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Entwurf

**Kommunikation im Energiemarkt –
Teil 451-6: Veröffentlichung von Marktinformationen, kontextbezogene
Modelle und Einbindungsmodelle für den europäischen Markt
(IEC 57/1888/CDV:2017);
Englische Fassung prEN 62325-451-6:2017**

Framework for energy market communications –
Part 451-6: Publication of information on market, contextual and assembly models for
European style market
(IEC 57/1888/CDV:2017);
English version prEN 62325-451-6:2017

Cadre pour les communications pour le marché de l'énergie –
Partie 451-6: Publication d'informations de marché, modèles contextuels et modèles
d'assemblage pour les marchés de style européen
(IEC 57/1888/CDV:2017);
Version anglaise prEN 62325-451-6:2017

Anwendungswarnvermerk

Dieser Norm-Entwurf mit Erscheinungsdatum 2018-03-02 wird der Öffentlichkeit zur Prüfung und
Stellungnahme vorgelegt.

Weil die beabsichtigte Norm von der vorliegenden Fassung abweichen kann, ist die Anwendung dieses
Entwurfs besonders zu vereinbaren.

Stellungnahmen werden erbeten

- vorzugsweise online im Norm-Entwurfs-Portal von DIN unter www.din.de/go/entwuerfe bzw. für Norm-Entwürfe der DKE auch im Norm-Entwurfs-Portal der DKE unter www.entwuerfe.normenbibliothek.de, sofern dort wiedergegeben;
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- oder in Papierform an die DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik in DIN und VDE, Stresemannallee 15, 60596 Frankfurt am Main.

Die Empfänger dieses Norm-Entwurfs werden gebeten, mit ihren Kommentaren jegliche relevanten
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Gesamtumfang 253 Seiten

DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik in DIN und VDE

Nationales Vorwort

Die englische Fassung des europäischen Dokuments prEN 62325-451-6:2017 „Kommunikation im Energiemarkt – Teil 451-6: Veröffentlichung von Marktinformationen, kontextbezogene Modelle und Einbindungsmodelle für den europäischen Markt“, ist unverändert in diesen Norm-Entwurf übernommen worden.

Die Internationale Elektrotechnische Kommission (IEC) und das Europäische Komitee für Elektrotechnische Normung (CENELEC) haben vereinbart, dass ein auf IEC-Ebene erarbeiteter Entwurf für eine Internationale Norm zeitgleich (parallel) bei IEC und CENELEC zur Umfrage (CDV-Stadium) und Abstimmung als FDIS (en: Final Draft International Standard) bzw. Schluss-Entwurf für eine Europäische Norm gestellt wird, um eine Beschleunigung und Straffung der Normungsarbeit zu erreichen. Dem entsprechend ist das internationale Dokument IEC 57/1888/CDV:2017 „Framework for energy market communications – Part 451-6: Publication of information on market, contextual and assembly models for European style market“ unverändert in den Entwurf prEN 62325-451-6:2017 übernommen worden.

Das internationale Dokument wurde vom TC 57 „Power systems management and associated information exchange“ der Internationalen Elektrotechnischen Kommission (IEC) erarbeitet.

Bei der Abstimmung zu dem Europäischen Schluss-Entwurf bei CENELEC und dem Internationalen Schluss-Entwurf bei IEC [Final Draft International Standard (FDIS)] sind jeweils nur „JA/NEIN“-Entscheidungen möglich, wobei „NEIN“-Entscheidungen fundiert begründet werden müssen. Dokumente, die bei CENELEC als Europäische Norm angenommen und ratifiziert werden, sind unverändert als Deutsche Normen zu übernehmen.

Für dieses Dokument ist das nationale Arbeitsgremium K 952 „Netzleittechnik“ der DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik in DIN und VDE (www.dke.de) zuständig.

Für den Fall einer undatierten Verweisung im normativen Text (Verweisung auf ein Dokument ohne Angabe des Ausgabedatums und ohne Hinweis auf eine Abschnittsnummer, eine Tabelle, ein Bild usw.) bezieht sich die Verweisung auf die jeweils aktuellste Ausgabe des in Bezug genommenen Dokuments.

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Der Zusammenhang der zitierten Dokumente mit den entsprechenden deutschen Dokumenten ergibt sich, soweit ein Zusammenhang besteht, grundsätzlich über die Nummer der entsprechenden IEC-Publikation. Beispiel: IEC 60068 ist als EN 60068 als Europäische Norm durch CENELEC übernommen und als DIN EN 60068 ins Deutsche Normenwerk aufgenommen.

Das Präsidium des DIN hat mit Präsidialbeschluss 1/2004 festgelegt, dass DIN-Normen, deren Inhalt sich auf internationale Arbeitsergebnisse der Informationsverarbeitung gründet, unter bestimmten Bedingungen allein in englischer Sprache veröffentlicht werden dürfen. Diese Bedingungen sind für den vorliegenden Normentwurf erfüllt.

Da sich die Benutzer der vorliegenden Norm der englischen Sprache als Fachsprache bedienen, wird die Englische Fassung der prEN 62325-451-6 veröffentlicht. Zu deren Abschnitt 1, der den Anwendungsbereich festlegt, und Abschnitt 3, der die Begriffe festlegt, wurde eine Übersetzung angefertigt und als Nationaler Anhang NA des vorliegenden Normentwurfs hinzugefügt. Für einige der verwendeten Begriffe existieren keine gebräuchlichen deutschen Benennungen, da sich die deutschen Anwender in der Regel ebenfalls der englischen Benennungen bedienen. Dieser Normentwurf steht nicht in unmittelbarem Zusammenhang mit Rechtsvorschriften und ist nicht als Sicherheitsnorm anzusehen.

Es ist vorgesehen, auch bei der entsprechenden zukünftigen Deutschen Norm auf die deutsche Sprachfassung zu verzichten und diese in der englischsprachigen Fassung zu veröffentlichen.

Es wird auf die Möglichkeit hingewiesen, dass einige Elemente dieses Dokuments Patentrechte berühren können. IEC ist nicht dafür verantwortlich, einige oder alle diesbezüglichen Patentrechte zu identifizieren.

Änderungen

Gegenüber DIN EN 62325-451-6:2017-05 wurden folgende Änderungen vorgenommen:

- a) Hinzufügen des neuen Dokumentes kontextbezogenen und Einbindungsmodelle zur Informations-Veröffentlichung über die Teilnehmer der Übertragungskapazitätszuweisung.
- b) Aktualisierung von TransmissionNetwork_MarketDocument um Information über inbegriffene Übertragungszuweisung an Grenzen von Drittländern zu veröffentlichen.
- c) Aktualisierung von Unavailability_MarketDocument um Informationen über Ausfälle, die Bezug zu Verbraucher-Einheiten haben, zu veröffentlichen.
- d) Aktualisierung von Balancing_MarketDocument Modell um Informationen für Ressourcen-Einheiten, die entweder verbrauchen oder erzeugen können, zu veröffentlichen

Nationaler Anhang NA (informativ)

Auszugsweise Übersetzung^{N1)}

1 Anwendungsbereich

Dieser Teil der IEC 62325 legt ein UML-Paket für den Geschäftsprozess der Marktinformationspublikation und die damit verbundenen Dokument-kontextbezogenen Modelle, Einbindungsmodelle (en: assembly models) und XML-Schemata für den Einsatz in Strommärkten nach europäischer Art fest.

Dieser Teil der IEC 62325 basiert auf dem Markt-kontextbezogenen Modell nach europäischer Art (IEC 62325-351). Der Geschäftsprozess, der von diesem Teil der IEC 62325 abgedeckt wird, ist in Abschnitt 5 beschrieben.

Die relevanten aggregierten Kernkomponenten (en: aggregate core components; ACCs), die in IEC 62325-351 definiert sind, wurden kontextualisiert in die aggregierten Geschäfts-Informationseinheiten (en: business information entities; ABIEs), um die Anforderungen des Geschäftsprozesses der Veröffentlichung in Märkten nach europäischer Art zu erfüllen.

3 Begriffe

Für die Anwendung dieses Dokuments gelten die Begriffe nach IEC 61970-2 und die folgenden Begriffe.

ISO und IEC stellen terminologische Datenbanken für die Verwendung in der Normung unter den folgenden Adressen bereit:

- IEC Electropedia: unter <http://www.electropedia.org/>
- ISO Online Browsing Platform: unter <http://www.iso.org/obp>

3.1

aggregierte Geschäfts-Informationseinheit

ABIE

(en: aggregate business information entity)

Wiederverwendung einer aggregierten Kernkomponente (ACC) in einem festgelegten Geschäftsbereich

3.2

aggregierte Kernkomponente

ACC

(en: aggregate core component)

Anhäufung zusammengehöriger Geschäftsinformationsteile, die unabhängig von einem bestimmten Geschäftskontext zusammen eine gesonderte Bedeutung für das Geschäft haben

Anmerkung 1 zum Begriff: Ausgedrückt durch Modellierungsbegriffe, ist dies die Darstellung einer Objektklasse, unabhängig von einem bestimmten Geschäftskontext.

[QUELLE: ISO/TS 15000-5:2005, Abschnitt 9, modifiziert (zweiter Satz wurde in Anmerkung 1 zum Begriff überführt)]

^{N1)} Nationale Fußnote: Die Nummerierung aus IEC 57/1888/CDV:2017-07 wurde beibehalten.

3.3

Anwendungsprogramm-Schnittstelle

API

(en: application program interface)

Menge von öffentlichen Funktionen, welche von einer ausführbaren Anwendungskomponente für die Verwendung durch andere ausführbare Anwendungskomponenten bereitgestellt wird

3.4

Einbindungsmodell

(en: assembly model)

Modell, welches Informationen in einem Geschäftskontext für das Einbinden in elektronische Dokumente für den Datenaustausch aufbereitet

3.5

basierend auf

IsBasedOn

(en: based on; IsBasedOn)

Verwendung eines Artefakts, welches entsprechend den Anforderungen eines spezifischen Geschäftskontexts eingeschränkt ist

[QUELLE: IEC 62325-450:2013, 3.4]

3.6

Geschäftskontext

(en: business context)

formale Beschreibung einer speziellen Geschäftssituation, die aus den Werten einer Gruppe von Kontextkategorien bestimmt wurde und es ermöglicht, unterschiedliche Geschäftssituationen eindeutig voneinander zu trennen

[QUELLE: UN/Cefact, Unified Context Methodology Technical Specification]

3.7

Profil des Europäischen Marktes

ESMP

(en: European style market profile)

das Profil des Europäischen Marktes, das Gegenstand des Teils der IEC 62325-351 ist, beschreibt die Gruppe von Klassen und Zusammenhängen, die zur Erzeugung aller Teile IEC 62325-451-x verwendet werden

3.8

Informationsmodell

(en: information model)

Darstellung von Konzeptionen, Beziehungen, Beschränkungen, Regeln und Operationen zur Festlegung von Datensemantiken für eine ausgewählte Diskursdomäne

Anmerkung 1 zum Begriff: Es kann gemeinsam anwendbare, feste und geordnete Informationsstrukturanforderungen an den Domänenkontext bereitstellen.

[QUELLE: IEC 62325-450:2013, 3.6]

3.9

Marktmanagementsystem

MMS

(en: market management system)

Computersystem, das eine Softwareplattform für die grundlegenden Supportdienstleistungen und eine Reihe von Anwendungen mit der Funktionalität beinhaltet, die für das effiziente Management des Elektrizitätsmarktes notwendig ist

Anmerkung 1 zum Begriff: Diese Softwaresysteme in einem Elektrizitätsmarkt dürfen Unterstützung für Kapazitätsvergabe, Energiezeitplanung, Hilfs- oder andere Dienste, Echtzeit-Abläufe und Abrechnungen einschließen.

3.10

Geschäfts-Informationseinheiten-Nachrichten

MBIE

(en: message business information entity)

Zusammenfassung einer Gruppe von ABIEs, die eine definierte Menge von Einbindungsvorschriften berücksichtigt

3.11

Profil

(en: profile)

grundlegender Rahmen für alle Informationen, welche erforderlich sind, um einer spezifischen Umgebung zu genügen

[QUELLE: IEC 62325-450:2013, 3.7]

CONTENTS

CONTENTS	2
FOREWORD	18
INTRODUCTION	20
1 Scope	21
2 Normative references	21
3 Terms and definitions	22
4 Document contextual model and message assembly model basic concepts	23
4.1 Overview	23
4.2 European style market package structure (ESMP)	24
4.3 From the European style market profile to the document contextual model	26
4.4 From the document contextual model to the message assembly model	26
4.5 From the assembly model to the XML schema	26
5 The market information publication business process	26
5.1 General	26
5.2 The market information aggregator role	27
5.3 Market information publication business process	27
5.4 The use cases	28
5.4.1 General overview	28
5.4.2 Provide configuration information for transmission capacity allocation and resource object	29
5.4.3 Provide generation and load information	29
5.4.4 Provide actual availability and planned unavailability information	29
5.4.5 Provide balancing information	29
5.4.6 Provide network transmission related information	29
5.5 Sequence diagram	30
5.6 Electronic documents used	30
5.6.1 Configuration_MarketDocument	30
5.6.2 CapacityAllocationConfiguration_MarketDocument	31
5.6.3 GenerationLoad_MarketDocument	31
5.6.4 Outage_MarketDocument	31
5.6.5 Balancing_MarketDocument	31
5.6.6 TransmissionNetwork_MarketDocument	31
5.6.7 Publication_MarketDocument	32
5.7 Generic business rules for documents	32
5.7.1 General	32
5.7.2 Document instance implementation	32
5.7.3 Rules governing the GenerationLoad_MarketDocument	33
5.7.4 Rules governing the Outage_MarketDocument	34
5.7.5 Rules governing the Balancing_MarketDocument	35
5.7.6 Rules governing the TransmissionNetwork_MarketDocument	35
5.7.7 Rules governing the Configuration_MarketDocument	36
5.7.8 Rules governing the CapacityAllocationConfiguration_MarketDocument	36
5.7.9 Rules governing the ProblemStatement_MarketDocument	36
6 Contextual and assembly models	36

6.1	GenerationLoad contextual model.....	36
6.1.1	Overview of the model.....	36
6.1.2	IsBasedOn relationships from the European style market profile	37
6.1.3	Detailed GenerationLoad contextual model	38
6.2	GenerationLoad assembly model.....	45
6.2.2	IsBasedOn relationships from the European style market profile	47
6.2.3	Detailed GenerationLoad assembly model	47
6.2.4	Primitives	51
6.2.5	Datatypes.....	52
6.2.6	Enumerations	60
6.3	Outage contextual model	60
6.3.1	Overview of the model.....	60
6.3.2	IsBasedOn relationships from the European style market profile	61
6.3.3	Detailed Outage contextual model	62
6.4	Outage assembly model	71
6.4.1	Overview of the model.....	71
6.4.2	IsBasedOn relationships from the European style market profile	72
6.4.3	Detailed Outage assembly model.....	73
6.4.4	Primitives	78
6.4.5	Datatypes.....	79
6.4.6	Enumerations	88
6.5	Balancing contextual model	89
6.5.1	Overview of the model.....	89
6.5.2	IsBasedOn relationships from the European style market profile	89
6.5.3	Detailed Balancing contextual model.....	90
6.6	Balancing assembly model	98
6.6.1	Overview of the model.....	98
6.6.2	IsBasedOn relationships from the European style market profile	99
6.6.3	Detailed Balancing assembly model.....	100
6.6.4	Primitives	104
6.6.5	Datatypes.....	105
6.6.6	Enumerations	116
6.7	TransmissionNetwork contextual model	116
6.7.1	Overview of the model.....	116
6.7.2	IsBasedOn relationships from the European style market profile	117
6.7.3	Detailed TransmissionNetwork contextual model.....	118
6.8	TransmissionNetwork assembly model.....	126
6.8.1	Overview of the model.....	126
6.8.2	IsBasedOn relationships from the European style market profile	127
6.8.3	Detailed TransmissionNetwork assembly model	128
6.8.4	Primitives	132
6.8.5	Datatypes.....	133
6.8.6	Enumerations	144

6.9	Configuration contextual model.....	145
6.9.1	Overview of the model.....	145
6.9.2	IsBasedOn relationships from the European style market profile	145
6.9.3	Detailed Configuration contextual model	146
6.10	Configuration assembly model.....	154
6.10.1	Overview of the model.....	154
6.10.2	IsBasedOn relationships from the European style market profile	155
6.10.3	Detailed Configuration assembly model	155
6.10.4	Primitives	159
6.10.5	Datatypes.....	160
6.10.6	Enumerations	171
6.11	Capacity allocation configuration contextual model.....	172
6.11.1	Overview of the model.....	172
6.11.2	IsBasedOn relationships from the European style market profile	172
6.11.3	Detailed Capacity allocation configuration contextual model	173
6.12	Capacity allocation configuration assembly model.....	182
6.12.1	Overview of the model.....	182
6.12.2	IsBasedOn relationships from the European style market profile	182
6.12.3	Detailed Capacity allocation configuration assembly model	183
6.12.4	Primitives	187
6.12.5	Datatypes.....	188
6.12.6	Enumerations	201
7	XML schema	201
7.1	XML schema URN namespace rules	201
7.2	Code list URN namespace rules	202
7.3	URI rules for model documentation	202
7.3.1	Datatype	202
7.3.2	Class	202
7.3.3	Attribute	203
7.3.4	Association end role name.....	203
7.4	GenerationLoad_MarketDocument schema	203
7.4.1	Schema structure	203
7.4.2	Schema description	206
7.5	Outage_MarketDocument schema	211
7.5.1	Schema structure	211
7.5.2	Schema description	214
7.6	Balancing_MarketDocument schema	219
7.6.1	Schema structure	219
7.6.2	Schema description	222
7.7	TransmissionNetwork_MarketDocument schema.....	227
7.7.1	Schema structure	227
7.7.2	Schema description	230
7.8	Configuration_MarketDocument schema	235
7.8.1	Schema structure	235
7.8.2	Schema description	235
7.9	CapacityAllocationConfiguration_MarketDocument.....	241

7.9.1	Schema structure	241
7.9.2	Schema description	243
Bibliography		248
Figure 1 – IEC 62325-450 modelling framework.....		24
Figure 2 – Overview of European style market profile dependency		25
Figure 3 – Market information publication process overview		28
Figure 4 – Sequence diagram of the information flows		30
Figure 5 - GenerationLoad contextual model		37
Figure 6 - GenerationLoad assembly model.....		46
Figure 7 - Outage contextual model.....		61
Figure 8 - Outage assembly model		72
Figure 9 - Balancing contextual model.....		89
Figure 10 - Balancing assembly model		99
Figure 11 - TransmissionNetwork contextual model		117
Figure 12 - TransmissionNetwork assembly model.....		127
Figure 13 - Configuration contextual model.....		145
Figure 14 - Configuration assembly model		154
Figure 15 - Capacity allocation configuration contextual model		172
Figure 16 - Capacity allocation configuration assembly model.....		182
Figure 17 – GenerationLoad_MarketDocument XML schema structure – 1/2		204
Figure 18 – GenerationLoad_MarketDocument XML schema structure – 2/2		205
Figure 19 – Outage_MarketDocument XML schema structure – 1/2.....		212
Figure 20 – Outage_MarketDocument XML schema structure – 2/2.....		213
Figure 21 – Balancing_MarketDocument XML schema structure – 1/2.....		220
Figure 22 – Balancing_MarketDocument XML schema structure – 2/2.....		221
Figure 23 – TransmissionNetwork_MarketDocument XML schema structure – 1/2		228
Figure 24 – TransmissionNetwork_MarketDocument XML schema structure – 2/2		229
Figure 25 – Configuration_MarketDocument XML schema structure – 1/2		235
Figure 26 – Configuration_MarketDocument XML schema structure – 2/2		236
Figure 27 – CapacityAllocationConfiguration_MarketDocument XML schema structure – 1/2.....		241
Figure 28 – CapacityAllocationConfiguration_MarketDocument XML schema structure – 2/2.....		242
Table 1 – Dependency table outline for the market information publication processes.....		33
Table 2 – Informative example of dependency table for the TransmissionNetwork_MarketDocument		33
Table 3 - IsBasedOn dependency.....		37
Table 4 - Attributes of GenerationLoad contextual model::GL_MarketDocument		38
Table 5 - Association ends of GenerationLoad contextual model::GL_MarketDocument with other classes		38
Table 6 - Attributes of GenerationLoad contextual model::Domain.....		39
Table 7 - Attributes of GenerationLoad contextual model::MarketParticipant.....		39

Table 8 - Association ends of GenerationLoad contextual model::MarketParticipant with other classes	39
Table 9 - Attributes of GenerationLoad contextual model::MarketRole	40
Table 10 - Attributes of GenerationLoad contextual model::Measure_Unit	40
Table 11 - Attributes of GenerationLoad contextual model::MktGeneratingUnit	40
Table 12 - Attributes of GenerationLoad contextual model::MktPSRType	41
Table 13 - Association ends of GenerationLoad contextual model::MktPSRType with other classes	41
Table 14 - Attributes of GenerationLoad contextual model::Point	41
Table 15 - Attributes of GenerationLoad contextual model::Process	42
Table 16 - Attributes of GenerationLoad contextual model::Production_VoltageLevel	42
Table 17 - Attributes of GenerationLoad contextual model::RegisteredResource	42
Table 18 - Attributes of GenerationLoad contextual model::Series_Period	43
Table 19 - Association ends of GenerationLoad contextual model::Series_Period with other classes	43
Table 20 - Attributes of GenerationLoad contextual model::Time_Period	43
Table 21 - Attributes of GenerationLoad contextual model::TimeSeries	43
Table 22 - Association ends of GenerationLoad contextual model::TimeSeries with other classes	44
Table 23 - IsBasedOn dependency	47
Table 24 - Attributes of GenerationLoad assembly model::GL_MarketDocument	47
Table 25 - Association ends of GenerationLoad assembly model::GL_MarketDocument with other classes	48
Table 26 - Attributes of GenerationLoad assembly model::MktGeneratingUnit	48
Table 27 - Attributes of GenerationLoad assembly model::MktPSRType	49
Table 28 - Association ends of GenerationLoad assembly model::MktPSRType with other classes	49
Table 29 - Attributes of GenerationLoad assembly model::Point	49
Table 30 - Attributes of GenerationLoad assembly model::Series_Period	50
Table 31 - Association ends of GenerationLoad assembly model::Series_Period with other classes	50
Table 32 - Attributes of GenerationLoad assembly model::TimeSeries	50
Table 33 - Association ends of GenerationLoad assembly model::TimeSeries with other classes	51
Table 34 - Attributes of ESMPDataTypes::ESMP_DateTimeInterval	52
Table 35 - Attributes of ESMPDataTypes::AreaID_String	52
Table 36 - Restrictions of attributes for ESMPDataTypes::AreaID_String	53
Table 37 - Attributes of ESMPDataTypes::BusinessKind_String	53
Table 38 - Attributes of ESMPDataTypes::CurveType_String	53
Table 39 - Attributes of ESMPDataTypes::ESMP_ActivePower	53
Table 40 - Restrictions of attributes for ESMPDataTypes::ESMP_ActivePower	54
Table 41 - Attributes of ESMPDataTypes::ESMP_DateTime	54
Table 42 - Restrictions of attributes for ESMPDataTypes::ESMP_DateTime	54
Table 43 - Attributes of ESMPDataTypes::ESMP_Voltage	54
Table 44 - Restrictions of attributes for ESMPDataTypes::ESMP_Voltage	55
Table 45 - Attributes of ESMPDataTypes::ESMPBoolean_String	55

Table 46 - Attributes of ESMPDataTypes::ESMPVersion_String	55
Table 47 - Restrictions of attributes for ESMPDataTypes::ESMPVersion_String	55
Table 48 - Attributes of ESMPDataTypes::ID_String	56
Table 49 - Restrictions of attributes for ESMPDataTypes::ID_String	56
Table 50 - Attributes of ESMPDataTypes::MarketRoleKind_String	56
Table 51 - Attributes of ESMPDataTypes::MeasurementUnitKind_String	57
Table 52 - Attributes of ESMPDataTypes::MessageKind_String	57
Table 53 - Attributes of ESMPDataTypes::ObjectAggregationKind_String	57
Table 54 - Attributes of ESMPDataTypes::PartyID_String	57
Table 55 - Restrictions of attributes for ESMPDataTypes::PartyID_String	58
Table 56 - Attributes of ESMPDataTypes::Position_Integer	58
Table 57 - Restrictions of attributes for ESMPDataTypes::Position_Integer	58
Table 58 - Attributes of ESMPDataTypes::ProcessKind_String	58
Table 59 - Attributes of ESMPDataTypes::PsrType_String	59
Table 60 - Attributes of ESMPDataTypes::ResourceID_String	59
Table 61 - Restrictions of attributes for ESMPDataTypes::ResourceID_String	59
Table 62 - Attributes of ESMPDataTypes::UnitSymbol	59
Table 63 - Attributes of ESMPDataTypes::YMDHM_DateTime	60
Table 64 - Restrictions of attributes for ESMPDataTypes::YMDHM_DateTime	60
Table 65 - IsBasedOn dependency	61
Table 66 - Attributes of Outage contextual model::Unavailability_MarketDocument	62
Table 67 - Association ends of Outage contextual model::Unavailability_MarketDocument with other classes	62
Table 68 - Attributes of Outage contextual model::Asset_MktPSRType	63
Table 69 - Attributes of Outage contextual model::Asset_RegisteredResource	63
Table 70 - Association ends of Outage contextual model::Asset_RegisteredResource with other classes	64
Table 71 - Attributes of Outage contextual model::DateAndOrTime	64
Table 72 - Attributes of Outage contextual model::Domain	64
Table 73 - Attributes of Outage contextual model::Location	65
Table 74 - Attributes of Outage contextual model::MarketParticipant	65
Table 75 - Association ends of Outage contextual model::MarketParticipant with other classes	65
Table 76 - Attributes of Outage contextual model::MarketRole	65
Table 77 - Attributes of Outage contextual model::Measure_Unit	66
Table 78 - Attributes of Outage contextual model::MktGeneratingUnit	66
Table 79 - Attributes of Outage contextual model::MktPSRType	66
Table 80 - Association ends of Outage contextual model::MktPSRType with other classes	67
Table 81 - Attributes of Outage contextual model::Point	67
Table 82 - Attributes of Outage contextual model::Process	67
Table 83 - Attributes of Outage contextual model::Production_RegisteredResource	68
Table 84 - Association ends of Outage contextual model::Production_RegisteredResource with other classes	68
Table 85 - Attributes of Outage contextual model::Reason	68

Table 86 - Attributes of Outage contextual model::Series_Period	69
Table 87 - Association ends of Outage contextual model::Series_Period with other classes	69
Table 88 - Attributes of Outage contextual model::Time_Period	69
Table 89 - Attributes of Outage contextual model::TimeSeries	70
Table 90 - Association ends of Outage contextual model::TimeSeries with other classes	70
Table 91 - IsBasedOn dependency	72
Table 92 - Attributes of Outage assembly model::Unavailability_MarketDocument	73
Table 93 - Association ends of Outage assembly model::Unavailability_MarketDocument with other classes	74
Table 94 - Attributes of Outage assembly model::Asset_RegisteredResource	74
Table 95 - Attributes of Outage assembly model::Point	74
Table 96 - Attributes of Outage assembly model::Reason	75
Table 97 - Attributes of Outage assembly model::Series_Period	75
Table 98 - Association ends of Outage assembly model::Series_Period with other classes	76
Table 99 - Attributes of Outage assembly model::TimeSeries	76
Table 100 - Association ends of Outage assembly model::TimeSeries with other classes	78
Table 101 - Attributes of ESMPDataTypes::Action_Status	79
Table 102 - Attributes of ESMPDataTypes::ESMP_DateTimeInterval	79
Table 103 - Attributes of ESMPDataTypes::AreaID_String	80
Table 104 - Restrictions of attributes for ESMPDataTypes::AreaID_String	80
Table 105 - Attributes of ESMPDataTypes::BusinessKind_String	80
Table 106 - Attributes of ESMPDataTypes::CurveType_String	80
Table 107 - Attributes of ESMPDataTypes::ESMP_ActivePower	81
Table 108 - Restrictions of attributes for ESMPDataTypes::ESMP_ActivePower	81
Table 109 - Attributes of ESMPDataTypes::ESMP_DateTime	81
Table 110 - Restrictions of attributes for ESMPDataTypes::ESMP_DateTime	81
Table 111 - Attributes of ESMPDataTypes::ESMP_Voltage	82
Table 112 - Restrictions of attributes for ESMPDataTypes::ESMP_Voltage	82
Table 113 - Attributes of ESMPDataTypes::ESMPBoolean_String	82
Table 114 - Attributes of ESMPDataTypes::ESMPVersion_String	83
Table 115 - Restrictions of attributes for ESMPDataTypes::ESMPVersion_String	83
Table 116 - Attributes of ESMPDataTypes::ID_String	83
Table 117 - Restrictions of attributes for ESMPDataTypes::ID_String	83
Table 118 - Attributes of ESMPDataTypes::MarketRoleKind_String	84
Table 119 - Attributes of ESMPDataTypes::MeasurementUnitKind_String	84
Table 120 - Attributes of ESMPDataTypes::MessageKind_String	84
Table 121 - Attributes of ESMPDataTypes::ObjectAggregationKind_String	84
Table 122 - Attributes of ESMPDataTypes::PartyID_String	85
Table 123 - Restrictions of attributes for ESMPDataTypes::PartyID_String	85
Table 124 - Attributes of ESMPDataTypes::Position_Integer	85
Table 125 - Restrictions of attributes for ESMPDataTypes::Position_Integer	85

Table 126 - Attributes of ESMPDataTypes::ProcessKind_String	86
Table 127 - Attributes of ESMPDataTypes::PsrType_String	86
Table 128 - Attributes of ESMPDataTypes::ReasonCode_String	86
Table 129 - Attributes of ESMPDataTypes::ReasonText_String	86
Table 130 - Restrictions of attributes for ESMPDataTypes::ReasonText_String	87
Table 131 - Attributes of ESMPDataTypes::ResourceID_String	87
Table 132 - Restrictions of attributes for ESMPDataTypes::ResourceID_String	87
Table 133 - Attributes of ESMPDataTypes::Status_String	87
Table 134 - Attributes of ESMPDataTypes::UnitSymbol	88
Table 135 - Attributes of ESMPDataTypes::YMDHM_DateTime	88
Table 136 - Restrictions of attributes for ESMPDataTypes::YMDHM_DateTime	88
Table 137 - IsBasedOn dependency	89
Table 138 - Attributes of Balancing contextual model::Balancing_MarketDocument	90
Table 139 - Association ends of Balancing contextual model::Balancing_MarketDocument with other classes	91
Table 140 - Attributes of Balancing contextual model::Currency_Unit	91
Table 141 - Attributes of Balancing contextual model::Domain	92
Table 142 - Attributes of Balancing contextual model::Financial_Price	92
Table 143 - Attributes of Balancing contextual model::FlowDirection	92
Table 144 - Attributes of Balancing contextual model::Imbalance_Price	92
Table 145 - Attributes of Balancing contextual model::MarketParticipant	93
Table 146 - Association ends of Balancing contextual model::MarketParticipant with other classes	93
Table 147 - Attributes of Balancing contextual model::MarketRole	93
Table 148 - Attributes of Balancing contextual model::Measure_Unit	94
Table 149 - Attributes of Balancing contextual model::MktPSRType	94
Table 150 - Attributes of Balancing contextual model::Point	94
Table 151 - Association ends of Balancing contextual model::Point with other classes	94
Table 152 - Attributes of Balancing contextual model::Price	95
Table 153 - Attributes of Balancing contextual model::Process	96
Table 154 - Attributes of Balancing contextual model::Series_Period	96
Table 155 - Association ends of Balancing contextual model::Series_Period with other classes	96
Table 156 - Attributes of Balancing contextual model::Time_Period	96
Table 157 - Attributes of Balancing contextual model::TimeSeries	97
Table 158 - Association ends of Balancing contextual model::TimeSeries with other classes	97
Table 159 - Attributes of Balancing contextual model::Type_MarketAgreement	98
Table 160 - IsBasedOn dependency	99
Table 161 - Attributes of Balancing assembly model::Balancing_MarketDocument	100
Table 162 - Association ends of Balancing assembly model::Balancing_MarketDocument with other classes	101
Table 163 - Attributes of Balancing assembly model::Financial_Price	101
Table 164 - Attributes of Balancing assembly model::Point	101
Table 165 - Association ends of Balancing assembly model::Point with other classes	102

Table 166 - Attributes of Balancing assembly model::Series_Period.....	102
Table 167 - Association ends of Balancing assembly model::Series_Period with other classes.....	103
Table 168 - Attributes of Balancing assembly model::TimeSeries.....	103
Table 169 - Association ends of Balancing assembly model::TimeSeries with other classes.....	104
Table 170 - Attributes of ESMPDataTypes::Action_Status.....	105
Table 171 - Attributes of ESMPDataTypes::ESMP_DateTimeInterval.....	105
Table 172 - Attributes of ESMPDataTypes::Amount_Decimal.....	105
Table 173 - Restrictions of attributes for ESMPDataTypes::Amount_Decimal.....	105
Table 174 - Attributes of ESMPDataTypes::AreaID_String.....	106
Table 175 - Restrictions of attributes for ESMPDataTypes::AreaID_String.....	106
Table 176 - Attributes of ESMPDataTypes::BusinessKind_String.....	106
Table 177 - Attributes of ESMPDataTypes::CapacityContractKind_String.....	107
Table 178 - Attributes of ESMPDataTypes::CurrencyCode_String.....	107
Table 179 - Attributes of ESMPDataTypes::CurveType_String.....	107
Table 180 - Attributes of ESMPDataTypes::DirectionKind_String.....	107
Table 181 - Attributes of ESMPDataTypes::ESMP_ActivePower.....	108
Table 182 - Restrictions of attributes for ESMPDataTypes::ESMP_ActivePower.....	108
Table 183 - Attributes of ESMPDataTypes::ESMP_DateTime.....	108
Table 184 - Restrictions of attributes for ESMPDataTypes::ESMP_DateTime.....	108
Table 185 - Attributes of ESMPDataTypes::ESMP_Voltage.....	109
Table 186 - Restrictions of attributes for ESMPDataTypes::ESMP_Voltage.....	109
Table 187 - Attributes of ESMPDataTypes::ESMPBoolean_String.....	109
Table 188 - Attributes of ESMPDataTypes::ESMPVersion_String.....	110
Table 189 - Restrictions of attributes for ESMPDataTypes::ESMPVersion_String.....	110
Table 190 - Attributes of ESMPDataTypes::ID_String.....	110
Table 191 - Restrictions of attributes for ESMPDataTypes::ID_String.....	110
Table 192 - Attributes of ESMPDataTypes::MarketRoleKind_String.....	111
Table 193 - Attributes of ESMPDataTypes::MeasurementUnitKind_String.....	111
Table 194 - Attributes of ESMPDataTypes::MessageKind_String.....	111
Table 195 - Attributes of ESMPDataTypes::ObjectAggregationKind_String.....	111
Table 196 - Attributes of ESMPDataTypes::PartyID_String.....	112
Table 197 - Restrictions of attributes for ESMPDataTypes::PartyID_String.....	112
Table 198 - Attributes of ESMPDataTypes::Position_Integer.....	112
Table 199 - Restrictions of attributes for ESMPDataTypes::Position_Integer.....	112
Table 200 - Attributes of ESMPDataTypes::PriceCategory_String.....	113
Table 201 - Attributes of ESMPDataTypes::PriceDirection_String.....	113
Table 202 - Attributes of ESMPDataTypes::ProcessKind_String.....	113
Table 203 - Attributes of ESMPDataTypes::PsrType_String.....	113
Table 204 - Attributes of ESMPDataTypes::ReasonCode_String.....	114
Table 205 - Attributes of ESMPDataTypes::ReasonText_String.....	114
Table 206 - Restrictions of attributes for ESMPDataTypes::ReasonText_String.....	114
Table 207 - Attributes of ESMPDataTypes::ResourceID_String.....	114

Table 208 - Restrictions of attributes for ESMPDataTypes::ResourceID_String	115
Table 209 - Attributes of ESMPDataTypes::Status_String	115
Table 210 - Attributes of ESMPDataTypes::UnitSymbol	115
Table 211 - Attributes of ESMPDataTypes::YMDHM_DateTime	115
Table 212 - Restrictions of attributes for ESMPDataTypes::YMDHM_DateTime	116
Table 213 - IsBasedOn dependency	117
Table 214 - Attributes of TransmissionNetwork contextual model::TransmissionNetwork_MarketDocument	118
Table 215 - Association ends of TransmissionNetwork contextual model::TransmissionNetwork_MarketDocument with other classes	119
Table 216 - Attributes of TransmissionNetwork contextual model::Asset_RegisteredResource	119
Table 217 - Association ends of TransmissionNetwork contextual model::Asset_RegisteredResource with other classes	119
Table 218 - Attributes of TransmissionNetwork contextual model::Currency_Unit	120
Table 219 - Attributes of TransmissionNetwork contextual model::DateAndOrTime	120
Table 220 - Attributes of TransmissionNetwork contextual model::Domain	120
Table 221 - Attributes of TransmissionNetwork contextual model::FlowDirection	121
Table 222 - Attributes of TransmissionNetwork contextual model::Location	121
Table 223 - Attributes of TransmissionNetwork contextual model::MarketParticipant	121
Table 224 - Association ends of TransmissionNetwork contextual model::MarketParticipant with other classes	121
Table 225 - Attributes of TransmissionNetwork contextual model::MarketRole	122
Table 226 - Attributes of TransmissionNetwork contextual model::Measure_Unit	122
Table 227 - Attributes of TransmissionNetwork contextual model::MktPSRType	122
Table 228 - Attributes of TransmissionNetwork contextual model::Point	122
Table 229 - Association ends of TransmissionNetwork contextual model::Point with other classes	123
Table 230 - Attributes of TransmissionNetwork contextual model::Price	123
Table 231 - Attributes of TransmissionNetwork contextual model::Process	123
Table 232 - Attributes of TransmissionNetwork contextual model::Quantity	124
Table 233 - Attributes of TransmissionNetwork contextual model::Reason	124
Table 234 - Attributes of TransmissionNetwork contextual model::Series_Period	124
Table 235 - Association ends of TransmissionNetwork contextual model::Series_Period with other classes	125
Table 236 - Attributes of TransmissionNetwork contextual model::Time_Period	125
Table 237 - Attributes of TransmissionNetwork contextual model::TimeSeries	125
Table 238 - Association ends of TransmissionNetwork contextual model::TimeSeries with other classes	125
Table 239 - IsBasedOn dependency	128
Table 240 - Attributes of TransmissionNetwork assembly model::TransmissionNetwork_MarketDocument	128
Table 241 - Association ends of TransmissionNetwork assembly model::TransmissionNetwork_MarketDocument with other classes	129
Table 242 - Attributes of TransmissionNetwork assembly model::Asset_RegisteredResource	129

Table 243 - Attributes of TransmissionNetwork assembly model::Point.....	130
Table 244 - Attributes of TransmissionNetwork assembly model::Reason.....	130
Table 245 - Attributes of TransmissionNetwork assembly model::Series_Period.....	130
Table 246 - Association ends of TransmissionNetwork assembly model::Series_Period with other classes.....	131
Table 247 - Attributes of TransmissionNetwork assembly model::TimeSeries.....	131
Table 248 - Association ends of TransmissionNetwork assembly model::TimeSeries with other classes.....	132
Table 249 - Attributes of ESMPDataTypes::Action_Status.....	133
Table 250 - Attributes of ESMPDataTypes::ESMP_DateTimeInterval.....	133
Table 251 - Attributes of ESMPDataTypes::Amount_Decimal.....	133
Table 252 - Restrictions of attributes for ESMPDataTypes::Amount_Decimal.....	134
Table 253 - Attributes of ESMPDataTypes::AreaID_String.....	134
Table 254 - Restrictions of attributes for ESMPDataTypes::AreaID_String.....	134
Table 255 - Attributes of ESMPDataTypes::BusinessKind_String.....	134
Table 256 - Attributes of ESMPDataTypes::CapacityContractKind_String.....	135
Table 257 - Attributes of ESMPDataTypes::CurrencyCode_String.....	135
Table 258 - Attributes of ESMPDataTypes::CurveType_String.....	135
Table 259 - Attributes of ESMPDataTypes::DirectionKind_String.....	135
Table 260 - Attributes of ESMPDataTypes::ESMP_ActivePower.....	136
Table 261 - Restrictions of attributes for ESMPDataTypes::ESMP_ActivePower.....	136
Table 262 - Attributes of ESMPDataTypes::ESMP_DateTime.....	136
Table 263 - Restrictions of attributes for ESMPDataTypes::ESMP_DateTime.....	137
Table 264 - Attributes of ESMPDataTypes::ESMP_Voltage.....	137
Table 265 - Restrictions of attributes for ESMPDataTypes::ESMP_Voltage.....	137
Table 266 - Attributes of ESMPDataTypes::ESMPBoolean_String.....	137
Table 267 - Attributes of ESMPDataTypes::ESMPVersion_String.....	138
Table 268 - Restrictions of attributes for ESMPDataTypes::ESMPVersion_String.....	138
Table 269 - Attributes of ESMPDataTypes::ID_String.....	138
Table 270 - Restrictions of attributes for ESMPDataTypes::ID_String.....	139
Table 271 - Attributes of ESMPDataTypes::MarketRoleKind_String.....	139
Table 272 - Attributes of ESMPDataTypes::MeasurementUnitKind_String.....	139
Table 273 - Attributes of ESMPDataTypes::MessageKind_String.....	139
Table 274 - Attributes of ESMPDataTypes::ObjectAggregationKind_String.....	140
Table 275 - Attributes of ESMPDataTypes::PartyID_String.....	140
Table 276 - Restrictions of attributes for ESMPDataTypes::PartyID_String.....	140
Table 277 - Attributes of ESMPDataTypes::Position_Integer.....	140
Table 278 - Restrictions of attributes for ESMPDataTypes::Position_Integer.....	141
Table 279 - Attributes of ESMPDataTypes::PriceCategory_String.....	141
Table 280 - Attributes of ESMPDataTypes::PriceDirection_String.....	141
Table 281 - Attributes of ESMPDataTypes::ProcessKind_String.....	141
Table 282 - Attributes of ESMPDataTypes::PsrType_String.....	142
Table 283 - Attributes of ESMPDataTypes::ReasonCode_String.....	142
Table 284 - Attributes of ESMPDataTypes::ReasonText_String.....	142

Table 285 - Restrictions of attributes for ESMPDataTypes::ReasonText_String	142
Table 286 - Attributes of ESMPDataTypes::ResourceID_String	143
Table 287 - Restrictions of attributes for ESMPDataTypes::ResourceID_String	143
Table 288 - Attributes of ESMPDataTypes::Status_String	143
Table 289 - Attributes of ESMPDataTypes::UnitSymbol	143
Table 290 - Attributes of ESMPDataTypes::YMDHM_DateTime	144
Table 291 - Restrictions of attributes for ESMPDataTypes::YMDHM_DateTime	144
Table 292 - IsBasedOn dependency	145
Table 293 - Attributes of Configuration contextual model::Configuration_MarketDocument	146
Table 294 - Association ends of Configuration contextual model::Configuration_MarketDocument with other classes	147
Table 295 - Attributes of Configuration contextual model::BiddingZone_Domain	147
Table 296 - Attributes of Configuration contextual model::ControlArea_Domain	147
Table 297 - Attributes of Configuration contextual model::DateAndOrTime	148
Table 298 - Attributes of Configuration contextual model::GeneratingUnit_Location	148
Table 299 - Attributes of Configuration contextual model::GeneratingUnit_MktPSRType	148
Table 300 - Attributes of Configuration contextual model::Location	149
Table 301 - Attributes of Configuration contextual model::MarketParticipant	149
Table 302 - Association ends of Configuration contextual model::MarketParticipant with other classes	149
Table 303 - Attributes of Configuration contextual model::MarketRole	149
Table 304 - Attributes of Configuration contextual model::MktGeneratingUnit	150
Table 305 - Association ends of Configuration contextual model::MktGeneratingUnit with other classes	150
Table 306 - Attributes of Configuration contextual model::MktPSRType	150
Table 307 - Association ends of Configuration contextual model::MktPSRType with other classes	151
Table 308 - Attributes of Configuration contextual model::NominalIP_MktGeneratingUnit	151
Table 309 - Attributes of Configuration contextual model::Process	151
Table 310 - Attributes of Configuration contextual model::Provider_MarketParticipant	152
Table 311 - Attributes of Configuration contextual model::RegisteredResource	152
Table 312 - Association ends of Configuration contextual model::RegisteredResource with other classes	152
Table 313 - Attributes of Configuration contextual model::TimeSeries	152
Table 314 - Association ends of Configuration contextual model::TimeSeries with other classes	153
Table 315 - Attributes of Configuration contextual model::VoltageLevel	154
Table 316 - IsBasedOn dependency	155
Table 317 - Attributes of Configuration assembly model::Configuration_MarketDocument	155
Table 318 - Association ends of Configuration assembly model::Configuration_MarketDocument with other classes	156
Table 319 - Attributes of Configuration assembly model::ControlArea_Domain	156
Table 320 - Attributes of Configuration assembly model::MktGeneratingUnit	156

Table 321 - Attributes of Configuration assembly model::MktPSRType	157
Table 322 - Association ends of Configuration assembly model::MktPSRType with other classes	157
Table 323 - Attributes of Configuration assembly model::Provider_MarketParticipant.....	158
Table 324 - Attributes of Configuration assembly model::TimeSeries.....	158
Table 325 - Association ends of Configuration assembly model::TimeSeries with other classes	159
Table 326 - Attributes of ESMPDataTypes::Action_Status.....	160
Table 327 - Attributes of ESMPDataTypes::ESMP_DateTimeInterval.....	160
Table 328 - Attributes of ESMPDataTypes::Amount_Decimal	160
Table 329 - Restrictions of attributes for ESMPDataTypes::Amount_Decimal	161
Table 330 - Attributes of ESMPDataTypes::AreaID_String	161
Table 331 - Restrictions of attributes for ESMPDataTypes::AreaID_String.....	161
Table 332 - Attributes of ESMPDataTypes::BusinessKind_String	161
Table 333 - Attributes of ESMPDataTypes::CapacityContractKind_String	162
Table 334 - Attributes of ESMPDataTypes::CurrencyCode_String	162
Table 335 - Attributes of ESMPDataTypes::CurveType_String	162
Table 336 - Attributes of ESMPDataTypes::DirectionKind_String.....	162
Table 337 - Attributes of ESMPDataTypes::ESMP_ActivePower.....	163
Table 338 - Restrictions of attributes for ESMPDataTypes::ESMP_ActivePower	163
Table 339 - Attributes of ESMPDataTypes::ESMP_DateTime	163
Table 340 - Restrictions of attributes for ESMPDataTypes::ESMP_DateTime	164
Table 341 - Attributes of ESMPDataTypes::ESMP_Voltage	164
Table 342 - Restrictions of attributes for ESMPDataTypes::ESMP_Voltage	164
Table 343 - Attributes of ESMPDataTypes::ESMPBoolean_String	164
Table 344 - Attributes of ESMPDataTypes::ESMPVersion_String	165
Table 345 - Restrictions of attributes for ESMPDataTypes::ESMPVersion_String	165
Table 346 - Attributes of ESMPDataTypes::ID_String.....	165
Table 347 - Restrictions of attributes for ESMPDataTypes::ID_String	166
Table 348 - Attributes of ESMPDataTypes::MarketRoleKind_String	166
Table 349 - Attributes of ESMPDataTypes::MeasurementUnitKind_String	166
Table 350 - Attributes of ESMPDataTypes::MessageKind_String	166
Table 351 - Attributes of ESMPDataTypes::ObjectAggregationKind_String	167
Table 352 - Attributes of ESMPDataTypes::PartyID_String.....	167
Table 353 - Restrictions of attributes for ESMPDataTypes::PartyID_String	167
Table 354 - Attributes of ESMPDataTypes::Position_Integer	167
Table 355 - Restrictions of attributes for ESMPDataTypes::Position_Integer	168
Table 356 - Attributes of ESMPDataTypes::PriceCategory_String	168
Table 357 - Attributes of ESMPDataTypes::PriceDirection_String.....	168
Table 358 - Attributes of ESMPDataTypes::ProcessKind_String.....	168
Table 359 - Attributes of ESMPDataTypes::PsrType_String	169
Table 360 - Attributes of ESMPDataTypes::ReasonCode_String	169
Table 361 - Attributes of ESMPDataTypes::ReasonText_String.....	169
Table 362 - Restrictions of attributes for ESMPDataTypes::ReasonText_String.....	169

Table 363 - Attributes of ESMPDataTypes::ResourceID_String	170
Table 364 - Restrictions of attributes for ESMPDataTypes::ResourceID_String	170
Table 365 - Attributes of ESMPDataTypes::Status_String	170
Table 366 - Attributes of ESMPDataTypes::UnitSymbol	170
Table 367 - Attributes of ESMPDataTypes::YMDHM_DateTime	171
Table 368 - Restrictions of attributes for ESMPDataTypes::YMDHM_DateTime	171
Table 369 - IsBasedOn dependency	172
Table 370 - Attributes of Capacity allocation configuration contextual model::CapacityAllocationConfiguration_MarketDocument	173
Table 371 - Association ends of Capacity allocation configuration contextual model::CapacityAllocationConfiguration_MarketDocument with other classes	174
Table 372 - Attributes of Capacity allocation configuration contextual model::Allocation_TimeSeries	174
Table 373 - Association ends of Capacity allocation configuration contextual model::Allocation_TimeSeries with other classes	175
Table 374 - Attributes of Capacity allocation configuration contextual model::AttributeInstanceComponent	176
Table 375 - Attributes of Capacity allocation configuration contextual model::Auction	177
Table 376 - Attributes of Capacity allocation configuration contextual model::CapacityProduct_TimeSeries	177
Table 377 - Association ends of Capacity allocation configuration contextual model::CapacityProduct_TimeSeries with other classes	177
Table 378 - Attributes of Capacity allocation configuration contextual model::Contract_MarketAgreement	178
Table 379 - Attributes of Capacity allocation configuration contextual model::Currency_Unit	178
Table 380 - Attributes of Capacity allocation configuration contextual model::Domain	179
Table 381 - Attributes of Capacity allocation configuration contextual model::MarketParticipant	179
Table 382 - Association ends of Capacity allocation configuration contextual model::MarketParticipant with other classes	179
Table 383 - Attributes of Capacity allocation configuration contextual model::MarketRole	179
Table 384 - Attributes of Capacity allocation configuration contextual model::Point	180
Table 385 - Association ends of Capacity allocation configuration contextual model::Point with other classes	180
Table 386 - Attributes of Capacity allocation configuration contextual model::Process	180
Table 387 - Attributes of Capacity allocation configuration contextual model::Product_Auction	181
Table 388 - Attributes of Capacity allocation configuration contextual model::Provider_MarketParticipant	181
Table 389 - Attributes of Capacity allocation configuration contextual model::SubType_Auction	181
Table 390 - Attributes of Capacity allocation configuration contextual model::Time_Period	181
Table 391 - IsBasedOn dependency	183
Table 392 - Attributes of Capacity allocation configuration assembly model::CapacityAllocationConfiguration_MarketDocument	183

Table 393 - Association ends of Capacity allocation configuration assembly model::CapacityAllocationConfiguration_MarketDocument with other classes.....	184
Table 394 - Attributes of Capacity allocation configuration assembly model::Allocation_TimeSeries	184
Table 395 - Association ends of Capacity allocation configuration assembly model::Allocation_TimeSeries with other classes	186
Table 396 - Attributes of Capacity allocation configuration assembly model::Point.....	186
Table 397 - Attributes of ESMPDataTypes::Action_Status.....	188
Table 398 - Attributes of ESMPDataTypes::ESMP_DateTimeInterval.....	188
Table 399 - Attributes of ESMPDataTypes::AllocationMode_String.....	188
Table 400 - Attributes of ESMPDataTypes::Amount_Decimal	189
Table 401 - Restrictions of attributes for ESMPDataTypes::Amount_Decimal	189
Table 402 - Attributes of ESMPDataTypes::AreaID_String	189
Table 403 - Restrictions of attributes for ESMPDataTypes::AreaID_String.....	189
Table 404 - Attributes of ESMPDataTypes::AuctionKind_String.....	190
Table 405 - Attributes of ESMPDataTypes::BusinessKind_String	190
Table 406 - Attributes of ESMPDataTypes::CapacityContractKind_String	190
Table 407 - Attributes of ESMPDataTypes::Category_String	190
Table 408 - Attributes of ESMPDataTypes::Characters100_String.....	191
Table 409 - Restrictions of attributes for ESMPDataTypes::Characters100_String	191
Table 410 - Attributes of ESMPDataTypes::Characters20_String.....	191
Table 411 - Restrictions of attributes for ESMPDataTypes::Characters20_String	191
Table 412 - Attributes of ESMPDataTypes::CurrencyCode_String	192
Table 413 - Attributes of ESMPDataTypes::CurveType_String	192
Table 414 - Attributes of ESMPDataTypes::DirectionKind_String.....	192
Table 415 - Attributes of ESMPDataTypes::ESMP_ActivePower.....	192
Table 416 - Restrictions of attributes for ESMPDataTypes::ESMP_ActivePower	193
Table 417 - Attributes of ESMPDataTypes::ESMP_DateTime	193
Table 418 - Restrictions of attributes for ESMPDataTypes::ESMP_DateTime	193
Table 419 - Attributes of ESMPDataTypes::ESMP_Voltage	193
Table 420 - Restrictions of attributes for ESMPDataTypes::ESMP_Voltage	194
Table 421 - Attributes of ESMPDataTypes::ESMPBoolean_String	194
Table 422 - Attributes of ESMPDataTypes::ESMPVersion_String	194
Table 423 - Restrictions of attributes for ESMPDataTypes::ESMPVersion_String	194
Table 424 - Attributes of ESMPDataTypes::ID_String.....	195
Table 425 - Restrictions of attributes for ESMPDataTypes::ID_String	195
Table 426 - Attributes of ESMPDataTypes::MarketRoleKind_String.....	195
Table 427 - Attributes of ESMPDataTypes::MeasurementUnitKind_String	196
Table 428 - Attributes of ESMPDataTypes::MessageKind_String	196
Table 429 - Attributes of ESMPDataTypes::ObjectAggregationKind_String	196
Table 430 - Attributes of ESMPDataTypes::PartyID_String.....	196
Table 431 - Restrictions of attributes for ESMPDataTypes::PartyID_String	197
Table 432 - Attributes of ESMPDataTypes::Position_Integer	197
Table 433 - Restrictions of attributes for ESMPDataTypes::Position_Integer	197

Table 434 - Attributes of ESMPDataTypes::PriceCategory_String	197
Table 435 - Attributes of ESMPDataTypes::PriceDirection_String.....	198
Table 436 - Attributes of ESMPDataTypes::ProcessKind_String	198
Table 437 - Attributes of ESMPDataTypes::PsrType_String	198
Table 438 - Attributes of ESMPDataTypes::ReasonCode_String	198
Table 439 - Attributes of ESMPDataTypes::ReasonText_String.....	199
Table 440 - Restrictions of attributes for ESMPDataTypes::ReasonText_String	199
Table 441 - Attributes of ESMPDataTypes::ResourceID_String	199
Table 442 - Restrictions of attributes for ESMPDataTypes::ResourceID_String	199
Table 443 - Attributes of ESMPDataTypes::Status_String	200
Table 444 - Attributes of ESMPDataTypes::UnitSymbol	200
Table 445 - Attributes of ESMPDataTypes::YMDHM_DateTime.....	200
Table 446 - Restrictions of attributes for ESMPDataTypes::YMDHM_DateTime	201

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FRAMEWORK FOR ENERGY MARKET COMMUNICATIONS –

**Part 451-6: Publication of information on market, contextual
and assembly models for European style market**

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International Standard IEC 62325-451-6 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

This second edition cancels and replaces the first edition published in 2016. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Add a new document contextual and assembly model to publish information about the transmission capacity allocation participants.
- b) Update the TransmissionNetwork_MarketDocument to publish information about implicit transmission allocations on third countries borders.
- c) Update the Unavailability_MarketDocument to publish outage related to consumption units.

- 56 d) Update the Balancing_MarketDocument model to publish information for resource object
57 that can either consume or generate.

58 The text of this standard is based on the following documents:

CDV	Report on voting
57/XXXX/CDV	57/XXXX/RVC

59

60 Full information on the voting for the approval of this standard can be found in the report on
61 voting indicated in the above table.

62 This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

63 A list of all parts in the IEC 62325 series, published under the general title *Framework for*
64 *energy market communications*, can be found on the IEC website.

65 The committee has decided that the contents of this publication will remain unchanged until
66 the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data
67 related to the specific publication. At this date, the publication will be

- 68 • reconfirmed,
- 69 • withdrawn,
- 70 • replaced by a revised edition, or
- 71 • amended.

72

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

73

74 Document history

75 Any person intervening in the present document is invited to complete the table below before
76 sending the document elsewhere. The purpose is to allow all actors to see all changes
77 introduced and the intervening persons.

78 Any important message to IEC editors should also be included in the table below.

Name of intervening person	Document received		Brief description of the changes introduced	Document sent	
	From	Date		To	Date
IEC	Editorial	2017-03-01	Send the original MS Word file of TS IEC 62325-503 Edition 1	Project team	2017-03-01
Greta Bonnary	Project leader	2017-03-01	Following review of the document, draft the CDV version of IEC 62325-503 Ed.1	IEC TC57	2017-05-29
M. Braun	Project leader	2017-05-30	Edited CDV document	CO	2017-05-30

79

80 This table will be removed by IEC editors before FDIS circulation (in case of IS) or before final
81 publication (in case of TS or TR).

82

INTRODUCTION

83 This document is one part of the IEC 62325 series for deregulated energy market data
84 exchanges based on the European style market profile. This part of IEC 62325 defines the
85 document contextual models, the message assembly models as well as the XML schemas to
86 be used for the market information publication process, also called the transparency process.

87 The principal objective of the IEC 62325 series is to produce standards which facilitate the
88 integration of market application software developed independently by different vendors into a
89 market management system, between market management systems and market participant
90 systems. This is accomplished by defining message exchanges to allow these applications or
91 systems access to public data and exchange information independent of how such information
92 is represented internally.

93 The common information model (CIM), i.e. IEC 62325-301, IEC 61970-301 and IEC 61968-11,
94 specifies the basis for the semantics for message exchange.

95 This European style market profile is based on different parts of the CIM IEC standards and
96 specifies the content of the messages exchanged.

97 This document provides, for the European style market profile, the publication (or
98 transparency) information exchanges to submit either to a data aggregator or to an electronic
99 publication platform the necessary information to be published about the electricity market.
100 These market processes are based on the European regulations (No. 1227/2011 and
101 No. 543/2013), and on the concepts of third party access and zonal markets. This part of
102 IEC 62325 was originally based upon the work of the European Network of Transmission
103 System Operators (ENTSO-E) Working Group EDI.

104

FRAMEWORK FOR ENERGY MARKET COMMUNICATIONS –**Part 451-6: Publication of information on market, contextual
and assembly models for European style market****Scope**

This part of IEC 62325 specifies a UML package for the market information publication business process and its associated document contextual models, assembly models and XML schemas for use within the European style electricity markets.

This part of IEC 62325 is based on the European style market contextual model (IEC 62325-351). The business process covered by this part of IEC 62325 is described in Clause 5.

The relevant aggregate core components (ACCs) defined in IEC 62325-351 have been contextualised into aggregated business information entities (ABIEs) to satisfy the requirements of the European style market publication business process.

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

IEC 62325-301, *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, *Framework for energy market communications – Part 451-1: Acknowledgement business process and contextual model for CIM European market*

IEC 62325-451-3, *Framework for energy market communications – Part 451-3: Transmission capacity allocation business process (explicit or implicit auction) and contextual models for European market*

IEC 62325-451-5, *Framework for energy market communications – Part 451-5: Problem statement and status request business processes, contextual and assembly models for European market*

IEC 62361-100, *Power systems management and associated information exchange – Interoperability in the long term – Part 100: CIM profiles to XML schema mapping*

Terms and definitions

For the purposes of this document, the terms and definitions given in IEC TS 61970-2, as well as the following apply.

NOTE General glossary definitions can be found in IEC 60050, *International Electrotechnical Vocabulary*.

3.1

aggregate business information entity

ABIE

re-use of an aggregate core component (ACC) in a specified business

3.2

aggregate core component

ACC

collection of related pieces of business information that together convey a distinct business meaning, independent of any specific business context

Note 1 to entry: Expressed in modelling terms, this is the representation of an object class, independent of any specific business context.

[SOURCE: ISO TS 15000-5:2005, Clause 9, modified (second sentence has been transformed into Note 1 to entry)]

3.3

application program interface

API

set of public functions provided by an executable application component for use by other executable application components

3.4

assembly model

assembly model is a model that prepares information in a business context for assembly into electronic documents for data interchange

3.5

based on

IsBasedOn

use of an artefact that has been restricted according to the requirements of a specific business context

[SOURCE: IEC 62325-450:2013, 3.4]

3.6

business context

formal description of a specific business circumstance as identified by the values of a set of context categories, allowing different business circumstances to be uniquely distinguished

[SOURCE: UN/Cefact, Unified Context Methodology Technical Specification]

3.7

European style market profile

ESMP

European style market profile, the object of the part of IEC 62325-351, describing the set of classes and associations used to generate all the parts IEC 62325-451-x

3.8**information model**

representation of concepts, relationships, constraints, rules, and operations to specify data semantics for a chosen domain of discourse

Note 1 to entry: It can provide shareable, stable, and organized structure of information requirements for the domain context.

[SOURCE: IEC 62325-450:2013, 3.6]

3.9**market management system****MMS**

computer system comprised of a software platform providing basic support services and a set of applications providing the functionality needed for the effective management of the electricity market

Note 1 to entry: These software systems in an electricity market may include support for capacity allocation, scheduling energy, ancillary or other services, real-time operations and settlements.

3.10**message business information entity****MBIE**

aggregation of a set of ABIEs that respects a define set of assembly rules

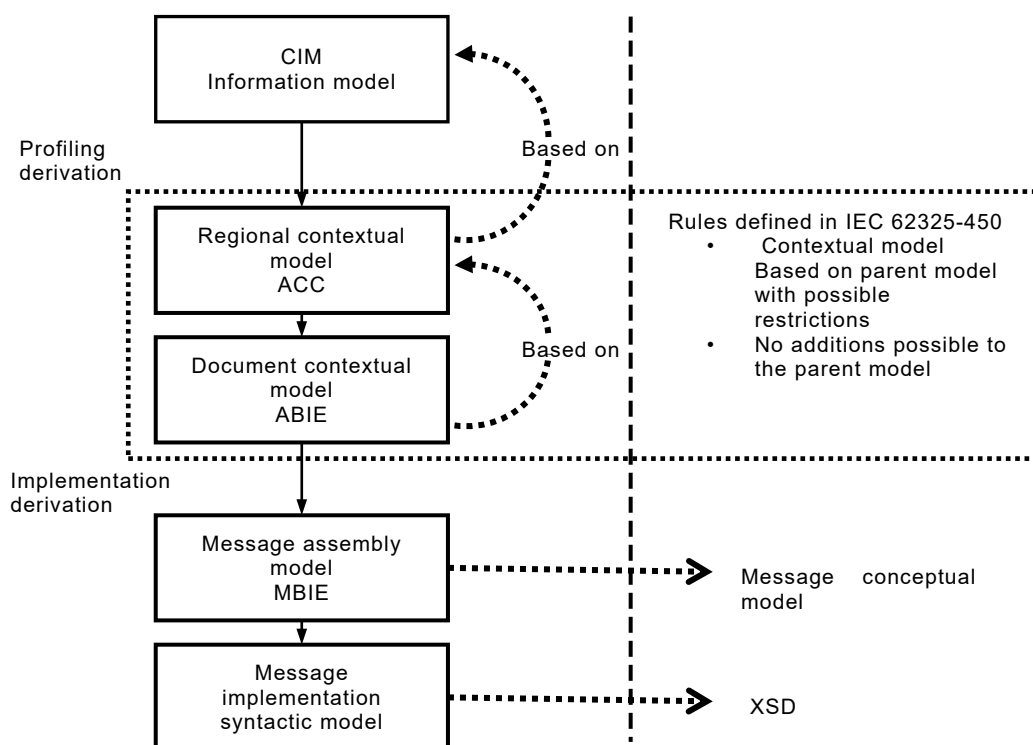
3.11**profile**

basic outline of all the information that is required to satisfy a specific environment

[SOURCE: IEC 62325-450:2013, 3.7]

Document contextual model and message assembly model basic concepts**4.1 Overview**

The part IEC 62325-450 defines a set of CIM profiles that follows a layered modelling framework as outlined in Figure 1 going from the common information model (CIM), to different regional contextual models and their subsequent contextualized documents for information exchange; the final step being the message specifications for information interchange.



IEC

Figure 1 – IEC 62325-450 modelling framework

The regional contextual models are the basic components that are necessary to build electronic documents for information interchange. The European style market contextual model (IEC 62325-351) is, as an example, a regional contextual model based on IEC 62325-301. The components are also termed aggregate core components (ACCs).

A document contextual model is based upon a specific business requirements specification and is constructed from the contextualisation of the ACCs that can be found in the European style market contextual model. The contextualised ACCs at this stage are termed aggregate business information entities (ABIEs). These ABIEs are the constructs that are assembled together into a specific electronic document to satisfy the information requirements outlined in the business requirements specification. The transformation from an ACC to an ABIE shall respect the rules defined in IEC 62325-450.

Once a document contextual model has been built that satisfactorily meets the business requirements, a message assembly model can be automatically generated from it. The automatic generation respects the rules defined in IEC 62361-100.

XML schema then may be automatically generated from the message assembly model. If necessary specific mapping can take place at this stage to transform the CIM class and attribute names into more market resilient names.

4.2 European style market package structure (ESMP)

The main package structure of the European style market profile is described in Figure 2.

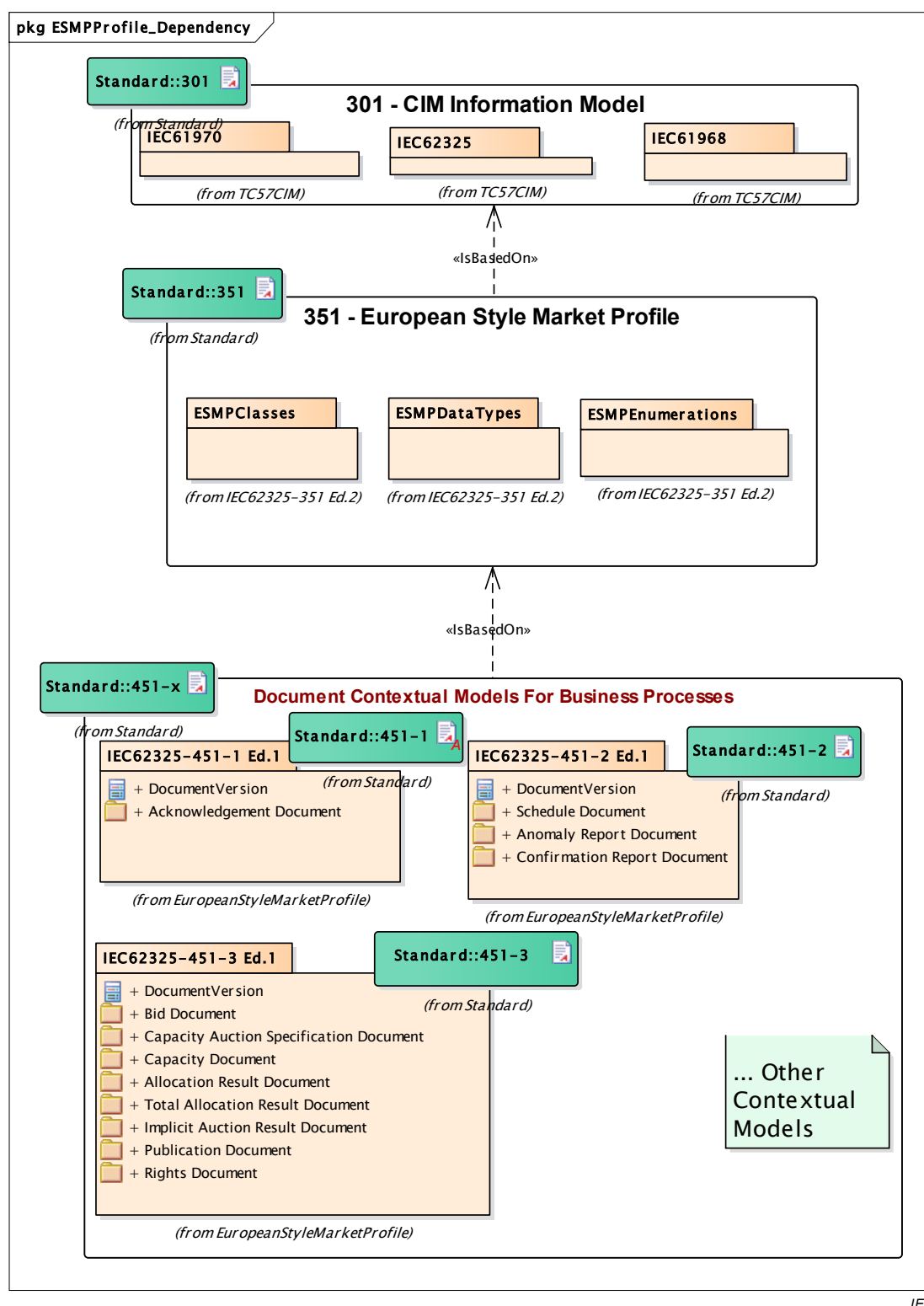


Figure 2 – Overview of European style market profile dependency

For each business process, a business process package is described in an IEC 62325-451-x standard. A business process package contains:

- the document contextual model (ABIE) and the automatically generated message assembly model (MBIE) for each electronic document required to enable the completion of the business process. Each document is a sub contextual model derived by restriction from the European style market profile;

- the XML schema of the business document that is automatically generated from the message assembly model.

The European style market profile (ESMP), as defined in the IEC 62325-351, provides the core components permitted for use in an IEC 62325-451-x standard. All ABIEs shall be “based on” the IEC 62325-351 core components:

- ESMPClasses: defining all the semi-contextual classes of the European style market profile derived by restriction from the CIM information model;
- ESMPDataTypes: defining all the core Datatypes used within the ESMP classes.

All the core components that are used in every electronic document structure have been harmonized and centralized in the European style market profile. These core components are consequently the basic building blocks from which all electronic document ABIEs are derived.

4.3 From the European style market profile to the document contextual model

The document contextual model for a given business process is constructed by an information analyst who identifies all the information requirements necessary to satisfy the business process.

Once the information requirements have been identified, the information analyst identifies the related ACCs that are available in the European style market profile and contextualises them to meet the information requirements. This contextualisation step creates a set of aggregate business Information entities (ABIEs).

In a final step the information analyst assembles together into a specific document contextual model package the ABIEs to form a document model satisfying the business requirements.

4.4 From the document contextual model to the message assembly model

Once the document contextual model has been finalised, the message assembly model may be automatically generated.

All document contextual models share the same core components and core datatypes. These are defined in the European style market profile (IEC 62325-351) and are contextualised and refined in all document contextual models (IEC 62325-451-x series) respecting the rules as described in IEC 62325-450.

4.5 From the assembly model to the XML schema

The final modelling step applies a standardized set of criteria in order to generate a uniform XML schema from the assembly model. This transformation process respects the rules defined in IEC 62361-100.

The market information publication business process

5.1 General

The market information publication (transparency) business process enables all the relevant information concerning the electricity markets to be made available in a transparent and coherent fashion.

The availability of such information is vital for market participants to take efficient production, consumption and trading decisions.

Deeper market integration and the rapid development of intermittent renewable energy generation sources such as wind and solar require the disclosure of complete, timely

287 available, high quality and easily digestible information relating to supply and demand
288 fundamentals (EU Commission Regulation No. 543/2013).

289 Thus, the documents described in this part of IEC 62325 enable the publication of the market
290 consumption and production information along with the identification of structural
291 unavailabilities in the power system network that may impact the normal availability of energy.

292 **5.2 The market information aggregator role**

293 As concerns the European style market profile, a market information aggregator may be
294 defined as follows:

- 295 • “This is a party that is responsible for the assembling of collected information (integration,
296 processing and storage) and their publishing (formatting and presentation) to a market
297 information receiver”.

298 The role market information aggregator is tied to the role “data provider” which is to say:

- 299 • “This may either be a transmission system operator or a third party acting as a data
300 provider. The data provider is not necessarily the primary owner of information but it is the
301 entity that submits information to the market information aggregator”.

302 **5.3 Market information publication business process**

303 Figure 3 provides the overview of the business process. This incorporates the information that
304 a market information aggregator has to provide to an information receiver; this may be done in
305 the context of a transparency platform, i.e. an IT system allowing to publish the market data.

306 The use cases that outline the market information publication process make use of several
307 different generic electronic document structures to provide the information to the market
308 information aggregator. The electronic document structures themselves are detailed later in
309 this document.

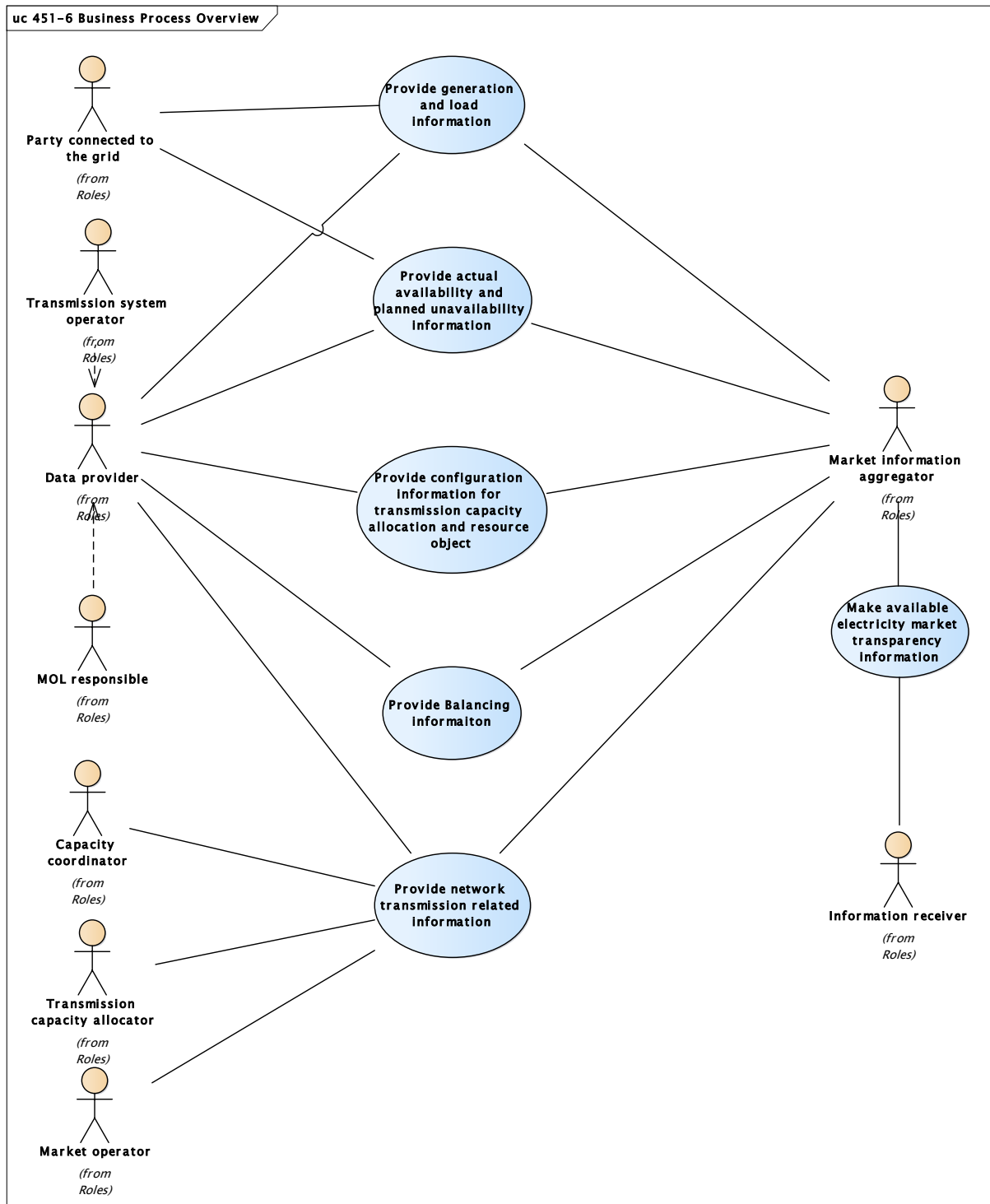


Figure 3 – Market information publication process overview

5.4 The use cases

5.4.1 General overview

As indicated in Figure 3, the basic information requirements are for the transmission of the relevant information assembled together by a data provider to a market information aggregator.

The data provider may englobe several different market roles. In certain contexts, the data provider may delegate this information to specific roles that may provide information directly

to the market information aggregator. For example as shown in Figure 3 the roles of capacity coordinator, transmission capacity allocator or market operator may directly send information to the market information aggregator.

The market information aggregator has the task of assembling the information together and of harmonising its content (for example ensuring the the information is provided with the same measurement granularity). Once the information has been assembled together and harmonised the market information aggregator publishes it, for instance, on a transparency platform whose access is publically available.

5.4.2 Provide configuration information for transmission capacity allocation and resource object

The provision of configuration information for transmission capacity allocation and assets is used to provide transmission capacity allocation and resource object configuration information.

The configuration of transmission capacity allocation describes the parties that will issue the data at the various steps of auctions, i.e. offered capacity, already allocated capacity, etc.”

The configuration of resource object includes:

e) Production unit configuration information and may include generation unit configuration information. The management of a generation unit is handled through the production unit. Consequently if there is an addition of a generation unit or change to a generation unit this requires that the change is carried out as a change of the production unit.

f) Provide transmission asset configuration information.

g) Provide consumption unit configuration information.

This basic configuration is required in order to ensure the validation and coherence of the information that is transmitted by the data providers for publication. The configuration information may evolve over time and consequently modifications or deactivations will have to be provided.

5.4.3 Provide generation and load information

The generation and load information is provided depending on the granularity required for the production and consumption units that have to be reported. It covers both realised and forecast information.

5.4.4 Provide actual availability and planned unavailability information

The provision of unavailability (outages and forced outages) information is relatively straightforward and covers basically the provision of planned unavailability information and the provision of changes in actual availability.

5.4.5 Provide balancing information

The provision of balancing information covers the information requirements within a given time interval for such things as contractual reserves, accepted offers, activated balancing energy, imbalance volumes and prices etc.

5.4.6 Provide network transmission related information

The provision of network transmission information covers the information requirements for the network evolution of critical network elements, capacity information, explicit and implicit auctions, and nomination information as well as congestion management measures.

5.5 Sequence diagram

The sequence diagram in Figure 4 presents the information flows that are exchanged between the different actors that intervene in the transparency process.

The information flows outlined in the sequence diagram are used to transmit all the information necessary in order to ensure the market information publication.

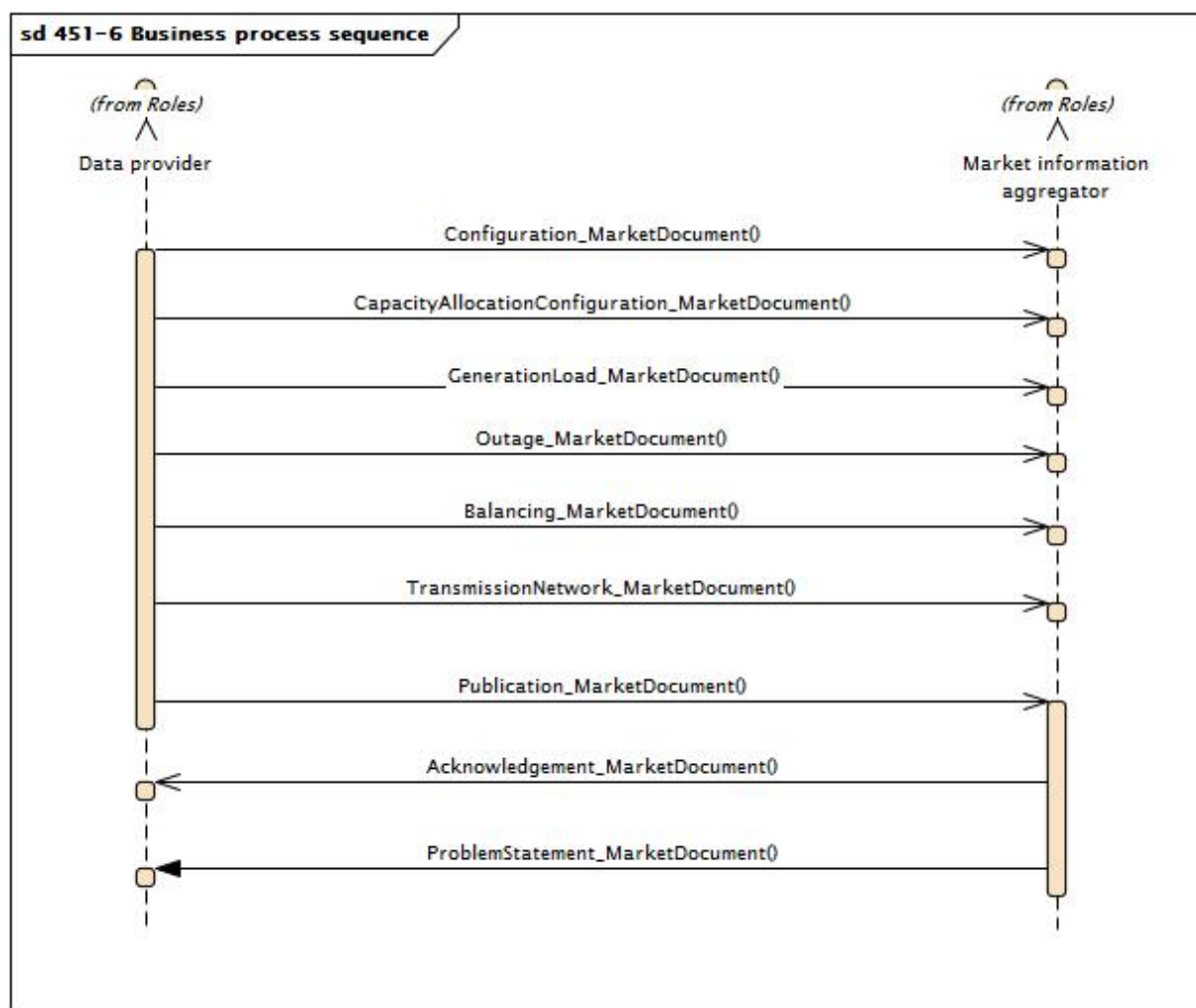


Figure 4 – Sequence diagram of the information flows

5.6 Electronic documents used.

5.6.1 Configuration_MarketDocument

The Configuration_MarketDocument enables the initialisation and update of basic configuration data for resource object. It is required to ensure the validity of the market information that is submitted by the other electronic documents. The information provided essentially concerns:

- Production unit information
- Transmission asset information
- Consumption unit information

The document may also be used to update any information initially provided as changes or evolutions occur. It may also be used to ensure the synchronisation of the data between the transparency platform and the data providers.

5.6.2 CapacityAllocationConfiguration_MarketDocument

The CapacityAllocationConfiguration_MarketDocument enables the initialisation and update of the actors that will provided the various sets of information at the various stages of the auction process (e.g. offered capacity, already allocated capacity).

The document may also be used to update any information initially provided as changes or evolutions occur.

5.6.3 GenerationLoad_MarketDocument

The GenerationLoad_MarketDocument enables the transmission of generation and load information on a regular basis. The frequency of the transmission of this information depends on the market requirements where the platform is implemented. The periodicity may be yearly, monthly, weekly, daily or hourly as necessary.

The information transmitted may be actual generation and load, planned generation and load or forecast generation and load depending on market requirements.

5.6.4 Outage_MarketDocument

The unavailability process basically follows two different periodicities; a regular periodicity for the provision of the planned unavailability and an event based periodicity for the provision of changes in actual availability.

The unavailability process covers all the significant resources within the energy grid that may impact the quantity of energy that can be produced or consumed.

5.6.5 Balancing_MarketDocument

The balancing transparency process can be basically divided into five groups of information requirements:

- Balancing procurement requirements
- Accepted offers
- Reserve activation
- Imbalance
- Situation and financial settlement

The process covers all the operations necessary to ensure that the bulk power system is always in balance.

5.6.6 TransmissionNetwork_MarketDocument

The TransmissionNetwork_MarketDocument enables the information concerning the transmission network to be provided to the transparency platform. The information provided concerns:

- Network evolution
- Redispatch measures
- Counter trade measures
- Congestion management costs
- Implicit transmission allocations on third countries borders

The process covers all the information concerning the above mentioned areas and the reporting frequency necessary to ensure transparency.

5.6.7 Publication_MarketDocument

The Publication_MarketDocument is a generic document that is defined in IEC 62325-451-3. It is used in the case of the transmission to the transparency platform to provide transmission capacity and auction information concerning the electricity market. The sort of information in this respect that it can provide is as follows:

- Forecasted transmission capacity
- Offered transmission capacity
- DC link capacity restrictions
- Explicit transmission capacity auction information
- Already allocated transmission capacity
- Day ahead prices
- Net bidding zone positions
- Total nominated transmission capacity
- Aggregated day ahead schedule information
- Physical flows
- Internal market and external allocations

5.7 Generic business rules for documents

5.7.1 General

All the business rules described in IEC 62325-351 are also valid for this part of IEC 62325. Additional rules are provided hereafter.

When a document is received, it shall be checked at the application level to ensure that there are no faults in it that could prevent its normal processing. After this check, an acknowledgement document, as defined in IEC 62325-451-1, shall be generated either accepting in its entirety the document in question or rejecting it with the reasons for the rejection.

5.7.2 Document instance implementation

The XML documents described in this part of IEC 62325 are to be used for the upload of information to a transparency platform managed by the information market aggregator; they may also be used for the download of information to market participants in order to enable automatic processing of the information within their systems.

Consequently attributes that describe basic configuration information (such as name, voltage level, etc.) have been included in the XML documents as optional attributes that may be used only in the case where information is provided to an information receiver. This information shall not be used in the case where information is uploaded to the market information aggregator.

The implementation of a data exchange shall be based upon dependency tables that are constructed as outlines in Table 1. In the case of the European market such tables are used to describe the different conditions in which all the optional attributes (i.e. the attributes that have a multiplicity of [0..1]) within a document structure are used.

Table 1 contains in the left hand column the mandatory coded attributes as well as the optional attributes. The top row provides the context where the contexts in which the use of the model is intended (e.g. installed production capacity aggregated per production type, day-ahead aggregated generation, transmission assets).

Within each context row the possible values for the mandatory coded attributes are provided and an indication if the optional attributes are to be used (used, not used, used for upload only, etc.).

Table 1 – Dependency table outline for the market information publication processes

Information model attribute	Usage context 1	Usage context 2	Usage context 3	Usage context n
type (Document)	Type code value 1	Type code value 2	Type code value 3	Type code value n
process.processType	Type code value	Type code value	Type code value	Type code value
businessType (TimeSeries)	Type code value	Type code value	Type code value	Type code value
Attribute value 1	Usage indication	Usage indication	Usage indication	Usage indication
Attribute value n	Usage indication	Usage indication	Usage indication	Usage indication

Table 2 provides a partial example of dependency table for the transmission network market document.

Table 2 – Informative example of dependency table for the TransmissionNetwork_MarketDocument

Information model attribute	Article 9.1 Transmission infrastructure	Article 13 (a) Redispatch	Article 13 (b) Countertrading	Article 13 (c) Congestion costs
type (Document)	Interconnector network expansion	Redispatch notice	Counter trade notice	Congestion costs
process.processType	Network information	Realised	Realised	Realised
businessType (TimeSeries)	Interconnector network evolution Interconnector network dismanteling	System operator redispatching Internal redispatch	Counter trade	Congestion costs Counter trade System operator redispatch
in_Domain.mRid	used	used	used	in_Domain same as out_Domain
out_Domain.mRID	used	used	used	out_Domain same as in_Domain
measurement_Unit.name	MAW	MAW	MAW	not used
currency_Unit.name	not used	not used	not used	used
mktPSRType.psrType	not used	used	not used	not used
curveType	used	used	used	used
end_Date.date	used	not used	not used	not used
flowDirection	not used	used	used	not used
etc.				

Such tables are to be provided in dedicated implementation guides for each relevant information to be delivered.

5.7.3 Rules governing the GenerationLoad_MarketDocument

5.7.3.1 Retransmission of historical information

Information for a given period in time (e.g. a day) may, depending of the nature of the information, be sent via several distinct transmissions (e.g. a document for each day of the

day). For example a separate electronic document could be sent every hour containing a quantity for the hour in question. Such documents will each have a distinct identification and version. The version could change in this case to correct the hour's quantity.

It may be necessary to retransmit at the end of the period the complete set of historical information. This is carried out through the creation of a new document covering the complete period (e.g. all the hours in the day) that includes all the quantities that have been previously sent with any corrections that are necessary.

Every document version has a creation date and time that could be effectively used as the document timestamp since a new version of a document cancels and replaces the previous version of the document.

5.7.3.2 Missing information

If for a given period there is missing information then the use of gaps as defined in Subclause 4.5.6 of IEC 62325-351:2013 shall be applied. A gap is identified through the use of two periods, where the end of the first period does not coincide with the start of the second period. The difference between the two periods represents a gap where data is missing.

5.7.3.3 Absence of time series in a document

An electronic document under certain circumstances may contain no time series. This signifies that in a download condition none of the requested information was available.

In a submission scenario it may be used to meet a submission deadline although no information is available.

5.7.3.4 Rules governing the TimeSeries class

If the information contained in a previously transmit time series is to be cancelled then a new version of the original document shall be sent with the time series in question completed with the information from the previous transmission in addition to the attribute cancelledTS being put to "cancelled". All the Periods below the time series shall be removed.

5.7.4 Rules governing the Outage_MarketDocument

5.7.4.1 The transmission of unavailability information

Each unavailability (planned maintenance or forced unavailability) should be transmitted in a single document with the identification of the document being used as the identification of the unavailability in question.

An Outage_MarketDocument may be revised through the use of the revisionNumber attribute, i.e. a new version. The latest version of the document provides the current state of the unavailability.

5.7.4.2 Status information

An Outage_MarketDocument when transmitted may have two states, it is by default always active or it has the status of cancelled or withdrawn.

A cancellation are foreseen where a planned unavailability will not take place,

A withdrawal is foreseen where there has been an error in the transmission of the information (in this case, a reason should be given).

518 An unavailability is deemed terminated when its end date is past. If the end date approaches
519 and the unavailability is always in vigor the data provider shall provide an update to the
520 unavailability with a new end date.

521 **5.7.4.3 Rules governing the TimeSeries class**

522 A time series shall exist to describe a specific piece of an unavailability situation. It conveys
523 the data related to the unavailability. For consumption or generation unit unavailability it
524 identifies the available capacity during the event. For transmission asset unavailability it
525 identifies the impact on cross zonal capacity per direction.

526 **5.7.4.4 Rules governing the Series_Period class**

527 There may be several series period classes for a time series per object type (installed,
528 unavailable or wind power feedin). The overall time interval covered by the period shall be
529 within the complete TimeInterval of the series period.

530 The number of periods within a time series as characterized by the resolution must completely
531 cover the period's time interval.

532 **5.7.5 Rules governing the Balancing_MarketDocument**

533 **5.7.5.1 The transmission of balancing information**

534 Each transmission of balancing information should be transmitted in a single document. Any
535 changes necessary to the information transmitted should be adjusted through the use of a
536 new version of the document in question. This is particularly true in the case of the
537 transmission of activated balancing energy, the imbalance volumes and the settlement
538 information.

539 The latest version of a document provides the current state of the information contained in the
540 document.

541 **5.7.5.2 Status information**

542 A balancing document shall have a docStatus class instance in the case where the
543 information provided is final.

544 **5.7.6 Rules governing the TransmissionNetwork_MarketDocument**

545 **5.7.6.1 Status information**

546 Network information when transmitted may have two states; either it is active or it has been
547 cancelled.

548 Two other cases are foreseen:

- 549 • A status of cancelled where the planned network evolution will not take place,
- 550 • A status of withdrawn where there has been an error in the transmission of the information
551 (in this case, a "proper" reason should be given).

552 **5.7.6.2 Rules governing the Time Series class**

553 A time series shall exist to describe a specific piece of a transmission network structure or
554 congestion management information. It conveys the data related to the evolution of a network
555 or provides congestion management measures. It identifies the impact on cross zonal
556 capacity per direction.

5.7.7 Rules governing the Configuration_MarketDocument

5.7.7.1 Management of production unit configuration

The creation of a production unit shall be composed of all dependent generation units.

The creation, modification or deactivation of a generation unit represents a change in the production unit configuration and consequently a modification to the production unit is necessary with all the valid generation units.

5.7.8 Rules governing the CapacityAllocationConfiguration_MarketDocument

5.7.8.1 Submission of document

There shall be two different documents for the submission of explicit and implicit transmission capacity allocation configuration, i.e. it is not allowed to submit these configurations information in a single document.

5.7.8.2 Cancellation of allocation instance

The cancellation of an allocation instance is carried out as an update with the attribute cancelledTS set to "A01" (yes).

5.7.9 Rules governing the ProblemStatement_MarketDocument

The ProblemStatement_MarketDocument is described in IEC 62325-451-5.

This document is used to report troubles to deliver information.

Contextual and assembly models

6.1 GenerationLoad contextual model

6.1.1 Overview of the model

Figure 5 shows the model.

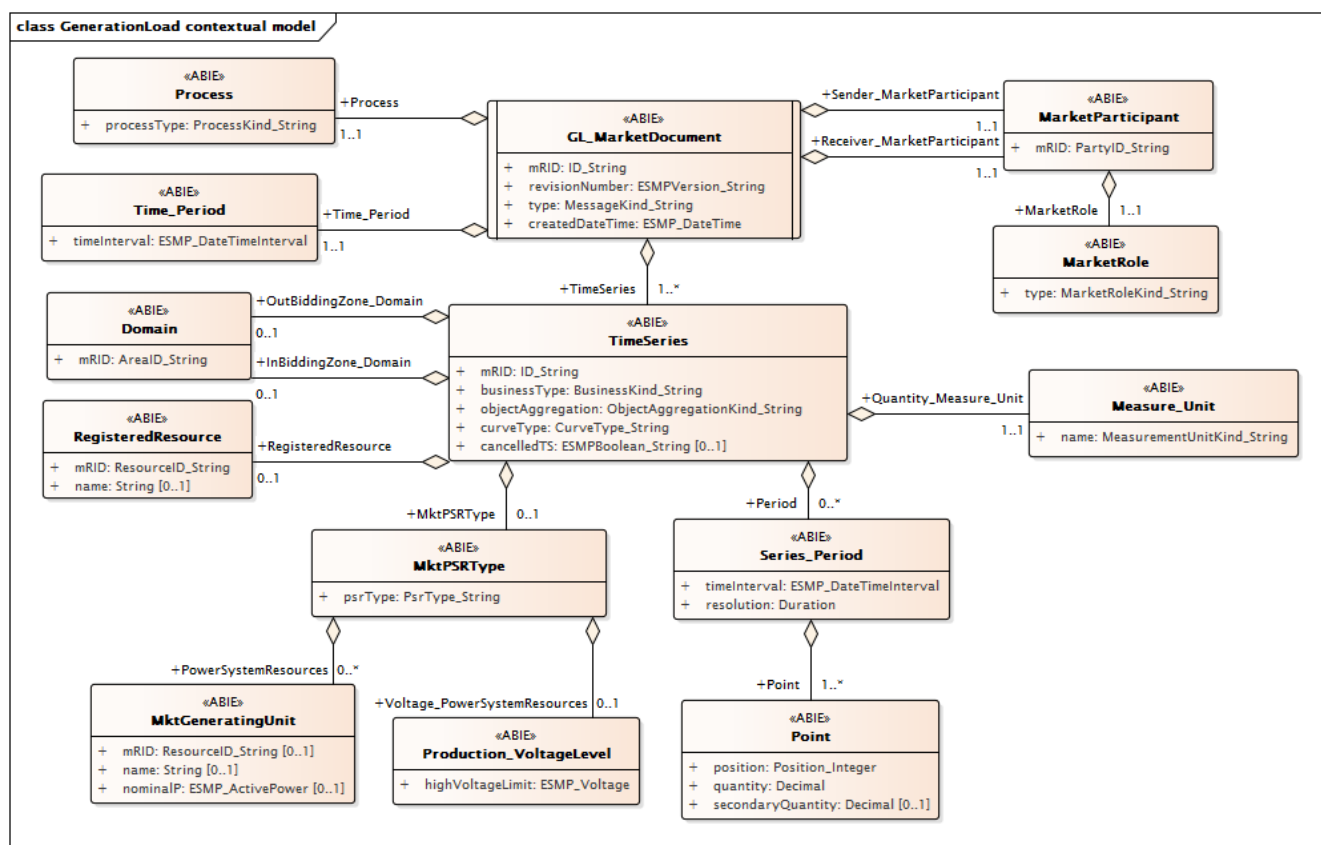


Figure 5 - GenerationLoad contextual model

6.1.2 IsBasedOn relationships from the European style market profile

Table 3 shows the traceability dependency of the classes used in this package towards the upper level.

Table 3 - IsBasedOn dependency

Name	Complete IsBasedOn Path
Domain	TC57CIM::IEC62325::MarketManagement::Domain
GL_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
Measure_Unit	TC57CIM::IEC62325::MarketManagement::Unit
MktGeneratingUnit	TC57CIM::IEC62325::MarketCommon::MktGeneratingUnit
MktPSRType	TC57CIM::IEC62325::MarketManagement::MktPSRType
Point	TC57CIM::IEC62325::MarketManagement::Point
Process	TC57CIM::IEC62325::MarketManagement::Process
Production_VoltageLevel	TC57CIM::IEC61970::Base::Core::VoltageLevel
RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries

6.1.3 Detailed GenerationLoad contextual model

6.1.3.1 GL_MarketDocument root class

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

This electronic document enables the transmission of the following forms of generation and load information for given periods:

- Daily, monthly, weekly and yearly generation and load forecasts
- Yearly forecast margin
- Actual load information
- Actual generation unit information
- Available and installed capacity
- Wind and solar information
- Pumped storage and reservoir capacity

Table 4 shows all attributes of GL_MarketDocument.

Table 4 - Attributes of GenerationLoad contextual model::GL_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.
6	[1..1]	createdDateTime ESMP_DateTime	The date and time of the creation of the document.

Table 5 shows all association ends of GL_MarketDocument with other classes.

Table 5 - Association ends of GenerationLoad contextual model::GL_MarketDocument with other classes

Order	mult.	Class name / Role	Description
3	[1..1]	Process Process	Association Based On: ESMPClasses::MarketDocument.[] ----- ESMPClasses::Process.Process[0..*]
4	[1..1]	MarketParticipant Sender_MarketParticipant	The document owner. Association Based On: ESMPClasses::MarketDocument.[] ----- ESMPClasses::MarketParticipant.MarketParticipant[0..*]
5	[1..1]	MarketParticipant Receiver_MarketParticipant	The document recipient. Association Based On: ESMPClasses::MarketDocument.[] ----- ESMPClasses::MarketParticipant.MarketParticipant[0..*]

Order	mult.	Class name / Role	Description
7	[1..1]	Time_Period Time_Period	The time interval that is associated with an electronic document and which is valid for the whole document. Association Based On: ESMPClasses::MarketDocument.[] ----- ESMPClasses::Time_Period.Period[0..*]
8	[1..*]	TimeSeries TimeSeries	The time series that is associated with an electronic document. Association Based On: ESMPClasses::MarketDocument.[] ----- ESMPClasses::TimeSeries.TimeSeries[0..*]

604

605 **6.1.3.2 Domain**

606 A domain covering a number of related objects, such as market balance area, grid area,
607 borders etc.

608 Table 6 shows all attributes of Domain.

609 **Table 6 - Attributes of GenerationLoad contextual model::Domain**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID AreaID_String	The unique identification of the domain.

610

611 **6.1.3.3 MarketParticipant**

612 The identification of the party participating in energy market business processes.

613 Table 7 shows all attributes of MarketParticipant.

614 **Table 7 - Attributes of GenerationLoad contextual model::MarketParticipant**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID PartyID_String	The identification of a party in the energy market.

615

616 Table 8 shows all association ends of MarketParticipant with other classes.

617 **Table 8 - Association ends of GenerationLoad contextual model::MarketParticipant with**
618 **other classes**

Order	mult.	Class name / Role	Description
1	[1..1]	MarketRole MarketRole	The role associated with a MarketParticipant. Association Based On: ESMPClasses::MarketParticipant.[] ----- ESMPClasses::MarketRole.MarketRole[0..1]

619

6.1.3.4 MarketRole

The identification of the intended behaviour of a market participant played within a given business process.

Table 9 shows all attributes of MarketRole.

Table 9 - Attributes of GenerationLoad contextual model::MarketRole

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	type MarketRoleKind_String	The identification of the role played by a market player.

6.1.3.5 Measure_Unit

A particular quantity, defined and adopted by convention, with which other quantities of the same kind are compared in order to express their magnitudes relative to that quantity.

Table 10 shows all attributes of Measure_Unit.

Table 10 - Attributes of GenerationLoad contextual model::Measure_Unit

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	name MeasurementUnitKind_String	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20).

6.1.3.6 MktGeneratingUnit

The information about a generating unit.

Table 11 shows all attributes of MktGeneratingUnit.

Table 11 - Attributes of GenerationLoad contextual model::MktGeneratingUnit

Order	mult.	Attribute name / Attribute type	Description
0	[0..1]	mRID ResourceID_String	The unique identification of a resource.
1	[0..1]	name String	The name is any free human readable and possibly non unique text naming the object.
2	[0..1]	nominalP ESMP_ActivePower	The nominal power of the generating unit. This represents the installed generation capacity for the generation unit being described.

6.1.3.7 MktPSRType

The type of a power system resource

Table 12 shows all attributes of MktPSRType.

Table 12 - Attributes of GenerationLoad contextual model::MktPSRType

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	psrType PsrType_String	The coded type of a power system resource.

Table 13 shows all association ends of MktPSRType with other classes.

Table 13 - Association ends of GenerationLoad contextual model::MktPSRType with other classes

Order	mult.	Class name / Role	Description
1	[0..1]	Production_VoltageLevel Voltage_PowerSystemResources	The voltage level of the RegisteredResource. Association Based On: ESMPClasses::VoltageLevel.PowerSystemResources[0..1] ----- ESMPClasses::MktPSRType.[]
2	[0..*]	MktGeneratingUnit PowerSystemResources	The generating unit(s) of the production unit identified by the RegisteredResource. Association Based On: ESMPClasses::MktGeneratingUnit.PowerSystemResources[0..*] ----- ESMPClasses::MktPSRType.[]

6.1.3.8 Point

The identification of the values being addressed within a specific interval of time.

Table 14 shows all attributes of Point.

Table 14 - Attributes of GenerationLoad contextual model::Point

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	position Position_Integer	A sequential value representing the relative position within a given time interval.
1	[1..1]	quantity Decimal	The principal quantity identified for a point. --- This information defines the quantity of the load or generation that is taken from or put into the area for the position within the interval period.
2	[0..1]	secondaryQuantity Decimal	The secondary quantity identified for a point. --- This quantity corresponds to the value for the previous year that is taken from or put into the area for the position within the interval period.

6.1.3.9 Process

The formal identification of the business process in which a flow of information is exchanged.

Table 15 shows all attributes of Process.

Table 15 - Attributes of GenerationLoad contextual model::Process

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	processType ProcessKind_String	The identification of the nature of process that the document addresses. The identified processes are year ahead, month ahead, week ahead, day ahead and realised.

6.1.3.10 Production_VoltageLevel

For a production unit or a generating unit, the high voltage level at the network side.

For other network equipment the voltage level.

Table 16 shows all attributes of Production_VoltageLevel.

Table 16 - Attributes of GenerationLoad contextual model::Production_VoltageLevel

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	highVoltageLimit ESMP_Voltage	The bus bar's high voltage limit

6.1.3.11 RegisteredResource

A resource that is registered with a recognized registration authority. Examples include generating unit, customer meter, and a non-physical generator or load.

Table 17 shows all attributes of RegisteredResource.

Table 17 - Attributes of GenerationLoad contextual model::RegisteredResource

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ResourceID_String	The unique identification of a resource.
1	[0..1]	name String	The name is any free human readable and possibly non unique text naming the object. The name of the production unit for which the generation information is provided.

6.1.3.12 Series_Period

The identification of the period of time corresponding to a given time interval and resolution.

Table 18 shows all attributes of Series_Period.

Table 18 - Attributes of GenerationLoad contextual model::Series_Period

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	timeInterval ESMP_DateTimeInterval	The start and end time of the period.
1	[1..1]	resolution Duration	The definition of the number of units of time that compose an individual step within a period.

Table 19 shows all association ends of Series_Period with other classes.

Table 19 - Association ends of GenerationLoad contextual model::Series_Period with other classes

Order	mult.	Class name / Role	Description
2	[1..*]	Point Point	The Point information associated with a given Series_Period.within a TimeSeries. Association Based On: ESMPClasses::Series_Period.[] ----- ESMPClasses::Point.Point[1..*]

6.1.3.13 Time_Period

The identification of a time interval.

Table 20 shows all attributes of Time_Period.

Table 20 - Attributes of GenerationLoad contextual model::Time_Period

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	timeInterval ESMP_DateTimeInterval	The start and end date and time for a given interval. As a convention for these data exchanges: - a week starts on a Monday and ends on a Sunday; - a week is assigned to a month if the Monday of the week in question is included in the month that the data is intended to cover.

6.1.3.14 TimeSeries

A set of time-ordered quantities being exchanged in relation to a product.

Table 21 shows all attributes of TimeSeries.

Table 21 - Attributes of GenerationLoad contextual model::TimeSeries

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ID_String	A unique identification of the time series.
1	[1..1]	businessType BusinessKind_String	The identification of the nature of the time series.

Order	mult.	Attribute name / Attribute type	Description
2	[1..1]	objectAggregation ObjectAggregationKind_String	The identification of the domain that is the common denominator used to aggregate a time series. The identified object aggregations are: - area; - resource object; - resource type.
7	[1..1]	curveType CurveType_String	The identification of the coded representation of the type of curve being described.
8	[0..1]	cancelledTS ESMPBoolean_String	An indicator stating that the TimeSeries, identified by the mRID, is cancelled as well as all the values sent in a previous version of the TimeSeries in a previous document. When this indicator has a Yes value, the meaning is that the data for the time series has been withdrawn. This differentiates between a time series with no values and one with values that have been revoked.

686

687 Table 22 shows all association ends of TimeSeries with other classes.

688 **Table 22 - Association ends of GenerationLoad contextual model::TimeSeries with other**
689 **classes**

Order	mult.	Class name / Role	Description
3	[0..1]	Domain InBiddingZone_Domain	The identification of the bidding zone where energy is going associated with a TimeSeries. Association Based On: ESMPClasses::TimeSeries.[] ----- ESMPClasses::Domain.Domain[0..*]
4	[0..1]	Domain OutBiddingZone_Domain	The identification of the bidding zone where energy is taken from associated with a TimeSeries. In the case of generation, this indicates the load used by the generation unit (consumption). Association Based On: ESMPClasses::TimeSeries.[] ----- ESMPClasses::Domain.Domain[0..*]
5	[0..1]	RegisteredResource RegisteredResource	The identification of a resource associated with a time series. Association Based On: ESMPClasses::RegisteredResource.RegisteredResource[0..*] ----- ESMPClasses::TimeSeries.[]
6	[1..1]	Measure_Unit Quantity_Measure_Unit	The unit of measure associated with the quantities in the Point class (quantity and secondaryQuantity). Association Based On: ESMPClasses::TimeSeries.[] ----- ESMPClasses::Measure_Unit.Measurement_Unit[0..*]
9	[0..1]	MktPSRType MktPSRType	The identification of the type of the RegisteredResource associated with a TimeSeries. Association Based On: ESMPClasses::TimeSeries.[] ----- ESMPClasses::MktPSRType.MktPSRType[0..*]
10	[0..*]	Series_Period Period	The time interval and resolution for a period associated with a TimeSeries Association Based On: ESMPClasses::TimeSeries.[] ----- ESMPClasses::Series_Period.Period[0..*]

690

691 **6.2 GenerationLoad assembly model**

692 **6.2.1.1 Overview of the model**

693 Figure 6 shows the model.