European Network of
Transmission System Operators
for Electricity

ENTSO-E EIC DATA EXCHANGE IMPLEMENTATION GUIDE

2021-09-15

APPROVED DOCUMENT
VERSION 1.1

Copyright notice:

This document is maintained by the ENTSO-E CIM EG. Comments or remarks are to be provided at cim@entsoe.eu

NOTE CONCERNING WORDING USED IN THIS DOCUMENT

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

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

32

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

CONTENTS

List of figures

79

80 **List of tables**

85

86

1 Scope

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

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

2 References

2.1 Normative references

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

- IEC 62325-301:2018, Framework for energy market communications – Part 301: Common information model (CIM) extensions for markets;
- IEC 62325-351:2016, Framework for energy market communications – Part 351: CIM European market model exchange profile;
- IEC 62325-450:2013, Framework for energy market communications – Part 450: Profile and context modelling rules;
- IEC 62325-451-1:2017, Framework for energy market communications – Part 451-1: Acknowledgement business process and contextual model for CIM European market;

2.2 Other references

- The Harmonised Electricity Market Role Model;
- EIC document UML model and schema

3 Terms and definitions

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

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

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

4 The EIC Process

4.1 Overall business context

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

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

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

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

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

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

4.2 Use cases

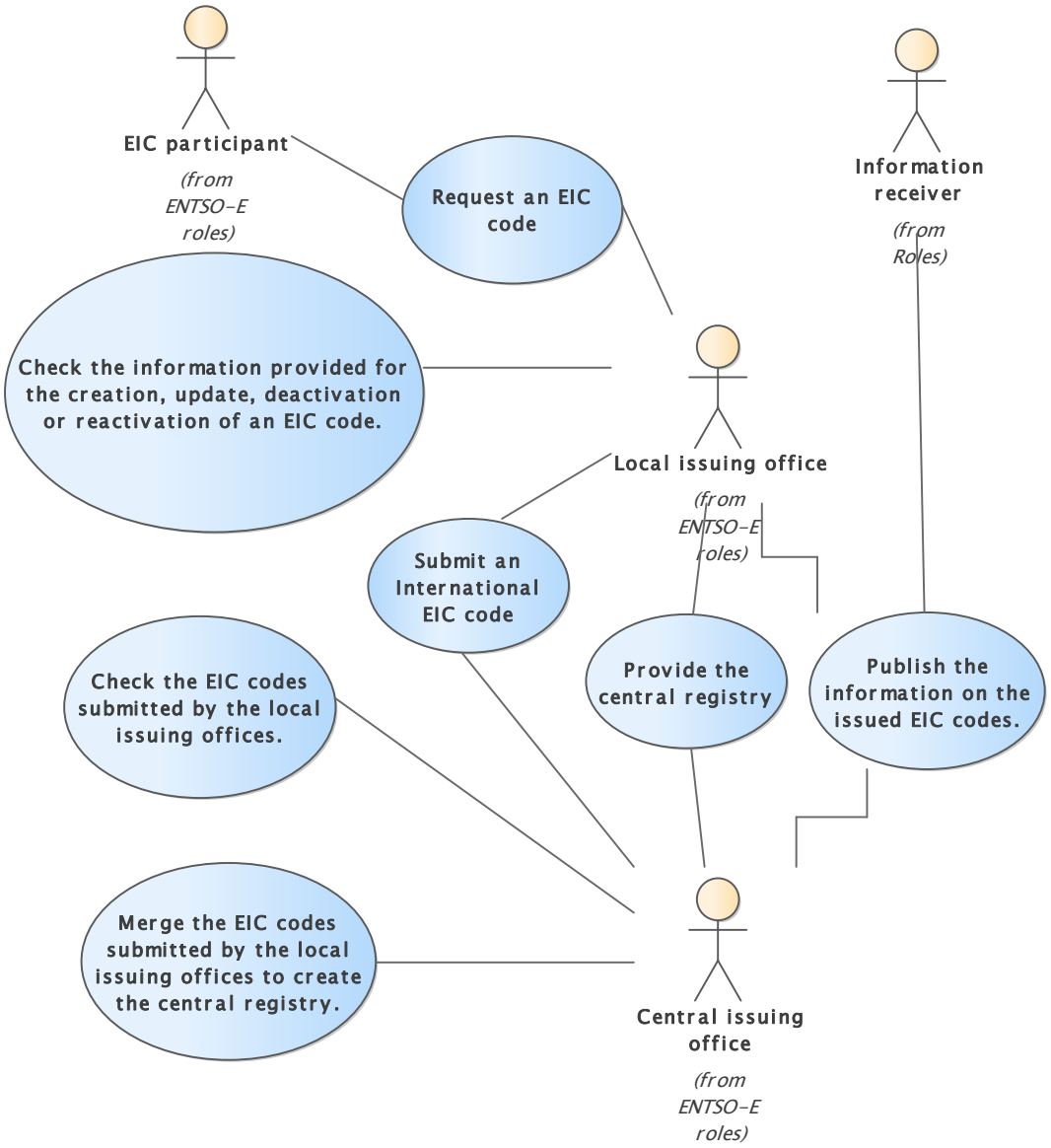

Figure 1 – EIC data exchange use case diagram

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

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

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

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

- the deactivation of an EIC code;
- the reactivation of an EIC code.

- The second step concerns the checks carried out by the LIO to assess the EIC code request. If the request is considered as valid, the LIO will process the request and update the local registry accordingly.
- The third step is related to the International EIC code (see EIC reference manual) process, in such a case the EIC code is submitted to the CIO.
- The fourth step concerns the checks carried out by the CIO to assess the International EIC code.
- The fifth step is the validation of the request. If the request is valid, the CIO will update the central registry accordingly.
- The sixth step is the CIO delivering the updated central registry to all concerned parties (LIOs).
- The seventh step is the publication of EIC code information on web sites (CIO and LIOs), either local registry information (LIO) or central registry information (CIO). This information is available to the EIC Participant and to any party interested in getting information about an EIC code.

4.3 Workflow overview

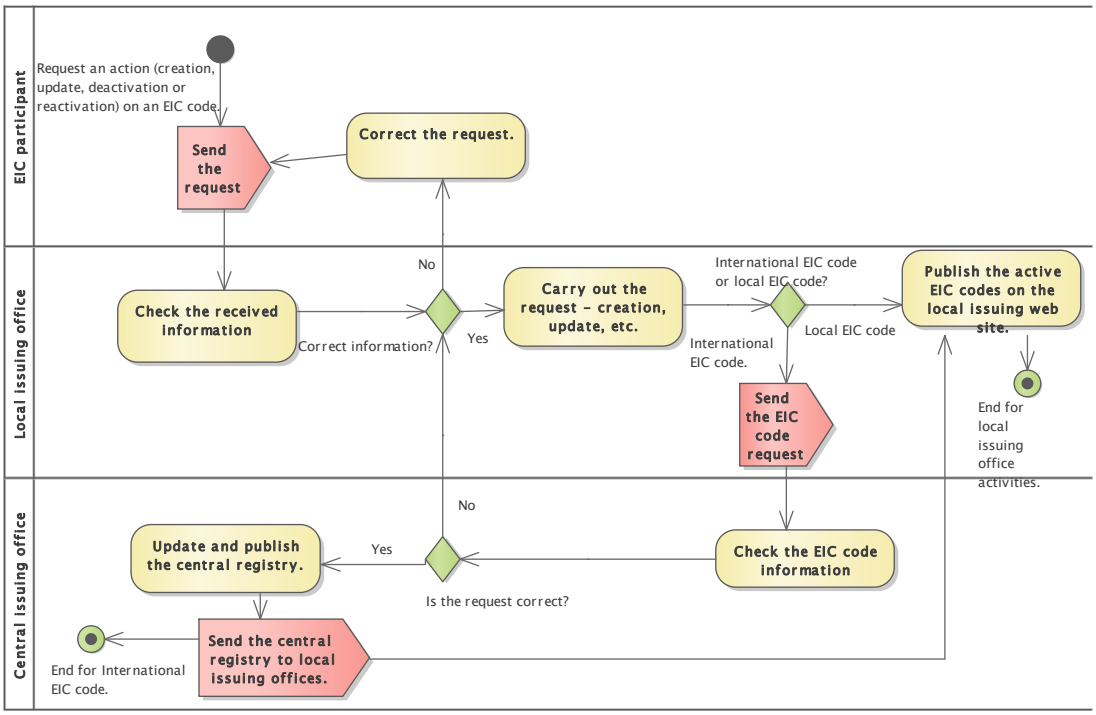

Figure 2 – EIC data exchange workflow diagram

4.4 Document exchange processes

4.4.1 General overview

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

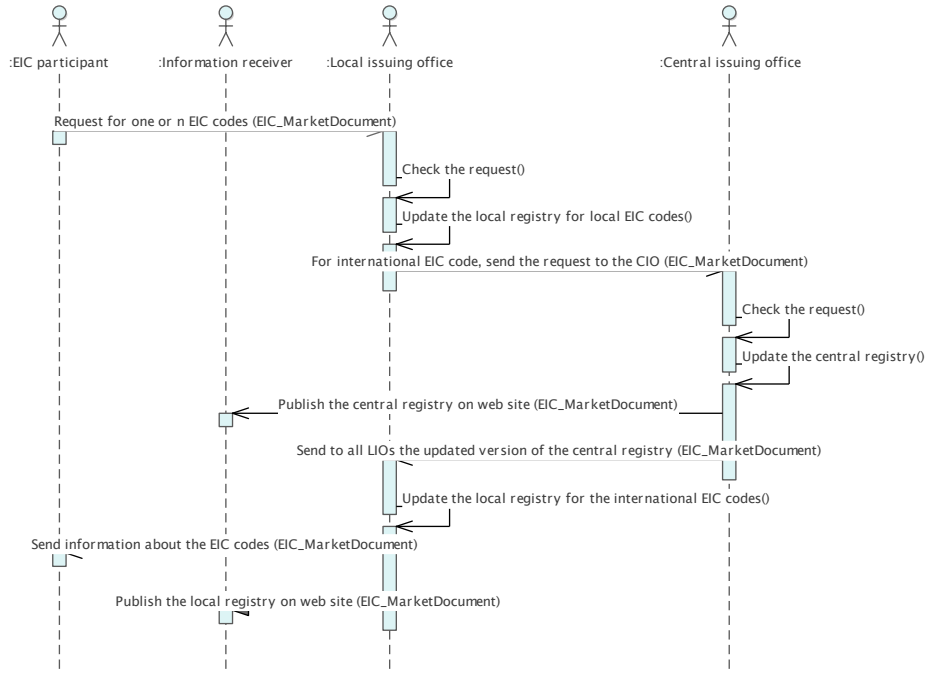

Figure 3 – EIC data exchange sequence diagram

4.5 Documents overview

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

- Acknowledgement_MarketDocument v8.1 based on IEC 62325-451-1:2017 Ed2;
- EIC_MarketDocument v1.1

4.5.1 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.

4.5.2 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, identification code 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.

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

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

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

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

4.5.3 Rules for specific characters

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

4.6 EIC_MarketDocument

Next table provides the constraints on the attributes of the EIC_MarketDocument.

4.6.1 EIC_MarketDocument constraints

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
	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	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

221

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

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

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	
[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.

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 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.	
[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.	
[0..*]	Function_Names.name	The function(s) of the EIC code. As per the ENTSO-E function list published on the EIC web site.	

4.6.3 Dependencies governing the EICCode_MarketDocument for EIC code publication

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

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.	
[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.

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. 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 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	
[0..*]	Function_Names.name	The function(s) of the EIC code. Mandatory.	

233

5 Additional information on the EIC coding scheme

5.1 The ENTSO-E check character algorithm

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

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

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

5.2 The energy identification code

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

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

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

5.3 Calculation of the check character

5.3.1 Step 1

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	-

5.3.2 Step 2

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

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

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

as follows:

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

5.3.3 Step 3

Then, the positions are again weighted, beginning with the greatest value to the left and 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

5.3.4 Step 4

Each digit is multiplied by its position weight

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

5.3.5 Step 5

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

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

5.3.6 Step 6

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

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

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

5.3.7 Strengths

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

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

5.4 Use of the EIC parent

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

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

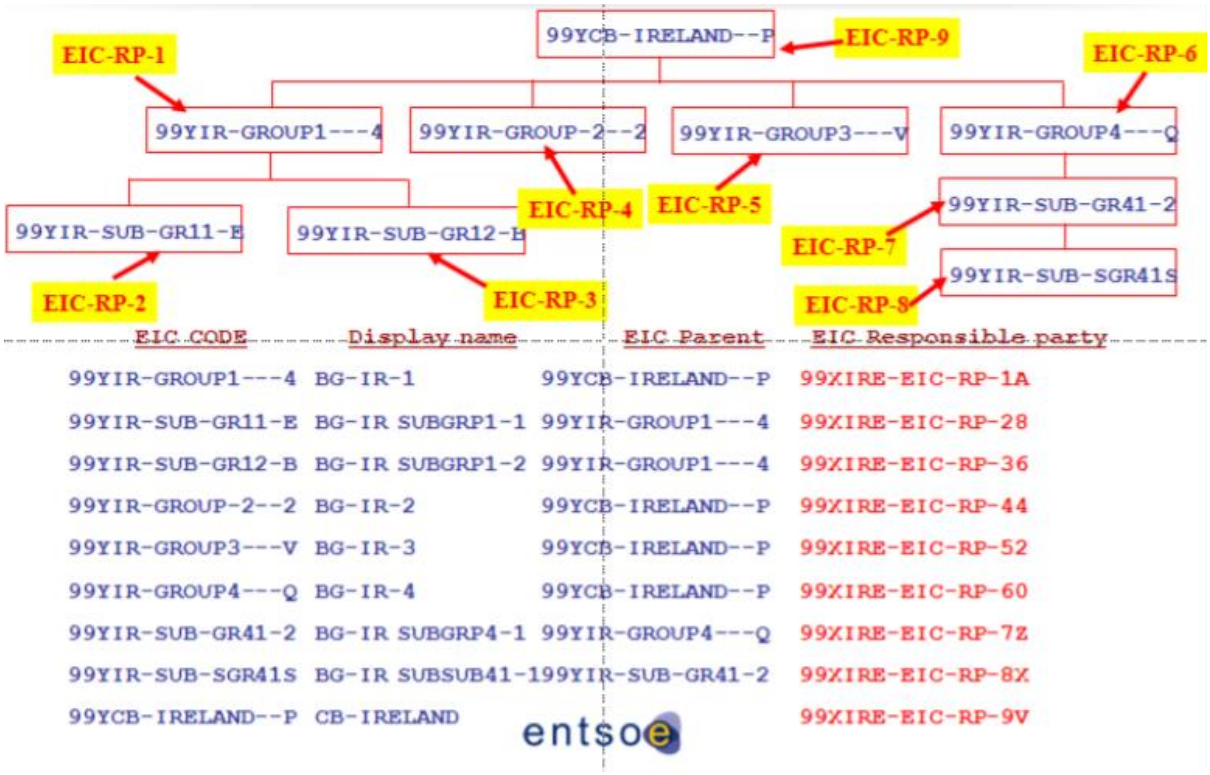

Figure 4 - EIC parent use

5.5 Use of the EIC responsible party

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

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

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

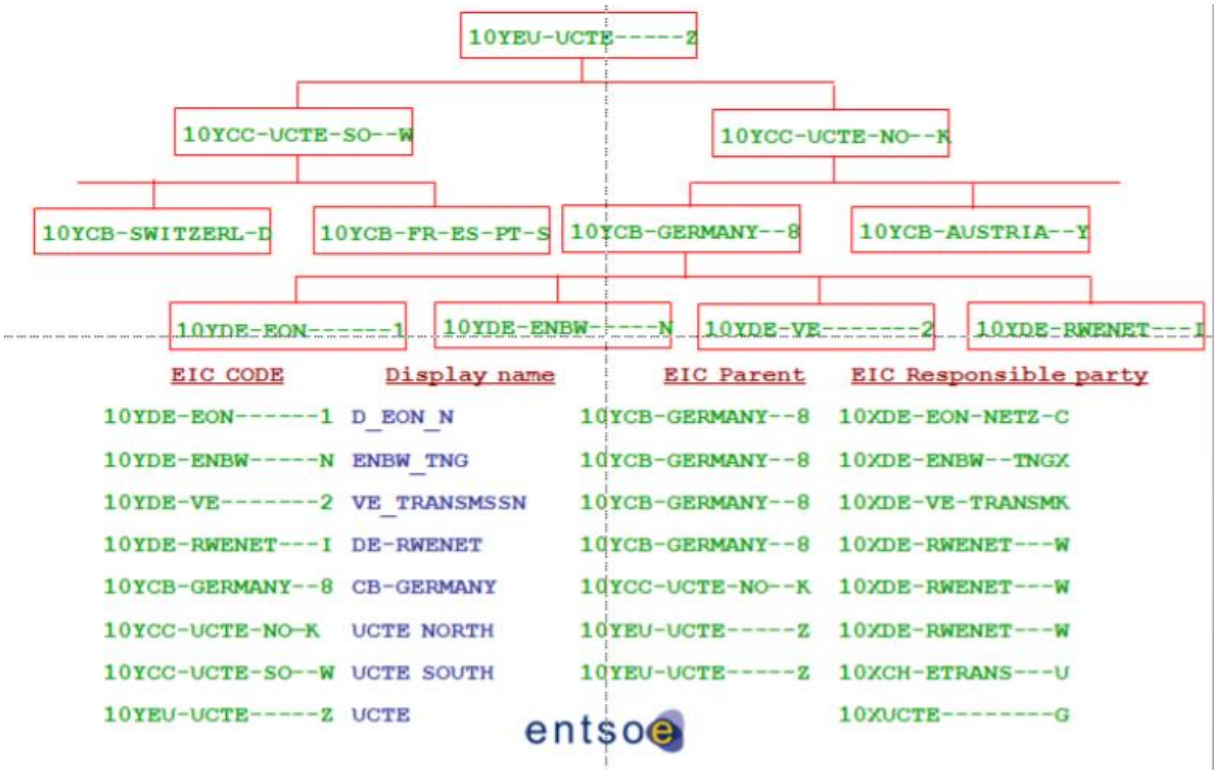

Figure 5 - EIC responsible party use

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

Figure 6 - EIC responsible party for locations