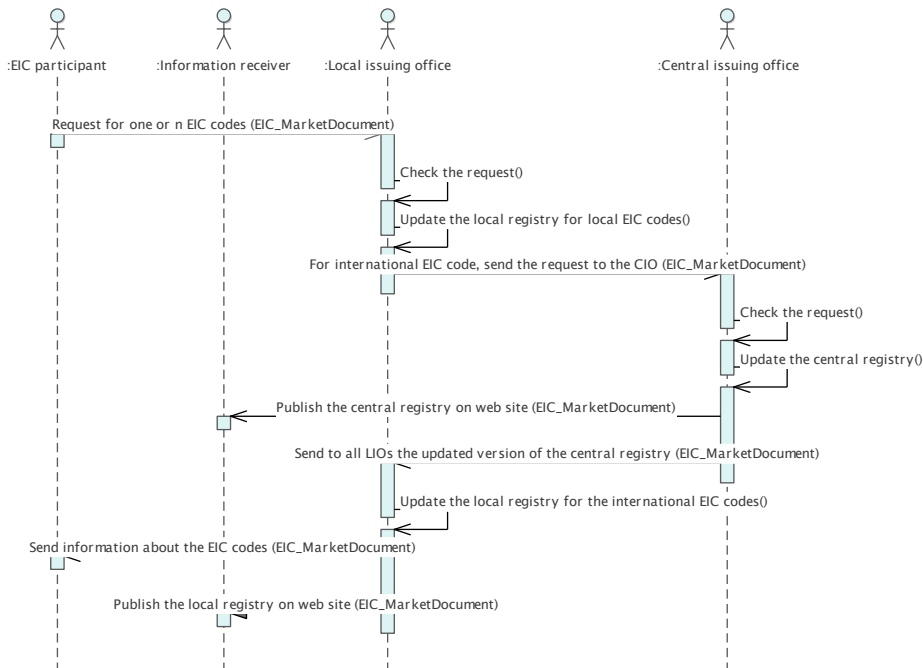
169

170

171 **4.4 Document exchange processes**

172 **4.4.1 General overview**

173 Next figure shows a general sequence diagram of the EIC data exchange processes.



174

**Figure 3 – EIC data exchange sequence diagram**

175

176

177 **4.5 Documents overview**

178 The document exchange of the EIC business process described in the previous chapter require  
179 sending and receiving various ESMP documents. For information exchange the following EDI  
180 documents based on the given schema versions are used:

- 181 • Acknowledgement\_MarketDocument v8.1 based on IEC 62325-451-1:2017 Ed2;
- 182 • EIC\_MarketDocument v1.2

183 **4.5.1 General rules**

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

189 **4.5.2 Rules for the request about an EIC code**

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

- 191 a) Creation request: all the mandatory attributes listed in the dependency table are to be  
192 provided. The EIC code is provided by the LIO; thus it is only in the creation request for  
193 an international EIC code issued by the LIO to the CIO that the EIC code is provided in  
194 the document.
- 195 b) Update request: an update request replaces the existing EIC code information (specific  
196 checks are carried out as per the EIC reference manual which concerns the VAT  
197 number, identification code and/or the ACER code); the EIC code is to be provided as  
198 well as all of the mandatory information.

- 199 c) Deactivation request: a deactivation request shall contain all the information about the  
200 EIC code (in particular the information about the contact person) to assess the validity  
201 of the request. The CIO shall set a deactivation date to indicate when the deactivation  
202 will be carried out.
- 203 d) Reactivation request: a reactivation request shall contain all the information as per an  
204 update request.
- 205 e) As concerns the exchange of the central registry, all information available in the central  
206 registry is provided by the CIO to the LIOs.
- 207 f) As concerns the feedback to an EIC participant about its request, all the information  
208 available in the local registry related to the EIC code object of the request is to be  
209 provided.
- 210 g) As concerns, the publication process, i.e. from the CIO to the role “information receiver”  
211 or from the LIO to the role “information receiver”, only a limited set of information is  
212 provided. These are detailed in the corresponding dependency table.  
213

### 214 4.5.3 Rules for specific characters

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

## 217 4.6 EIC\_MarketDocument

218 Next table provides the constraints on the attributes of the EIC\_MarketDocument.

### 219 4.6.1 EIC\_MarketDocument constraints

220 **Table 2 - Constraints on the attributes**

Class	Attribute name	Constraint
EIC_MarketDocument	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.

Class	Attribute name	Constraint
	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.
EICCode_ MarketDocument	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

Class	Attribute name	Constraint
	attributInstanceComponent.attribute	When not provided, the default value is "Local".  Local: Local EIC code  International: International EIC code
	long_Names.name	Maximum 100 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	VAT number or unique identification code  Maximum 25 characters
	eICParent_MarketDocument.mRID	16 characters
	eICResponsible_MarketParticipant.mRID	16 characters
	description	Maximum 700 characters
	Function_Names.name	Maximum 70 characters  Mandatory. At least one function must be associated with each EIC code.

222 **4.6.2 Dependencies governing the EICCode\_MarketDocument for EIC code request or**  
223 **EIC code information**

224 Next table provides the dependency table for the different types of EIC code when used for EIC  
225 code request (document type B03) or EIC code information (document type B04).

226 **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.	

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.  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 for LIOs.  Not used for CIO.	
[0..1]	eICContact_MarketParticipant.phone1	Phone number.  The information about the contact person for the EIC code.  Mandatory for LIOs.  Not used for CIO.	
[0..1]	eICContact_MarketParticipant.electronicAddress	Electronic address.  The information about the contact person for the EIC code.  Mandatory for LIOs.  Not used for CIO.	

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.streetAddress	Street address.  The elements streetDetail, postalCode and townDetail are to be provided in particular the country for publication  Mandatory for LIOs.  Not used for CIO.	Optional.
[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 number or unique identification 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 5.4).  Optional.	



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]	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 5.5
[0..1]	description	The description of the EIC code.  If available.	
[1..*]	Function_Names.name	The function(s) of the EIC code.  As per the ENTSO-E function list published on the EIC web site.  Mandatory. At least one function must be provided when doing the request.	

227

228 **4.6.3 Dependencies governing the EICCode\_MarketDocument for EIC code**  
229 **publication**

230 Next table provides the dependency table for the different types of EIC code when used for EIC  
231 code publication (document type B05) on a web site.

232 **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.	

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]	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.	
[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.

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.vATCode_Names.name	The VAT code or unique identification 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 5.4).  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 5.5
[0..1]	description	The description of the EIC code.  If available	
[1..*]	Function_Names.name	The function(s) of the EIC code.  Mandatory.	

234 **5 Additional information on the EIC coding scheme**

235 **5.1 The ENTSO-E check character algorithm**

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

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

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

245 **5.2 The energy identification code**

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

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

251 An example of an area is 11Y123456789012T. The last character of each of this EIC code (i.e.  
252 T) is the check character of the EIC code.

253 **5.3 Calculation of the check character**

254 **5.3.1 Step 1**

255 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	-
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

256

257 **5.3.2 Step 2**

258 Where alphabetic characters are present, they are replaced by a numeric value as extracted  
259 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

260

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

261

CODE	R	S	T	U	V	W	X	Y	Z	-
VALUE	27	28	29	30	31	32	33	34	35	36

262

263 as follows:

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

264

265 **5.3.3 Step 3**

266 Then, the positions are again weighted, beginning with the greatest value to the left and ending  
267 with the lower 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

268

269 **5.3.4 Step 4**

270 Each digit is multiplied by its position weight

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

271

272 **5.3.5 Step 5**

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

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

274 **5.3.6 Step 6**

275 Apply a modulo 37 (which corresponds to the total number of characters available) to the value  
276 2107 with the formula  $(36 - \text{MOD}((2107-1), 37))$ .

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

280 **If the check character generated is the “-” character (result of the calculation equal to**  
281 **36), one of the characters in the proposed EIC code shall be changed in order to obtain**  
282 **a result which does not give a value of 36.**

283 **5.3.7 Strengths**

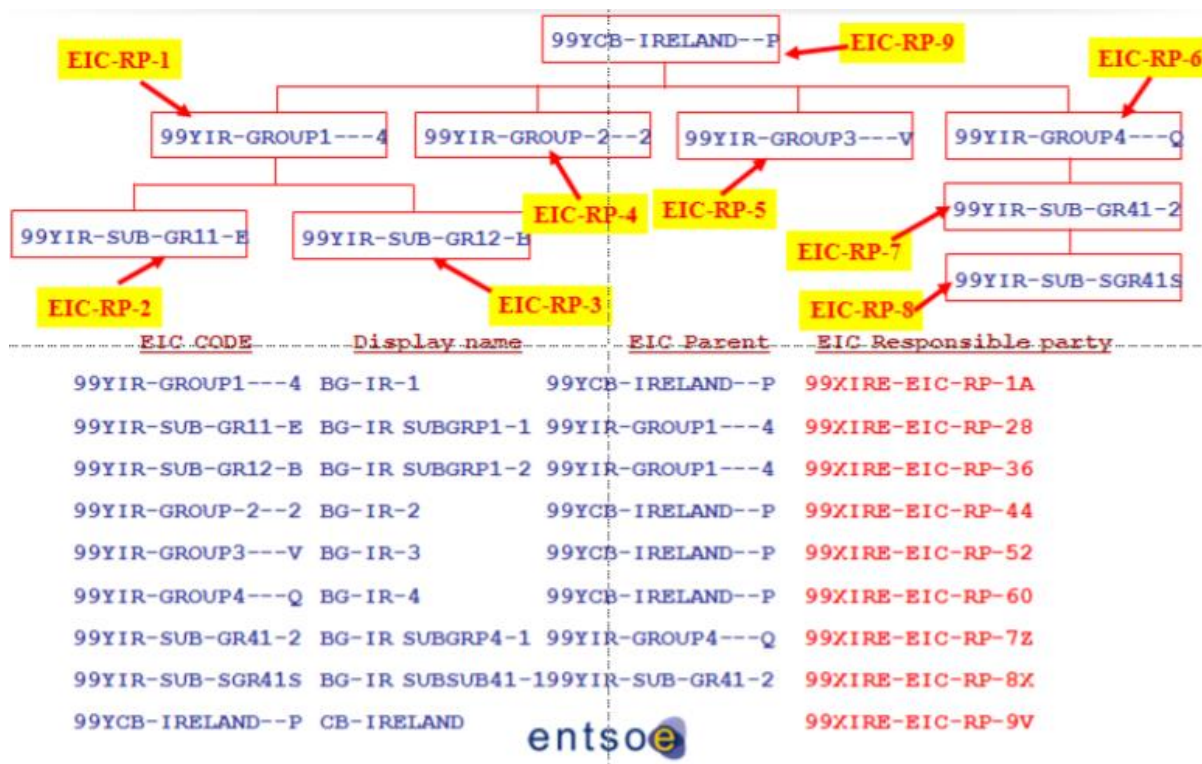
284 Like any consecutive weighting system, this scheme detects 100% of all single digit errors and  
285 all transposition errors. Thus the system would detect that the EIC code 10Z317973010277Q  
286 was incorrect.

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

289 **5.4 Use of the EIC parent**

290 The EIC parent allows an issuing office to define a hierarchy of parties, units or areas. Placing  
291 the EIC code of the parent entity in the field "EIC parent" of the child entity is a necessary step  
292 to create the parent-child relationship between the two EIC codes. Refer to Figure 4 for an  
293 example of its use.

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



296

297

298

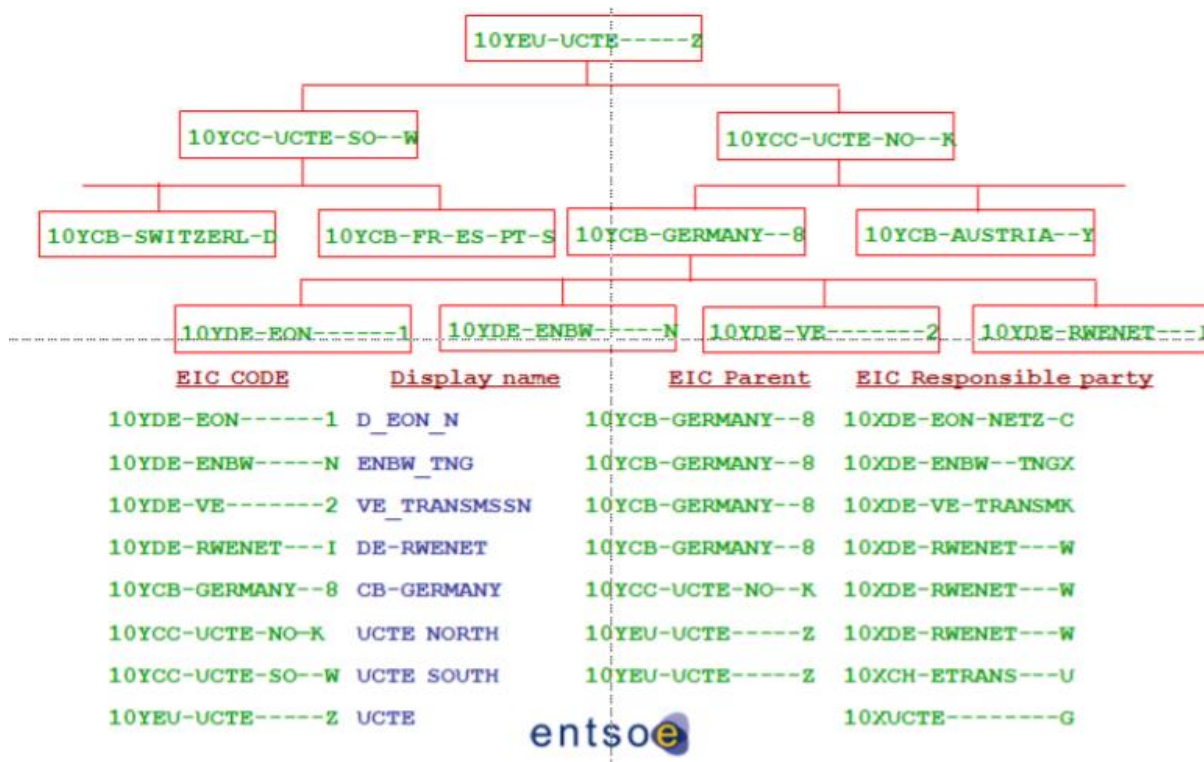
Figure 4 - EIC parent use

299 5.5 Use of the EIC responsible party

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

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

305 In order to identify the party responsible for a domain for example, it is sufficient to enter the  
306 EIC Party type X code in the EIC responsible party field. Figure below shows an example of its  
307 use.



308  
309

Figure 5 - EIC responsible party use

310 In the case of Location ("V") codes it is required to enter the identification of the organisation  
311 that is responsible for the location in the EIC responsible party field. Figure below shows an  
312 example of its use.



313  
314

Figure 6 - EIC responsible party for locations