

DIN IEC 62325-451-3

ICS 35.240.60; 35.240.50

Einsprüche bis 2013-10-12

Entwurf

**Kommunikation im Energiemarkt –
Teil 451-3: Geschäftsprozess für die Übertragungskapazitäts-Zuteilung
(explizite oder implizite Auktion) und kontextbezogene Modelle für den
europäischen Markt
(IEC 57/1314/CD:2013), Text in Englisch**

Framework for energy market communications –
Part 451-3: Transmission capacity allocation business process (explicit or implicit auction)
and contextual models for European market
(IEC 57/1314/CD:2013), Text in English

Anwendungswarnvermerk

Dieser Norm-Entwurf mit Erscheinungsdatum 2013-08-12 wird der Öffentlichkeit zur Prüfung und
Stellungnahme vorgelegt.

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

Stellungnahmen werden erbeten

- vorzugsweise online im Norm-Entwurfs-Portal des DIN unter www.entwuerfe.din.de bzw. für Norm-Entwürfe der DKE auch im Norm-Entwurfs-Portal der DKE unter www.entwuerfe.normenbibliothek.de, sofern dort wiedergegeben;
- oder als Datei per E-Mail an dke@din.de möglichst in Form einer Tabelle. Die Vorlage dieser Tabelle kann im Internet unter www.din.de/stellungnahme oder für Stellungnahmen zu Norm-Entwürfen der DKE unter www.dke.de/stellungnahme abgerufen werden;
- oder in Papierform an die DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik im DIN und VDE (Hausanschrift: Stresemannallee 15, 60596 Frankfurt am Main).

Die Empfänger dieses Norm-Entwurfs werden gebeten, mit ihren Kommentaren jegliche relevanten
Patentrechte, die sie kennen, mitzuteilen und unterstützende Dokumentationen zur Verfügung zu stellen.

Gesamtumfang 247 Seiten

DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik im DIN und VDE

Nationales Vorwort

Die Englische Originalfassung des internationalen Dokuments IEC 57/1314/CD:2013 „Framework for energy market communications – Part 451-3: Transmission capacity allocation business process (explicit or implicit auction) and contextual models for European market“ (CD, en: Committee Draft) ist unverändert in diesen Norm-Entwurf übernommen worden.

Das internationale Dokument wurde vom TC 57 „Power systems management and associated information exchange“ der Internationalen Elektrotechnischen Kommission (IEC) erarbeitet und den nationalen Komitees zur Stellungnahme vorgelegt.

Die 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. Dokumente, die bei CENELEC als Europäische Norm angenommen und ratifiziert werden, sind unverändert als Deutsche Normen zu übernehmen.

Da der Abstimmungszeitraum für einen FDIS bzw. Schluss-Entwurf prEN nur 2 Monate beträgt, und dann keine sachlichen Stellungnahmen mehr abgegeben werden können, sondern nur noch eine „JA/NEIN“-Entscheidung möglich ist, wobei eine „NEIN“-Entscheidung fundiert begründet werden muss, wird bereits der CD als DIN-Norm-Entwurf veröffentlicht, um die Stellungnahmen aus der Öffentlichkeit frühzeitig berücksichtigen zu können.

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

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

Für den Fall einer datierten Verweisung im normativen Text bezieht sich die Verweisung immer auf die in Bezug genommene Ausgabe der Norm.

Der Zusammenhang der zitierten Normen mit den entsprechenden Deutschen Normen 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 die vorliegenden Normentwurf erfüllt.

Da sich die Benutzer des vorliegenden Normentwurfs der englischen Sprache als Fachsprache bedienen, wird die Englische Fassung der IEC 62325-451-3 veröffentlicht. Zu deren Abschnitt 3, der die Begriffe festlegt, wurde eine Übersetzung angefertigt und als informativer Nationaler Anhang NA des vorliegenden Normentwurfs hinzugefügt. Für viele 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.

Nationaler Anhang NA (informativ)

3 Begriffe

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

ANMERKUNG Siehe Internationales Elektrotechnisches Wörterbuch, IEC 60050, für allgemeine Glossardefinitionen.

3.1

bereits vergebene Kapazität

AAC

(en: **already allocated capacity**)

Gesamtmenge der vergebenen Übertragungskapazitätsrechte, unbeachtet, ob es sich abhängig vom Vergabeverfahren um Kapazitäts- oder Austauschprogramme handelt

3.2

aggregierte Geschäfts-Informationseinheit

ABIE

(en: **aggregate business information entity**)

Wiederverwendung einer aggregierten Kernkomponente (ACC) in einem festgelegten Geschäftsbereich

[QUELLE: ISO 15000-5]

3.3

aggregierte Kernkomponente

ACC

(en: **aggregate core component**)

Sammlung aufeinander bezogener Stücke von Geschäftsinformationen, welche zusammen eine bestimmte Geschäftsbedeutung tragen, unabhängig von einem bestimmten Geschäftskontext

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

[QUELLE: ISO 15000-5]

3.4

Anwendungsprogramm-Schnittstelle

API

(en: **application program interface**)

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

3.5

Einbindungsmodell

(en: **assembly model**)

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

3.6

verfügbare Übertragungskapazität

ATC

(en: **available transmission capacity**)

Anteil der NTC, welcher nach jeder Phase des Vergabeverfahrens für weitere kommerzielle Aktivitäten verfügbar bleibt

Anmerkung 1 zum Begriff: ATC ist durch folgende Gleichung gegeben: $ATC = NTC - AAC$.

3.7**basierend auf oder IsBasedOn****(en: based on or IsBasedOn)**

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

3.8**Gebot****(en: bid)**

Anforderung einer gegebenen Kapazität zu einem gegebenen Preis, die von einem Kapazitätshändler ausgegeben wird, und einer einzelnen Zeitreihe innerhalb eines Angebotsdokuments entspricht

3.9**Geschäftskontext****(en: business context)**

spezifischer Geschäftszusammenhang, welcher durch die Werte einer Menge von Kontextkategorien festgelegt ist, und es ermöglicht, unterschiedliche Geschäftszusammenhänge eindeutig voneinander zu unterscheiden (UN/CEFACT)

3.10**explizite Auktion****(en: explicit auction)**

Engpassmanagementverfahren, in welchem lediglich die Rechte für Energieübertragungskapazitäten ersteigert werden

3.11**europäischer Marktprofiltyp****ESMP****(en: European style market profile)**

europäischer Marktprofiltyp, das Ziel der vorliegenden Internationalen Norm

3.12**implizite Auktion****(en: implicit auction)**

Engpassmanagementverfahren, in welchem die Übertragungskapazitäten implizit im Energiehandel im Markt inbegriffen sind

3.13**Informationsmodell****(en: information model)**

Repräsentation 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 für den Domänenkontext bereitstellen.

3.14**Marktmanagementsystem****MMS****(en: market management system)**

aus einer Softwareplattform bestehendes Computersystem, welches grundlegende unterstützende Dienste und eine Reihe von Anwendungen bereitstellt, welche die für ein effektives Management des Elektrizitätsmarktes erforderliche Funktionalität bereitstellen

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

3.15

Nachricht-Geschäfts-Informationseinheit MBIE

(en: **message business information entity**)

repräsentiert die Aggregation einer Menge von ABIE, welche eine definierte Reihe von Einbindungsregeln berücksichtigt

3.16

Netzübertragungskapazität NTC

(en: **net transfer capacity**)

größter Austausch zwischen zwei Gebieten, welche mit in beiden Gebieten anwendbaren Sicherheitsnormen vereinbar sind, unter Berücksichtigung der technischen Ungewissheiten unter zukünftigen Netzwerkbedingungen

Anmerkung 1 zum Begriff: $NTC = TTC - TRM$.

3.17

Nominierung

(en: **nomination**)

bindende Erklärung der zu verwendenden Übertragungskapazitätsrechte

3.18

Profil

(en: **profile**)

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

3.19

Übertragungskapazitätsrechte

(en: **transmission capacity rights**)

Rechte zur Verwendung einer bestimmten Menge von Übertragungskapazität an einem Übergang zwischen zwei Marktgebieten mit potentiellen Engpässen

3.20

Übertragungs-Sicherheitsmarge TRM

(en: **transmission reliability margin**)

Sicherheitsmarge, welche Ungewissheiten der verarbeiteten TTC-Werte verkraften kann, die entweder aufgrund unbeabsichtigter Abweichungen physikalischer Flüsse während des Betriebs aufgrund der physikalischen Funktionalität der Last-Frequenz-Steuerung auftreten, oder aufgrund von Notfallaustauschen zwischen Systembetreibern zur Behandlung von unerwarteten nicht ausgeglichenen Situationen in Echtzeit

3.21

Gesamtübertragungskapazität TTC

(en: **total transfer capacity**)

größtes Austauschprogramm zwischen zwei Gebieten, welche mit in jedem System anwendbaren Sicherheitsnormen vereinbar sind, wenn zukünftige Netzwerkbedingungen, Erzeugung und Lastmuster vorab ausreichend bekannt waren

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707

INTRODUCTION

708 This standard is one of the IEC 62325 series which define protocols for deregulated energy
709 market communications.

710 The principal objective of the IEC 62325 series of standards is to produce standards which
711 facilitate the integration of market application software developed independently by different
712 vendors into a market management system, between market management systems and
713 market participant systems. This is accomplished by defining message exchanges to enable
714 these applications or systems access to public data and exchange information independent of
715 how such information is represented internally.

716 The common information model (CIM) specifies the basis for the semantics for this message
717 exchange.

718 The European style market profile is based on different parts of the CIM IEC standard. The
719 CIM is defined through a series of standard, i.e. IEC 62325-301, IEC 61970-301 and IEC
720 61968-11 standards.

721 This document provides for the European style market profile the transmission capacity
722 allocation business process based on either explicit or implicit auction that can be used
723 throughout a European style market. This standard was originally based upon the work of the
724 European Transmission System Operators (ETSO) Task Force EDI (Electronic Data
725 Interchange) and then on the work of the European Network of Transmission System
726 Operators (ENTSO-E) Working Group EDI.

727 ISO (www.iso.org/patents) and IEC (http://www.iec.ch/tctools/patent_decl.htm) maintain on-
728 line data bases of patents relevant to their standards. Users are encouraged to consult the
729 data bases for the most up to date information concerning patents.

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

1 Scope

Based on the European style market profile (IEC 62325 part 351), this particular International Standard specifies a package for the transmission capacity allocation business process through explicit or implicit auctions and the associated document contextual models, assembly models and XML schema for use within European style markets.

The relevant aggregate core components (ACCs) defined in IEC 62325 part 351 have been contextualised into aggregated business information entities (ABIEs) to satisfy the requirements of these business processes. The contextualised ABIEs have been assembled into the relevant document contextual models. Related assembly models and XML schema for the exchange of transmission capacity allocation information between market participants are automatically generated from the assembled document contextual models.

2 Normative references

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

IEC 62325-301, *Framework for energy market communications - Common information model (CIM) extensions for markets*.

IEC 62325-351, *Framework for energy market communications - CIM European market model exchange profile*.

IEC 62325-450, *Profile and context modeling rules*.

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

IEC-62325 Part 451-2, *Framework for energy market communications - Scheduling business process and contextual model for CIM European market*.

IEC 62361-100, *Naming and design rules for CIM profiles to XML schema mapping*.

3 Terms and definitions

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

NOTE Refer to International Electrotechnical Vocabulary, IEC 60050, for general glossary definitions.

3.1

already allocated capacity

AAC

total amount of allocated transmission capacity rights, whether they are capacity or exchange programmes depending on the allocation method.

3.2

aggregate business information entity

ABIE

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

[SOURCE: ISO 15000-5]

- 772 **3.3**
773 **aggregate core component**
774 **ACC**
775 collection of related pieces of business information that together convey a distinct business
776 meaning, independent of any specific business context.
- 777 Note 1 to entry: Expressed in modelling terms, this is the representation of an object class, independent of any
778 specific business context.
- 779 [SOURCE: ISO 15000-5]
- 780 **3.4**
781 **application program interface**
782 **API**
783 the set of public functions provided by an executable application component for use by other
784 executable application components.
- 785 **3.5**
786 **assembly model**
787 model that prepares information in a business context for assembly into electronic documents
788 for data interchange.
- 789 **3.6**
790 **available transmission capacity**
791 **ATC**
792 the part of NTC that remains available, after each phase of the allocation procedure, for
793 further commercial activity.
- 794 Note 1 to entry: ATC is given by the following equation: $ATC = NTC - AAC$.
- 795 **3.7**
796 **based on or IsBasedOn**
797 use of an artefact that has been restricted according to the requirements of a specific
798 business context (IEC 62325 part 450).
- 799 **3.8**
800 **bid**
801 request for a given capacity at a given price made by a capacity trader and corresponding to a
802 single time series within a bid document.
- 803 **3.9**
804 **business context**
805 specific business circumstance as identified by the values of a set of context categories,
806 allowing different business circumstances to be uniquely distinguished (UN/Cefact).
- 807 **3.10**
808 **explicit auctioning**
809 congestion management method in which only the energy transmission capacity rights are
810 auctioned.
- 811 **3.11**
812 **European style market profile**
813 **ESMP**
814 the European style market profile, the object of this International Standard.
- 815 **3.12**
816 **implicit auctioning**
817 congestion management method in which the transmission capacity is included implicitly in
818 the trading of energy in the market.
- 819 **3.13**
820 **information model**
821 representation of concepts, relationships, constraints, rules, and operations to specify data
822 semantics for a chosen domain of discourse.

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

825 **3.14**

826 **market management system**

827 **MMS**

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

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

833 **3.15**

834 **message business information entity**

835 **MBIE**

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

837 **3.16**

838 **net transfer capacity**

839 **NTC**

840 maximum exchange between two areas compatible with security standards applicable in both
841 areas and taking into account the technical uncertainties on future network conditions.

842 Note 1 to entry: $NTC = TTC - TRM$.

843 **3.17**

844 **nomination**

845 firm declaration of the transmission capacity rights to be used.

846 **3.18**

847 **profile**

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

849 **3.19**

850 **transmission capacity rights**

851 rights of usage of a certain amount of transmission capacity in a potentially congested border
852 between market areas.

853 **3.20**

854 **transmission reliability margin**

855 **TRM**

856 security margin that copes with uncertainties on the computed TTC values arising from either
857 unintended deviations of physical flows during operation due to the physical functioning of
858 load-frequency regulation, or emergency exchanges between system operators to cope with
859 unexpected unbalanced situation in real time.

860 **3.21**

861 **total transfer capacity**

862 **TTC**

863 maximum exchange program between two areas compatible with operational security
864 standards applicable at each system if future network conditions, generation and load
865 patterns were perfectly known in advance.

866 **4 Document contextual model and message assembly model basic concepts**

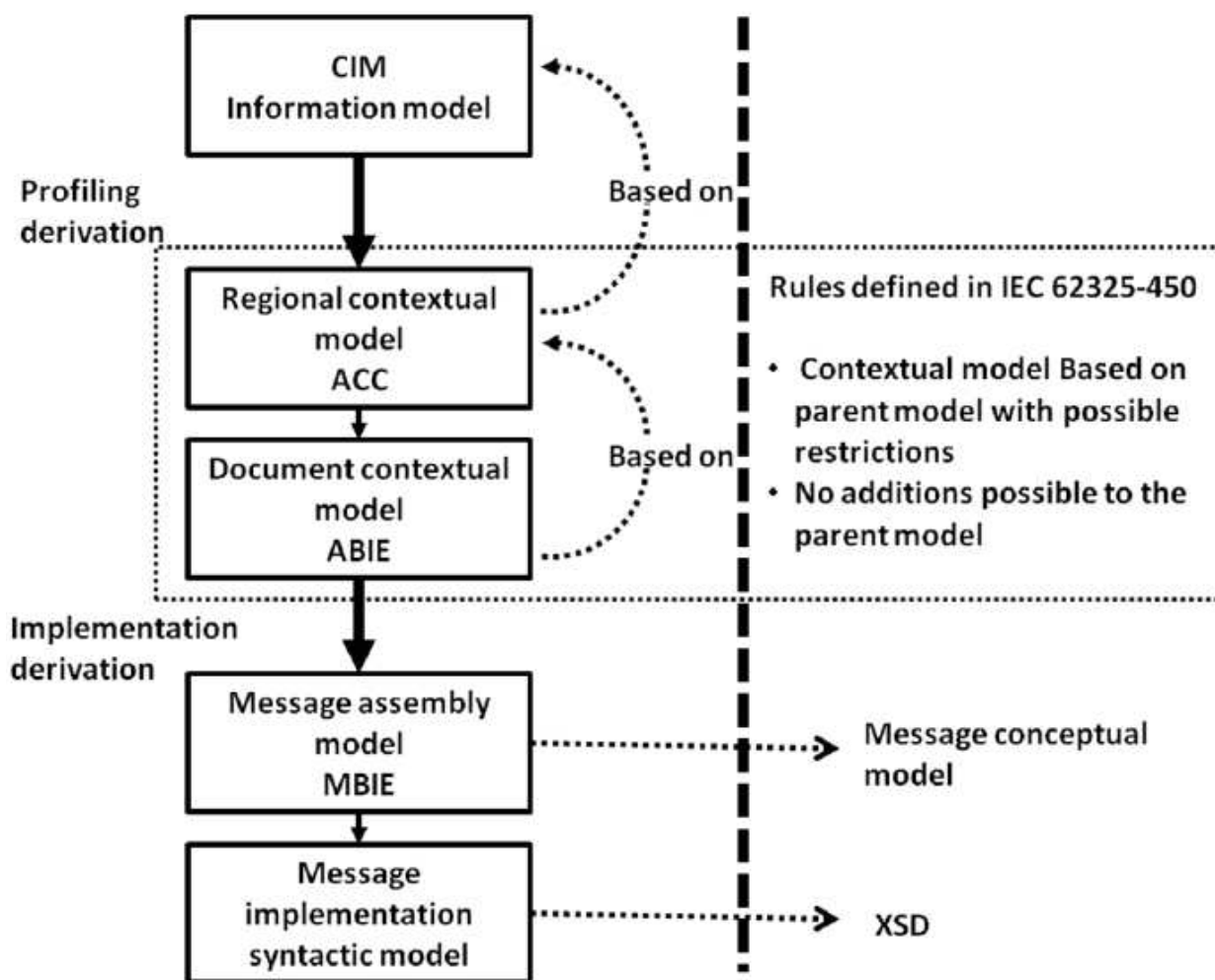
867 **4.1 Overview**

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

872 The regional contextual models are the basic core components that are necessary to build
873 electronic documents for information interchange. This is defined in the European style

874 market contextual model (IEC 62325 part 351). These core components are also termed
875 aggregate core components (ACCs).

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



883
884 **Figure 1 - IEC 62325-450 modelling framework**

885 Once a document contextual model has been built that satisfactorily meets the business
886 requirements, a message assembly model can be automatically generated from it. The
887 automatic generation respects the rules defined in IEC 62325 part 450, Profile and context
888 modeling rules.

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

892 **4.2 European style market package structure**

893 The main package structure described in the European style market profile is provided in
894 Figure 2.

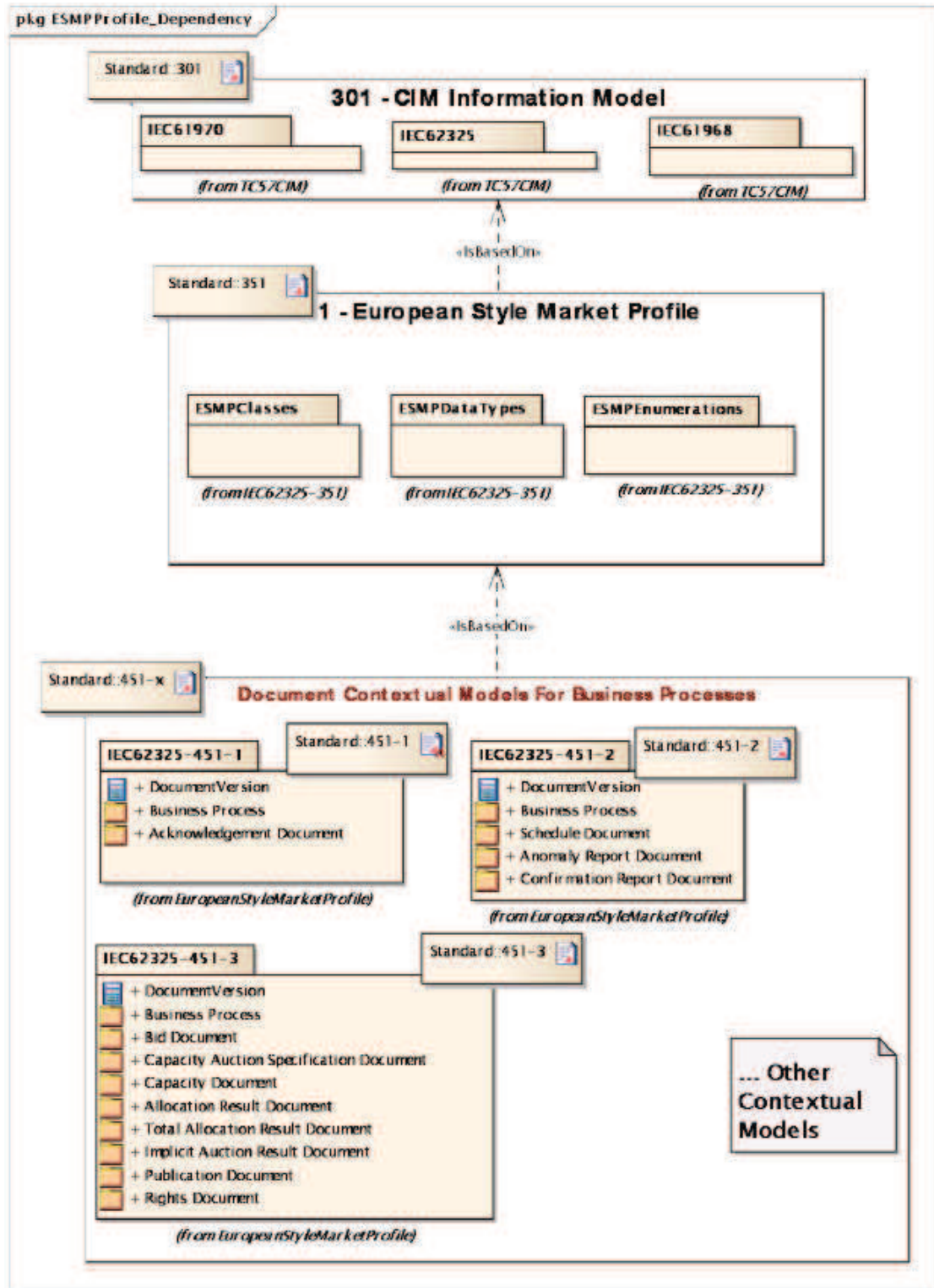


Figure 2 - Overview of European style market profile dependency

For each business process, a business process package is described in an IEC 62325 part 451-i (i from 1 to n) 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.

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

905 The European style market profile (ESMP), as defined in the IEC 62325 part 351, provides the
906 core components permitted for use in an IEC 62325 part 451-n standard as all ABIEs must be
907 “based on” the IEC 62325 part 351 core components:

- 908 • ESMPClasses: Defining all the semi-contextual classes of the European style market
909 profile derived by restriction from the CIM model.

- 910 • ESMPPDataTypes: Defining all the core datatypes used within the ESMP classes.

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

914 **4.3 From the European style market profile to the document contextual model**

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

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

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

924 **4.4 From the document contextual model to the message assembly model**

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

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

931 **4.5 From the assembly model to the XML schema**

932 The final modelling step applies a standardized set of criteria in order to generate a uniform
933 XML schema from the assembly model. This transformation process respects the rules
934 defined in IEC 62361 part 100, “Naming and design rules for CIM profiles to XML schema
935 mapping”.

5 The transmission capacity allocation business process (Non normative)

5.1 Overall business context

The business processes described in this standard are related to the transmission capacity auctions and to the market of transmission capacity rights.

No assumption is made on the way the auction are carried out as well as on the allocation mode or the payment terms.

The auctions can be carried out for products such as:

- Multi-year,
- annual,
- monthly,
- weekly,
- daily
- intraday.

The allocation mode can be one of the following:

- order by price with pro rata,
- first come first served,
- pro rata,
- etc.

And the payment terms may vary from:

- pay as bid,
- pay as cleared,
- no payment terms,
- etc.

There are two different types of transmission capacity auctioning, explicit or implicit auctions. These are outlined in the use case in Figure 3.

The use case “Establish offered capacity” is common to both explicit and implicit auctions and relates to the identification and publication of the offered capacity that can be allocated. The available transmission capacity has initially to be agreed between the system operators. Once the offered capacity is agreed, it is publish with the relevant information that defines the auction, i.e. the transmission capacity auction specification.

The use case “Participate in Explicit auctions” implies the following steps:

- The first step covers the bidding and allocation activity itself. A sub use case of the bidding and allocation activity may be the eventual secondary trade and negotiation of allocated capacity rights between capacity traders or capacity traders and interconnection trade responsible parties. The principle actors are the capacity trader and the transmission capacity allocator.
- The second step concerns nomination, the activity of declaring the long term, daily and intraday capacity rights to be used. This involves the interconnection trade responsible, the nomination validator and the system operator. The nomination validator ensures that all nominations presented are coherent. To carry out this nomination process, the electronic documents defined in IEC 62325-451-2 are to be used.
- The third and final step concerns the validation and final confirmation of all nominations. This step includes cross border matching. The principle actors are the nomination validator and the system operators.

980 The use case “Participate in Implicit auctions” implies the publication of cross border
 981 exchange values with or without prices.

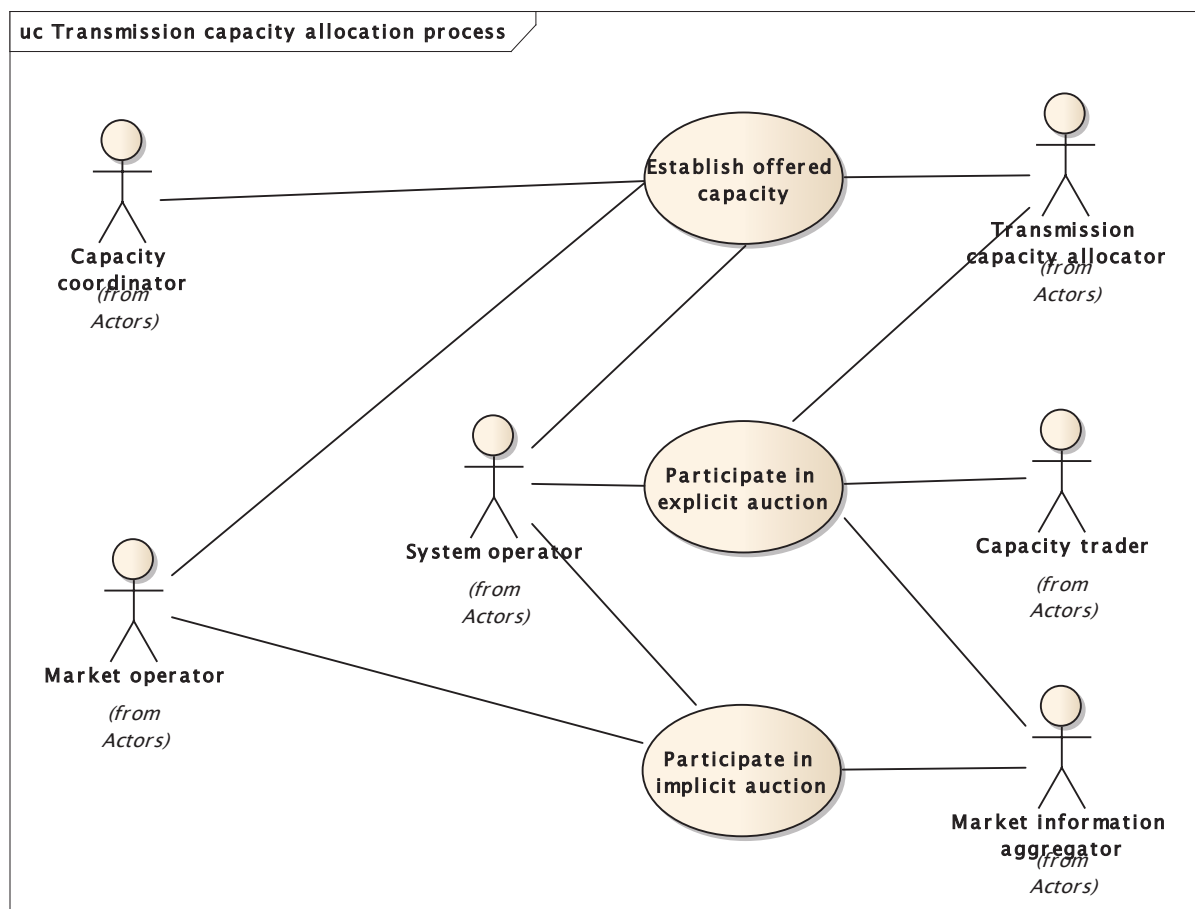


Figure 3 - Use case of the transmission capacity allocation process

5.2 Establish offered capacity process

The process necessary to constitute an auction specification is initiated by the system operators who provide the capacity coordinator with all the information necessary for the establishment of the offered capacity.

This capacity may be increased with additional capacity rights submitted by the capacity traders for resale, for the period being addressed such as resale of annual capacity rights to a monthly auction, etc.

This capacity may be also increased with additional capacity rights not used for nomination, i.e. the annual, monthly, weekly capacity rights that have not been used for the daily nomination, and thus that are released (either as “use it or lose it” or “use it or get paid for it” or “use it or sale it”, etc.) to the daily auction.

The capacity coordinator then determines the initial offered capacity with the information received.

The offered capacity is then sent to the transmission capacity allocator to enable the establishment of the auction specification for the period in question.

Finally, the auction specification is published. A first version of the AuctionSpecification_MarketDocument may be publish with only the identification of the auction and the planned date of the auction. Then a new version of document shall be issued with all the relevant information. It is to be noted that this document may be updated to inform the market participant that the auction is cancelled.

1004 This process is described in Figure 4; the documents exchanged within this process are
1005 indicated.

1006 The establishment of the offered capacity is common to both explicit and implicit auction
1007 process.

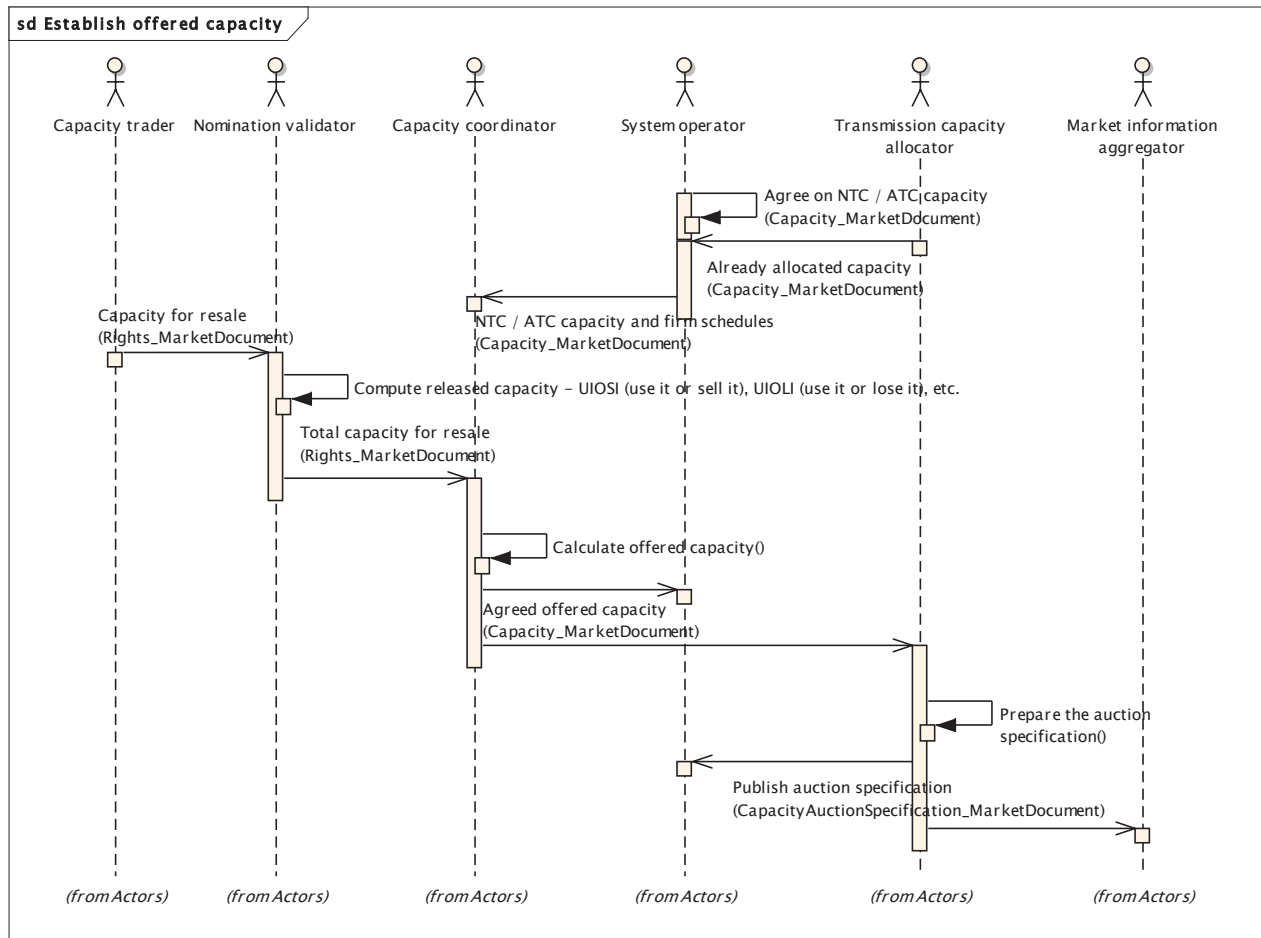


Figure 4 - Establish offered capacity overview

5.3 Explicit auction process

5.3.1 Overview of explicit auction process

The explicit auction process is composed of a number of steps described in the following paragraphs:

- Figure 5 describes the submission of bids, the allocation process of capacity rights and the publication of allocated capacity rights.
- Figure 6 describes the resale of capacity rights and the capacity curtailment process for security reason.
- Figure 7 describes the nomination of capacity rights.

5.3.2 Bid and allocate capacity

The capacity traders submit bids for the transmission rights on a border to the transmission capacity allocator during the bidding period.

During a predefined validation window the transmission capacity allocator will verify the correctness of all bids for the auction in question.

1024 After the bidding phase, the bids in question are allocated transmission rights by the
1025 transmission capacity allocator in compliance with the published auction rules.

1026 5.3.3 Publish auction results

1027 In the final step of the capacity allocation process the transmission capacity allocator
1028 publishes the auction results which include the auction outcome of all bids and resales.

1029 Involved system operators are informed of the allocated and resold capacity being the
1030 outcome of the auction.

1031 Each capacity trader is informed of the outcome of its bid(s) and resales after the bidding
1032 period in compliance with auction rules.

1033 The results may be re-transmitted to market information aggregators for general publication.

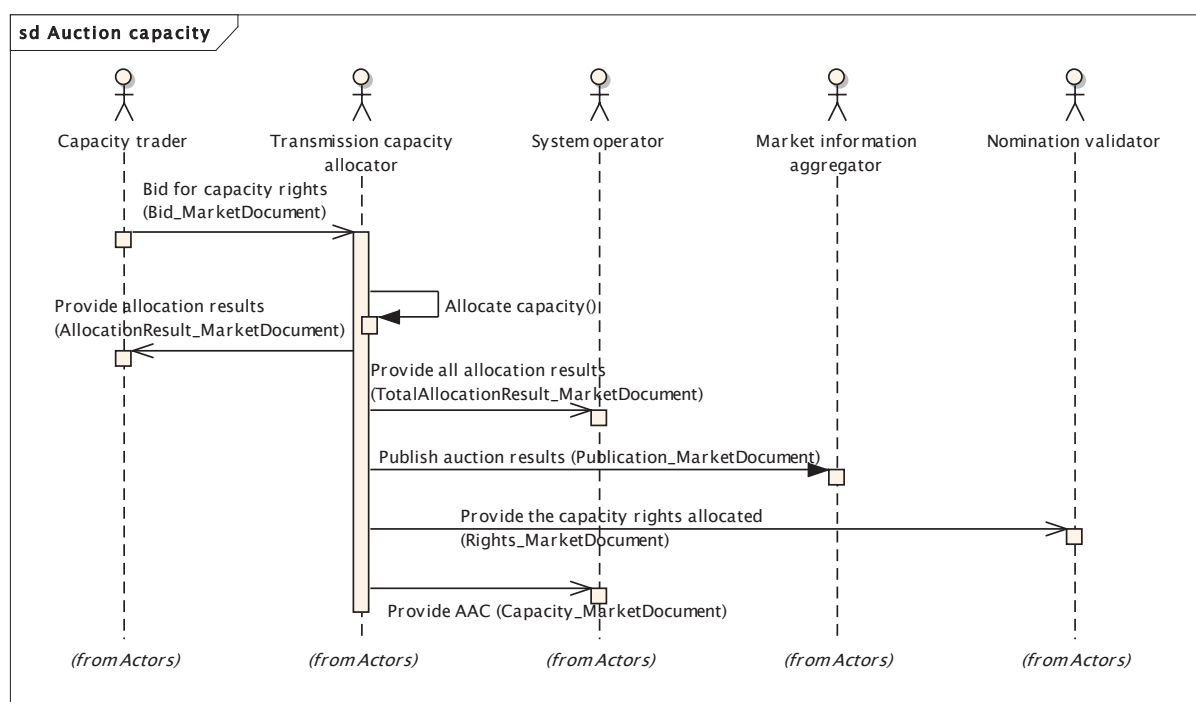


Figure 5 - Auction capacity

1036 5.3.4 Trade and negotiate allocated capacity

1037 In this process capacity traders trade transmission capacity rights between themselves and at
1038 the end of the trade inform the transmission capacity allocator of the rights transfer.

1039 This is an "Over The Counter (OTC)" market, i.e. there are no specific rules for the trade, only
1040 the rules agreed between the parties involved in the trade. This market is also called
1041 "secondary market".

1042 The transmission capacity allocator approves the transfer through the transmission of a
1043 Rights_MarketDocument containing the approved transmission rights that have been
1044 transferred between both parties. This is sent to both the transferor and the transferee
1045 parties.

1046 5.3.5 Capacity rights resale

1047 The capacity trader may, dependent on local rules, release his transmission capacity rights
1048 that he has previously acquired prior to an auction. If the capacity is released to the
1049 transmission capacity allocator sufficiently in advance the trader can benefit from its resale in
1050 the coming auction.

1051 In a “use it or sell it” (UIOSI) model the capacity trader benefits from the resale of the capacity
 1052 rights in a subsequent auction for the part of the capacity rights that was not nominated
 1053 beforehand.

1054 In a “use it or lose it” model (UIOLI) capacity not nominated is generally lost by the capacity
 1055 trader.

1056 5.3.6 Possibility of curtailment of allocated capacity

1057 If, in order to ensure network security, the system operator found it necessary to curtail the
 1058 transmission capacity rights from a previous auction, the system operator informs the
 1059 corresponding transmission capacity allocator of the curtailment that will have to be imposed.
 1060 The transmission capacity allocator informs the capacity traders of the new curtailed
 1061 transmission capacity rights.

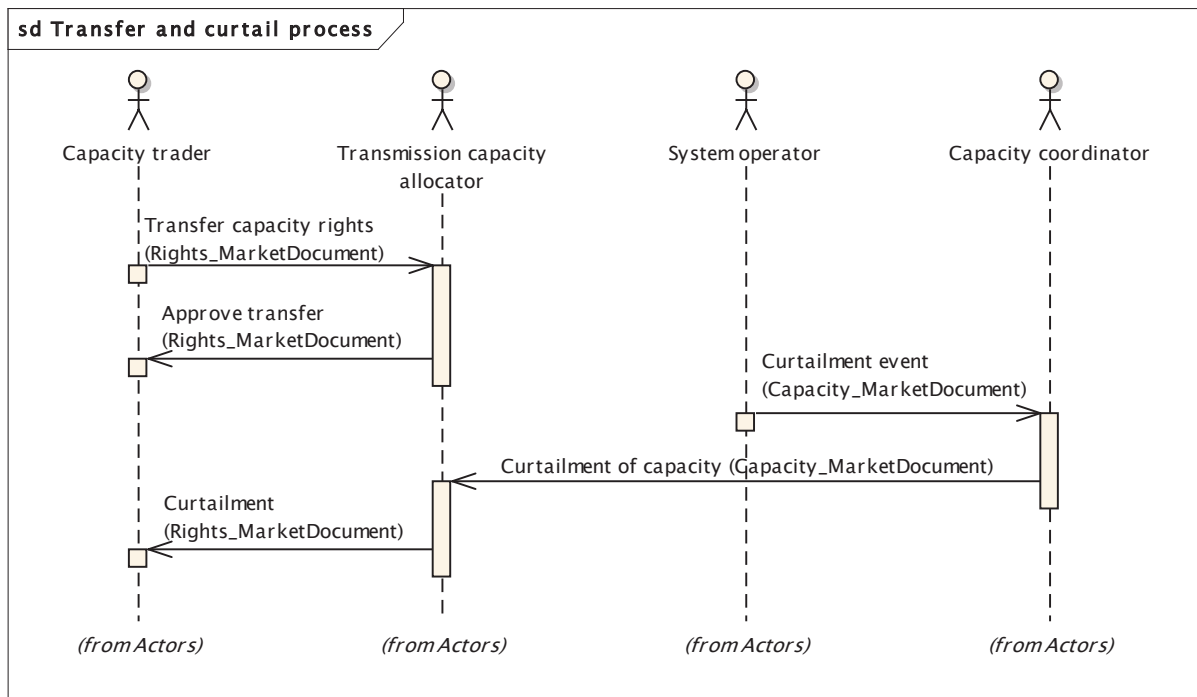


Figure 6 - Transfer and curtailment

1064 5.3.7 Designate interconnection trade responsible for nomination

1065 The capacity trader informs the transmission capacity allocator of the interconnection trade
 1066 responsible that will carry out the nomination of transmission capacity rights on his behalf.

1067 The designation of the interconnection trade responsible that will nominate the capacity rights
 1068 is transmitted to the transmission capacity allocation with a Rights_MarketDocument.

1069 5.3.8 Nominate use of border capacity

1070 The nomination validator receives the final allocations (capacity rights) from the transmission
 1071 capacity allocator, which identifies the interconnection trade responsible parties authorised to
 1072 nominate the capacity, and sends the authorised nomination capacity to the interconnection
 1073 trade responsables in question.

1074 5.3.9 Validate nominations

1075 The validation process for nominations may take place on one side or both sides of the
 1076 border.

1077 The nomination validator must check that the nominations from the interconnection trade
 1078 responsible parties do not exceed the amount of capacity that the transmission capacity
 1079 allocator has communicated. In the case that the nominations exceeded the amount of the
 1080 capacity rights the nomination validator applies local market rules.

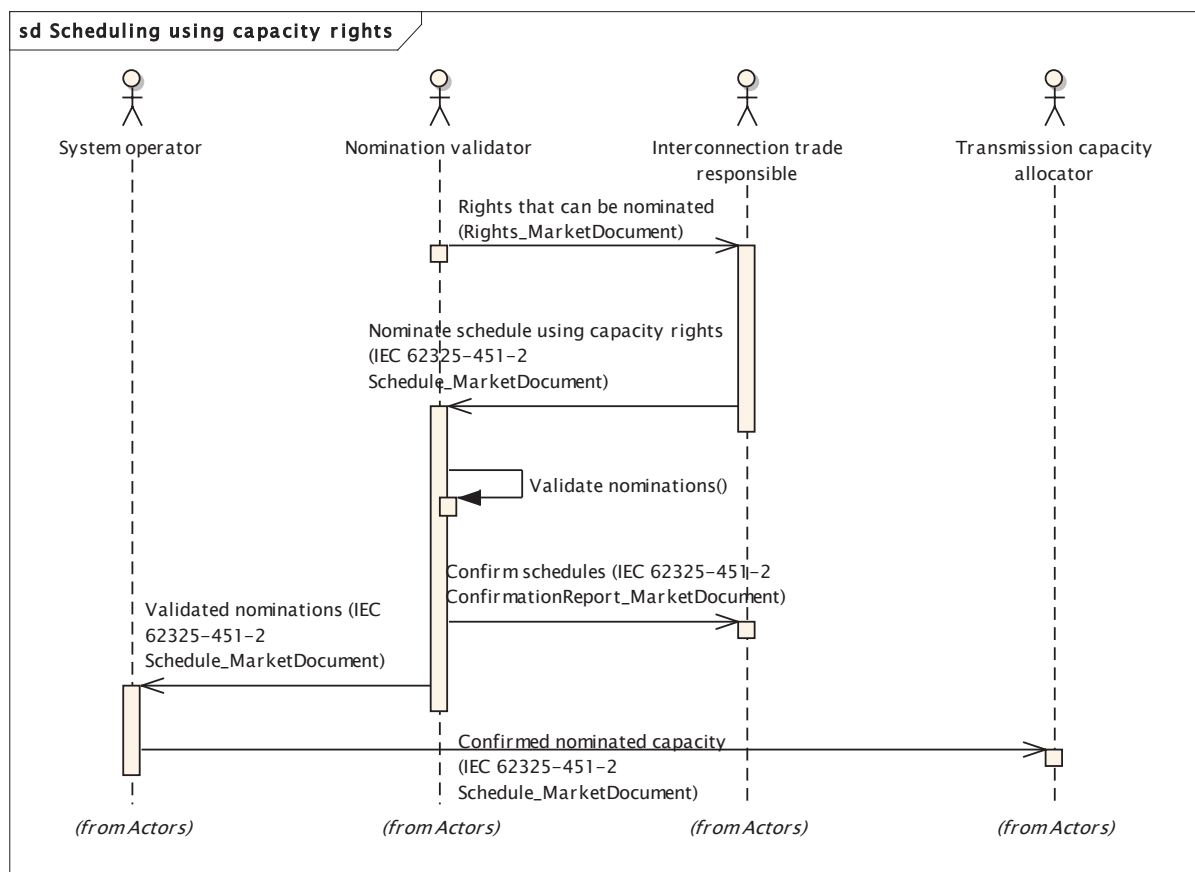


Figure 7 - Nomination of capacity rights

5.4 Implicit auction process

5.4.1 Overview implicit auction process

The implicit auction is characterized by the fact that the trade responsible party bought both energy and transmission capacity at the same time.

Thus the distinction between the role of capacity trader and interconnection trade responsible is not necessary for this business process.

The rules covering the auction mechanism determine the market energy price for the market balance area after applying technical constraints from the system operator.

Figure 8 provides an overview of the implicit auction process and the list of exchanged documents.

5.4.2 Submit bids and offers to local exchange

The trade responsible parties submit to their market operator their offer (sell or buy) of energy.

5.4.3 Implicit auction

The market operator defines, based on agreed market rules, the “market equilibrium point”, i.e. the cross border flows, the energy prices and the trades that are matched..

5.4.4 Publish exchange results

The market operator provides to the involved system operators the result of the matching using the ImplicitAuctionResult_MarketDocument.

The system operators verify the consistency of the results with the constraints provided when defining the offered capacity.

1104 The result are then provided to the market information aggregator using the
 1105 Publication_MarketDocument.

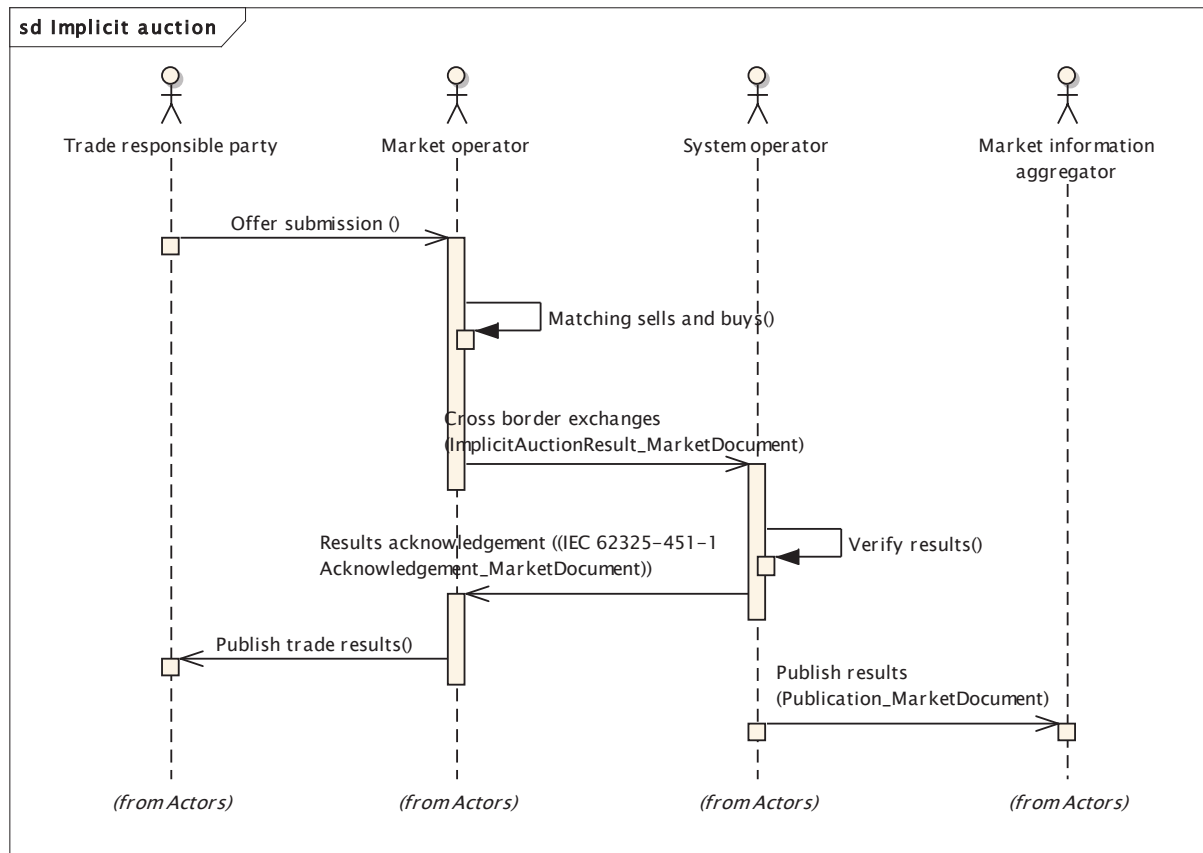


Figure 8 - Implicit auction overview

5.5 Business rules for the transmission capacity allocation process

5.5.1 General rules

The generic rules defined in IEC 62325-351 applied to all the documents described in this part.

For each electronic data interchange defined in this document, an application acknowledgement is required as defined in IEC 62325-451-1, except for the document sent to the capacity trader or the interconnection trade responsible as receiver_MarketParticipant.marketRole.type.

When a document is received, it shall be check 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.

5.5.2 Rules governing the Bid_MarketDocument

The following rules applied to the Bid_MarketDocument:

- A bid document contains a set of bids (a bid is represented by a time series).
- There may be several bids submitted by the sender for the same bid period and subject party (capacity trader).
- To cancel a complete set of bids the bid document is resubmit with a new version number but no time series under it.
- There can only be one sender for a given subject party.
- A bid document can only be for only one subject party.

- 1129 • A bid document received with the same document identification and document version as
1130 an existing bid document shall be rejected.
- 1131 • The last version of a bid document with the same document identification shall constitute
1132 the last valid bid for the document in question.
- 1133 • Each Bid_TimeSeries within a document is considered a bid within this specification. The
1134 bid mRID that the bidder assigns is the unique identification of the bid for a given auction
1135 identification (auction.mRID).
- 1136 • The Table 1 provides the dependency concerning the bid indicators:

Table 1 – Bid indicators dependency

	Default case	Other cases			
Divisible (possible values)	YES	NO	NO	YES	YES
Linked Bids Identification (attribute used or not)	Not used	Used	Not used	Not used	Not applicable
Block Bid (possible values)	NO	YES	YES	NO	Not applicable

1138 Note: “not used” signifies that the attribute cannot be used. “Not applicable” signifies that the attributes in question
1139 to not apply to the dependency case.

1140 For example: a LinkedBidIdentification could only contain an identification where Divisible was “NO” and a
1141 BlockedBid was “YES”. In all other cases it could not contain an identification.

1142 5.5.3 Rules governing the Capacity_MarketDocument

1143 The dependencies are listed here after:

- 1144 • The document type “Agreed capacity” is to be used with the process type “Capacity
1145 determination” and the business types “Offered capacity”, “NTC” or “ATC”, the “Reason”
1146 could be “Curtailement”;
- 1147 • The document type “Proposed capacity” is to be used with the process type “Capacity
1148 determination” and the business types “Offered capacity”, “NTC” or “ATC”, the “Reason”
1149 could be “Curtailement”;
- 1150 • The document type “Interconnection capacity” is to be used with the process type
1151 “Capacity determination” and the business types “AAC” or “Released AAC”;
- 1152 • The document type “Interconnection capacity” is to be used with the process type
1153 “Capacity allocation” and the business type “General capacity information”.

1154 Note: the Business Type “General Capacity Information” is a generic type for the identification of a time series that
1155 provides the total capacity available on a TSO border

1156 5.5.4 Rules governing the AllocationResult_MarketDocument

1157 The following rules applied to the AllocationResult_MarketDocument:

- 1158 • There is only one contract identification assigned by the transmission capacity allocator
1159 per auction identification, bid period and subject party.
- 1160 • There is only one allocation result document per sender and subject party for a given
1161 auction identification and bid time interval.
- 1162 • Only one of these three possibilities is permitted in a given allocation result document:
- 1163 a) In the case where the allocation result document contains all bids and resales that
1164 have been validated for processing in the auction in the latest version of bid and
1165 resales documents received, this shall include bids and resales that have not been
1166 satisfied. In this case the quantity and price amount of the bids and resales that have
1167 not been satisfied shall be equal to zero.
- 1168 b) It is also possible for the allocation result document to contain only the bids that have
1169 been allocated capacity transmission rights and resales that have sold capacity
1170 transmission rights.

1171 c) A third possibility exists where only the aggregation of the bids that have capacity
 1172 transmission rights and the aggregation of transmission rights that have been sold are
 1173 provided. In this case the bid identification shall not be specified.

1174 • The bid result may mirror the original bid itself in which case the curveType shall not be
 1175 used, or a profile may be provided as a result in which the curveType shall be used.

1176 • The choice of whether or not to mirror the original bids must be consistent within the whole
 1177 result document.

1178 **5.5.5 Rules governing the TotalAllocationResult_MarketDocument**

1179 The following rules applied to the TotalAllocationResult_MarketDocument:

1180 • There is only one contract identification assigned by the transmission capacity allocator
 1181 per auction identification, bid period and bidding party.

1182 • Only one of these three possibilities is permitted in a given total allocation result
 1183 document:

1184 d) In the case where the total allocation result document contains all bids and resales
 1185 that have been validated for processing in the auction in the latest version of bid and
 1186 resales documents received, this shall include bids and resales that have not been
 1187 satisfied. In this case the quantity and price amount of the bids and resales that have
 1188 not been satisfied shall be equal to zero.

1189 e) It is also possible for the total allocation result document to contain only the bids that
 1190 have been allocated capacity transmission rights and resales that have sold capacity
 1191 transmission rights.

1192 f) A third possibility exists where only the aggregation of the bids that have capacity
 1193 transmission rights and the aggregation of transmission rights that have been sold are
 1194 provided. In this case the bid identification shall not be specified.

1195 • The bid result may mirror the original bid itself in which case the curveType shall not be
 1196 used, or a profile may be provided as a result in which the curveType shall be used.

1197 • The choice of whether or not to mirror the original bids must be consistent within the whole
 1198 result document.

1199 **5.5.6 Rules governing the Rights_MarketDocument**

1200 The following rules applied to the Rights_MarketDocument:

1201 • A Rights_MarketDocument is used in various business contexts. In general it identifies the
 1202 capacity transmission rights that a capacity trader or an interconnection trade responsible
 1203 has in his portfolio for a given border.

1204 • Any time a party's capacity transmission rights change for a given period the capacity
 1205 trader may inform the party of his new portfolio by sending a new version of the rights
 1206 document to the party in question.

1207 • A rights document may also be used to provide the complete portfolio for a given border.

1208 • In addition, a rights document may be used to provide information on rights compensation
 1209 such as UIOSI pricing or rights curtailment compensation.

1210 • There can only be one sender for a given subject party.

1211 • A bid document can only be for only one subject party.

1212 • A bid document received with the same document identification and document version as
 1213 an existing bid document shall be rejected.

1214 • The last version of a bid document with the same document identification shall constitute
 1215 the last valid bid for the document in question.

1216 • Each Bid_TimeSeries within a document is considered a bid within this specification. The
 1217 bid mRID that the bidder assigns is the unique identification of the bid for a given auction
 1218 identification (auction.mRID).

1219 • The Table 2 provides the dependency concerning the bid indicators:

1220

Table 2 – Rights_MarketDocument dependency table

Document type	Business type	Rights holder	Transferee	Previous contract identification	Auction identification
Capacity for resale	Released AAC	Mandatory			Mandatory
	Capacity rights not nominated	Mandatory			
Approved transfer	Capacity transfer notification	Mandatory			
AAC transfer	Capacity transfer notification Interconnection trade responsible designation	Mandatory	Mandatory	Mandatory	
Transmission rights portfolio	Capacity rights	Mandatory	Mandatory		
Allocations	Authorised AAC	Mandatory			
	Minimum authorised AAC	Mandatory			
	Maximum authorised AAC	Mandatory			
Compensation rights	Use it or sell it pricing Resale compensation following cancellation Rights curtailment Use it or sell it compensation Auction cancellation	Mandatory			

1221 Note : when using the document type “Allocations”, the business type “Authorised AAC” is generally sufficient to
 1222 provide the maximum amount of AAC available for nomination. However, if the business type “Minimum authorized
 1223 AAC” is used then the business type “Maximum authorised AAC” must be used in the place of the business type
 1224 “Authorised AAC”.

6 Contextual and assembly models (Normative)

6.1 Bid Contextual model

6.1.1 Overview of the model

Figure 9 shows the model.

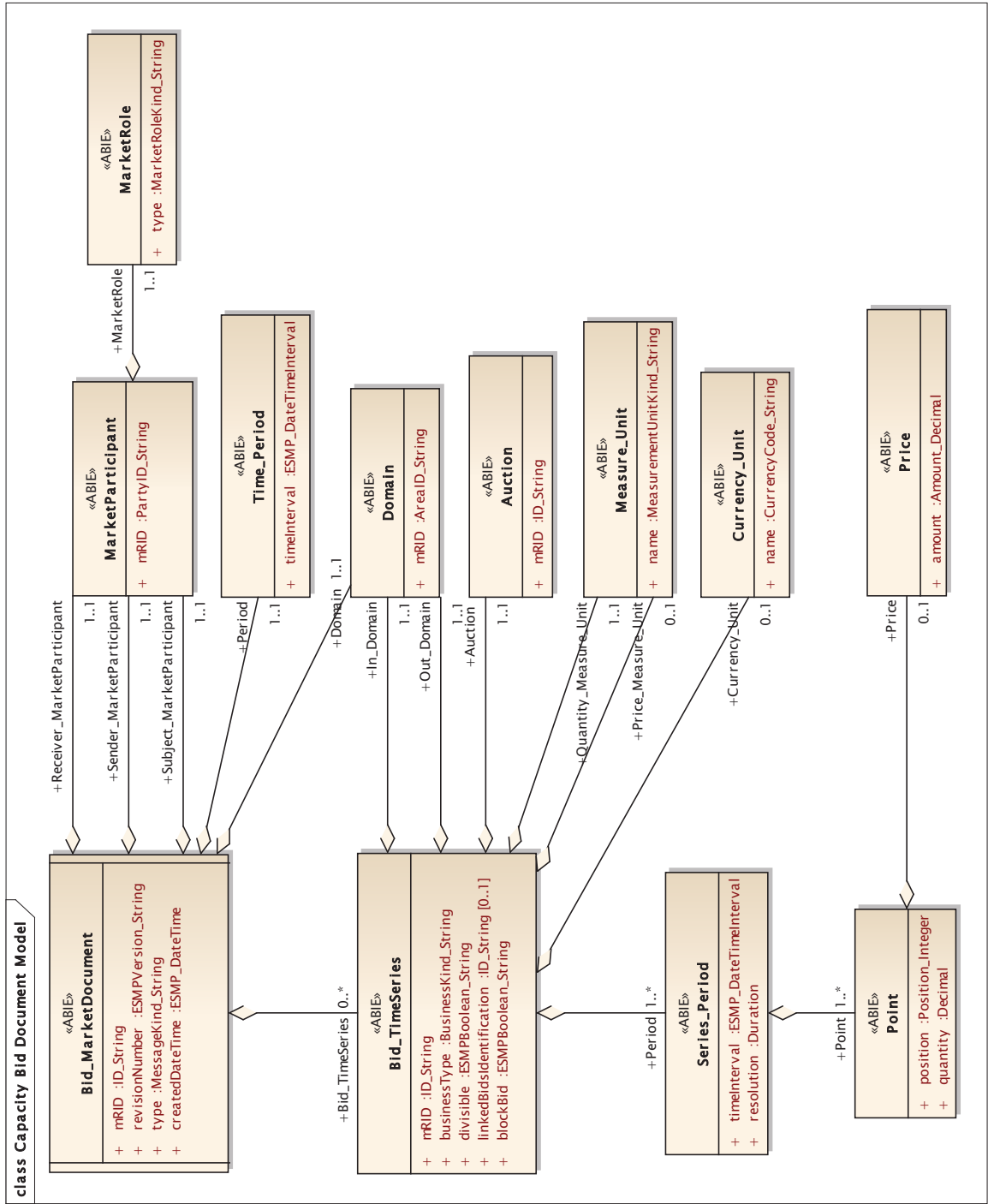


Figure 9 – Bid Contextual Model

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.

1234

Table 3 - IsBasedOn dependency

Name	Is BasedOn Class	Complete IsBasedOn Path
Auction	ESMPClasses::Auction	62325\ESMPClasses
Bid_MarketDocument	ESMPClasses::MarketDocument	62325\ESMPClasses
Bid_TimeSeries	ESMPClasses::BidTimeSeries	62325\ESMPClasses
Currency_Unit	ESMPClasses::Currency_Unit	62325\ESMPClasses
Domain	ESMPClasses::Domain	62325\ESMPClasses
MarketParticipant	ESMPClasses::MarketParticipant	62325\ESMPClasses
MarketRole	ESMPClasses::MarketRole	62325\ESMPClasses
Measure_Unit	ESMPClasses::Measure_Unit	62325\ESMPClasses
Point	ESMPClasses::Point	62325\ESMPClasses
Price	ESMPClasses::Price	62325\ESMPClasses
Series_Period	ESMPClasses::Series_Period	62325\ESMPClasses
Time_Period	ESMPClasses::Time_Period	62325\ESMPClasses

1235 **6.1.3 Detailed Bid Contextual Model**1236 **6.1.3.1 Bid_MarketDocument root class**

1237 A bid document contains a set of bids (a bid is represented by a time series). There may be
 1238 several bids submitted by the sender for the same bid period and subject party.

1239 An electronic document containing the information necessary to satisfy the requirements of a
 1240 given business process.

1241 IsBasedOn: ESMPClasses::MarketDocument

1242 Table 4 shows all attributes of Bid_MarketDocument.

1243 **Table 4 - Attributes of Bid Contextual Model::Bid_MarketDocument.**

mult.	Attribute name	Attribute type	Description
[1..1]	createdDateTime	ESMP_DateTime	The date and time of the creation of the document.
[1..1]	mRID	ID_String	The unique identification of the document being exchanged within a business process flow.
[1..1]	revisionNumber	ESMPVersion_String	The identification of the version that distinguishes one evolution of a document from another.
[1..1]	type	MessageKind_String	The coded type of a document. The document type describes the principal characteristic of the document.

1244 Table 5 shows all association ends of Bid_MarketDocument with other classes.

1245 **Table 5 - Association ends of Bid Contextual Model::Bid_MarketDocument with other**
 1246 **classes.**

mult.	Role	Class type name	Description
[0..*]	Bid_TimeSeries	Bid_TimeSeries	Association Based On : ESMPClasses::MarketDocument.[] ----- ESMPClasses::TimeSeries.TimeSeries[0..*]

mult.	Role	Class type name	Description
[1..1]	Domain	Domain	The domain covered within the bid document, i.e. the border for which auction is done. Association Based On : ESMPClasses::MarketDocument.[] ----- ESMPClasses::Domain.Domain[0..1]
[1..1]	Period	Time_Period	The beginning and ending date and time of the period covered by the document. Association Based On : ESMPClasses::MarketDocument.[] ----- ESMPClasses::Time_Period.Period[0..*]
[1..1]	Receiver_MarketParticipant	MarketParticipant	Document recipient. Association Based On : ESMPClasses::MarketDocument.[] ----- ESMPClasses::MarketParticipant.MarketParticipant[0..*]
[1..1]	Sender_MarketParticipant	MarketParticipant	Document owner. Association Based On : ESMPClasses::MarketDocument.[] ----- ESMPClasses::MarketParticipant.MarketParticipant[0..*]
[1..1]	Subject_MarketParticipant	MarketParticipant	The party for whom the bid is being submitted. Association Based On : ESMPClasses::MarketDocument.[] ----- ESMPClasses::MarketParticipant.MarketParticipant[0..*]

1247 **6.1.3.2 Auction**

1248 The identification of a formal specification of an energy product that is offered for sale.

1249 IsBasedOn: ESMPClasses::Auction

1250 Table 6 shows all attributes of Auction.

1251 **Table 6 - Attributes of Bid Contextual Model::Auction.**

mult.	Attribute name	Attribute type	Description
[1..1]	mRID	ID_String	The unique identification of the auction.

1252 **6.1.3.3 Bid_TimeSeries**

1253 The formal specification of specific characteristics related to a bid.

1254 IsBasedOn: ESMPClasses::BidTimeSeries

1255 Table 7 shows all attributes of Bid_TimeSeries.

1256 **Table 7 - Attributes of Bid Contextual Model::Bid_TimeSeries.**

mult.	Attribute name	Attribute type	Description
[1..1]	blockBid	ESMPBoolean_String	The indication that the values in the period are considered as a whole. They cannot be changed or subdivided.
[1..1]	businessType	BusinessKind_String	The identification of the nature of the time series.
[1..1]	divisible	ESMPBoolean_String	An indication whether or not each element of the bid may be partially accepted or not.
[0..1]	linkedBidsIdentification	ID_String	The unique identification used to identify associated bids with each other.
[1..1]	mRID	ID_String	A unique identification of the time series.

1257 Table 8 shows all association ends of Bid_TimeSeries with other classes.

1258 **Table 8 - Association ends of Bid Contextual Model::Bid_TimeSeries with other classes.**

mult.	Role	Class type name	Description
[1..1]	Auction	Auction	The identification linking the bid to a set of specifications created by the auction operator. Association Based On : ESMPClasses::TimeSeries.[] ----- ESMPClasses::Auction.Auction[0..*]
[0..1]	Currency_Unit	Currency_Unit	The currency in which the monetary amount is expressed. Association Based On : ESMPClasses::TimeSeries.[] ----- ESMPClasses::Currency_Unit.Currency_Unit[0..1]
[1..1]	In_Domain	Domain	The area where the energy is to be put. Association Based On : ESMPClasses::TimeSeries.[] ----- ESMPClasses::Domain.Domain[0..*]
[1..1]	Out_Domain	Domain	The area where the energy is coming from. Association Based On : ESMPClasses::TimeSeries.[] ----- ESMPClasses::Domain.Domain[0..*]
[1..*]	Period	Series_Period	Association Based On : ESMPClasses::TimeSeries.[] ----- ESMPClasses::Series_Period.Period[0..*]
[0..1]	Price_Measure_Unit	Measure_Unit	The unit of measure in which the price in the time series is expressed (MW, MWh, etc.). Association Based On : ESMPClasses::TimeSeries.[] ----- ESMPClasses::Measure_Unit.Measurement_Unit[0..*]
[1..1]	Quantity_Measure_Unit	Measure_Unit	The unit of measure in which the quantities in the time series are expressed, e.g. MAW. Association Based On : ESMPClasses::TimeSeries.[] ----- ESMPClasses::Measure_Unit.Measurement_Unit[0..*]

1259 **6.1.3.4 Currency_Unit**

1260 The code specifying a monetary unit.

1261 IsBasedOn: ESMPClasses::Currency_Unit

1262 Table 9 shows all attributes of Currency_Unit.

1263 **Table 9 - Attributes of Bid Contextual Model::Currency_Unit.**

mult.	Attribute name	Attribute type	Description
[1..1]	name	CurrencyCode_String	The identification of the formal code for a currency (ISO 4217).

1264 **6.1.3.5 Domain**

1265 A domain covering a number of related objects, such as market balance area, grid area,
1266 borders etc.

1267 IsBasedOn: ESMPClasses::Domain

1268 Table 10 shows all attributes of Domain.

1269 **Table 10 - Attributes of Bid Contextual Model::Domain.**

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

1270 6.1.3.6 MarketParticipant

1271 The identification of the party participating in energy market business processes.

1272 IsBasedOn: ESMPClasses::MarketParticipant

1273 Table 11 shows all attributes of MarketParticipant.

1274 **Table 11 - Attributes of Bid Contextual Model::MarketParticipant.**

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

1275 Table 12 shows all association ends of MarketParticipant with other classes.

1276 **Table 12 - Association ends of Bid Contextual Model::MarketParticipant with other**
1277 **classes.**

mult.	Role	Class type name	Description
[1..1]	MarketRole	MarketRole	Association Based On : ESMPClasses::MarketParticipant.[] ----- ESMPClasses::MarketRole.MarketRole[0..1]

1278 6.1.3.7 MarketRole

1279 The identification of the intended behaviour of a market participant played within a given
1280 business process.

1281 IsBasedOn: ESMPClasses::MarketRole

1282 Table 13 shows all attributes of MarketRole.

1283 **Table 13 - Attributes of Bid Contextual Model::MarketRole.**

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

1284 6.1.3.8 Measure_Unit

1285 A particular quantity, defined and adopted by convention, with which other quantities of the
1286 same kind are compared in order to express their magnitudes relative to that quantity.

1287 IsBasedOn: ESMPClasses::Measure_Unit

1288 Table 14 shows all attributes of Measure_Unit.

1289 **Table 14 - Attributes of Bid Contextual Model::Measure_Unit.**

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

1290 **6.1.3.9 Point**

1291 The quantity that is bid for the interval in question.

1292 The identification of the values being addressed within a specific interval of time.

1293 IsBasedOn: ESMPClasses::Point

1294 Table 15 shows all attributes of Point.

1295 **Table 15 - Attributes of Bid Contextual Model::Point.**

mult.	Attribute name	Attribute type	Description
[1..1]	position	Position_Integer	A sequential value representing the relative position within a given time interval.
[1..1]	quantity	Decimal	The principal quantity identified for a point.

1296 Table 16 shows all association ends of Point with other classes.

1297 **Table 16 - Association ends of Bid Contextual Model::Point with other classes.**

mult.	Role	Class type name	Description
[0..1]	Price	Price	The price expressed for each unit of quantity. The price amount is mandatory in the case of capacity auctions and must not be provided in the case of rule based allocations depending on local market rules (for example "first come first serve"). Association Based On : ESMPClasses::Point. ----- ESMPClasses::Price.Price[0..*]

1298 **6.1.3.10 Price**

1299 The cost corresponding to a specific entity expressed in a currency.

1300 IsBasedOn: ESMPClasses::Price

1301 Table 17 shows all attributes of Price.

1302 **Table 17 - Attributes of Bid Contextual Model::Price.**

mult.	Attribute name	Attribute type	Description
[1..1]	amount	Amount_Decimal	A number of monetary units specified in a unit of currency.

1303 **6.1.3.11 Series_Period**

1304 The identification of the period of time corresponding to a given time interval and resolution.

1305 IsBasedOn: ESMPClasses::Series_Period

1306 Table 18 shows all attributes of Series_Period.

1307

Table 18 - Attributes of Bid Contextual Model::Series_Period.

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

1308

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

1309

Table 19 - Association ends of Bid Contextual Model::Series_Period with other classes.

mult.	Role	Class type name	Description
[1..*]	Point	Point	Association Based On : ESMPClasses::Series_Period.[] ----- ESMPClasses::Point.Point[1..*]

1310

6.1.3.12 Time_Period

1311

The identification of a time interval.

1312

IsBasedOn: ESMPClasses::Time_Period

1313

Table 20 shows all attributes of Time_Period.

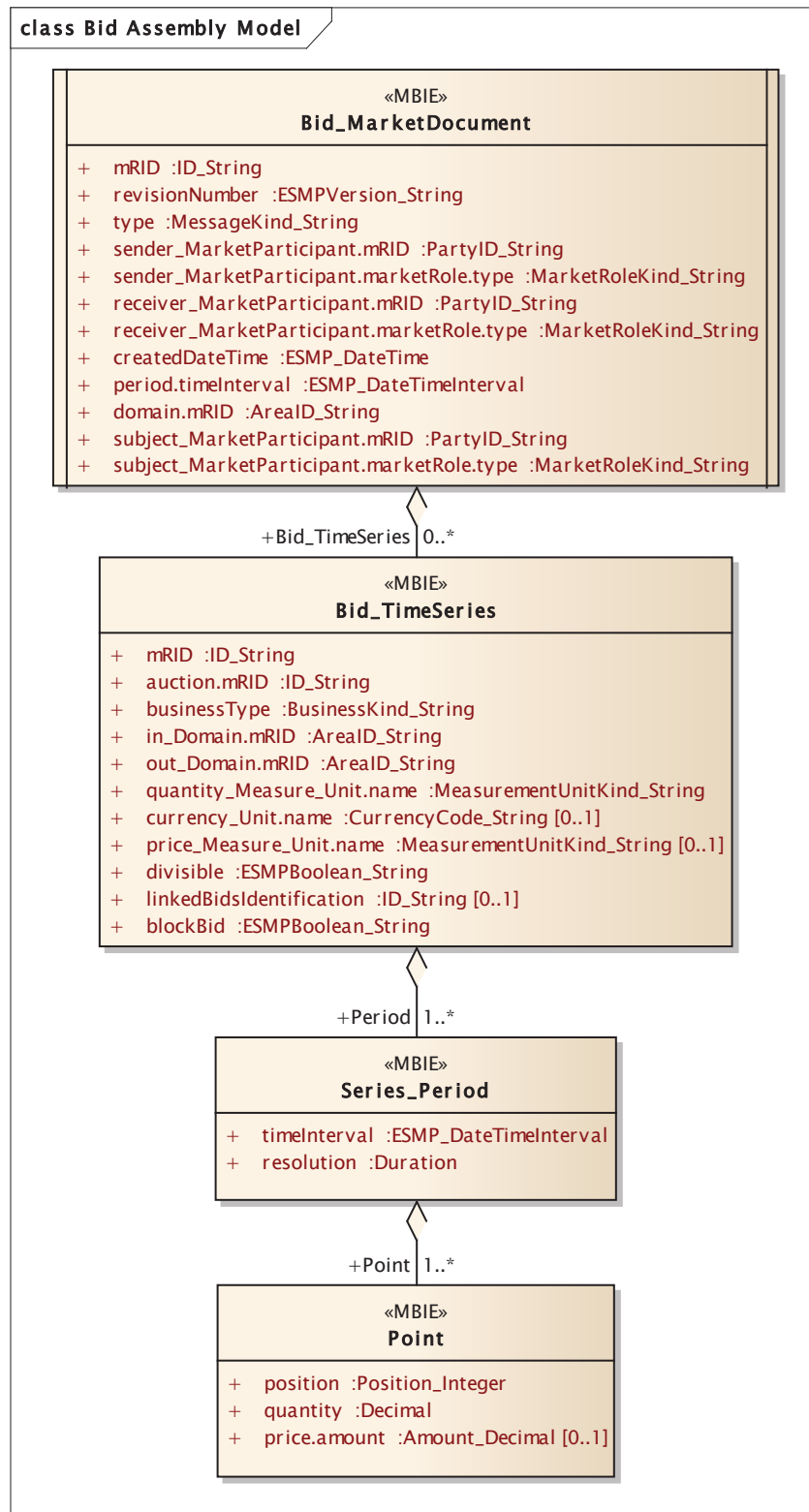
1314

Table 20 - Attributes of Bid Contextual Model::Time_Period.

mult.	Attribute name	Attribute type	Description
[1..1]	timeInterval	ESMP_DateTimeInterval	The start and end date and time for a given interval.

1315 **6.2 Bid Assembly Model**1316 **6.2.1 Overview of the model**

1317 Figure 10 shows the model.

1318 **Figure 10 – Bid Assembly model**

6.2.2 IsBasedOn relationships from the European style market profile

Table 21 shows the traceability dependency of the classes used in this package towards the upper level.

Table 21 - IsBasedOn dependency

Name	Is BasedOn Class	Complete IsBasedOn Path
Bid_MarketDocument	Bid Contextual Model::Bid_MarketDocument	62325\Bid Contextual Model
Bid_TimeSeries	Bid Contextual Model::Bid_TimeSeries	62325\Bid Contextual Model
Point	Bid Contextual Model::Point	62325\Bid Contextual Model
Series_Period	Bid Contextual Model::Series_Period	62325\Bid Contextual Model

6.2.3 Detailed Bid Assembly Model**6.2.3.1 Bid_MarketDocument root class**

A bid document contains a set of bids (a bid is represented by a time series). There may be several bids submitted by the sender for the same bid period and subject party.

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

IsBasedOn: Bid Contextual Model::Bid_MarketDocument

Table 22 shows all attributes of Bid_MarketDocument.

Table 22 - Attributes of Bid Assembly Model::Bid_MarketDocument.

mult.	Attribute name	Attribute type	Description
[1..1]	createdDateTime	ESMP_DateTime	The date and time of the creation of the document.
[1..1]	domain.mRID	AreaID_String	The unique identification of the domain. --- The domain covered within the bid document, i.e. the border for which auction is done.
[1..1]	mRID	ID_String	The unique identification of the document being exchanged within a business process flow.
[1..1]	period.timeInterval	ESMP_DateTimeInterval	The start and end date and time for a given interval. --- The beginning and ending date and time of the period covered by the document.
[1..1]	receiver_MarketParticipant.marketRole.type	MarketRoleKind_String	The identification of the role played by a market player. --- Document recipient.
[1..1]	receiver_MarketParticipant.mRID	PartyID_String	The identification of a party in the energy market. --- Document recipient.
[1..1]	revisionNumber	ESMPVersion_String	The identification of the version that distinguishes one evolution of a document from another.
[1..1]	sender_MarketParticipant.marketRole.type	MarketRoleKind_String	The identification of the role played by a market player. --- Document owner.
[1..1]	sender_MarketParticipant.mRID	PartyID_String	The identification of a party in the energy market. --- Document owner.

mult.	Attribute name	Attribute type	Description
[1..1]	subject_MarketParticipant.marketRole.type	MarketRoleKind_String	The identification of the role played by a market player. --- The party for whom the bid is being submitted.
[1..1]	subject_MarketParticipant.mRID	PartyID_String	The identification of a party in the energy market. --- The party for whom the bid is being submitted.
[1..1]	type	MessageKind_String	The coded type of a document. The document type describes the principal characteristic of the document.

1333 Table 23 shows all association ends of Bid_MarketDocument with other classes.

1334 **Table 23 - Association ends of Bid Assembly Model::Bid_MarketDocument with other**
1335 **classes.**

mult.	Role	Class type name	Description
[0..*]	Bid_TimeSeries	Bid_TimeSeries	Association Based On : Bid Contextual Model::Bid_TimeSeries.Bid_TimeSeries[0..*] ----- Bid Contextual Model::Bid_MarketDocument.[]

1336 **6.2.3.2 Bid_TimeSeries**

1337 The formal specification of specific characteristics related to a bid.

1338 IsBasedOn: Bid Contextual Model::Bid_TimeSeries

1339 Table 24 shows all attributes of Bid_TimeSeries.

1340 **Table 24 - Attributes of Bid Assembly Model::Bid_TimeSeries.**

mult.	Attribute name	Attribute type	Description
[1..1]	auction.mRID	ID_String	The unique identification of the auction. --- The identification linking the bid to a set of specifications created by the auction operator.
[1..1]	blockBid	ESMPBoolean_String	The indication that the values in the period are considered as a whole. They cannot be changed or subdivided.
[1..1]	businessType	BusinessKind_String	The identification of the nature of the time series.
[0..1]	currency_Unit.name	CurrencyCode_String	The identification of the formal code for a currency (ISO 4217). --- The currency in which the monetary amount is expressed.
[1..1]	divisible	ESMPBoolean_String	An indication whether or not each element of the bid may be partially accepted or not.
[1..1]	in_Domain.mRID	AreaID_String	The unique identification of the domain. --- The area where the energy is to be put.
[0..1]	linkedBidsIdentification	ID_String	The unique identification used to identify associated bids with each other.
[1..1]	mRID	ID_String	A unique identification of the time series.
[1..1]	out_Domain.mRID	AreaID_String	The unique identification of the domain. --- The area where the energy is coming from.

mult.	Attribute name	Attribute type	Description
[0..1]	price_Measure_Unit.name	MeasurementUnitKind_String	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measure in which the price in the time series is expressed (MW, MWh, etc.).
[1..1]	quantity_Measure_Unit.name	MeasurementUnitKind_String	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measure in which the quantities in the time series are expressed, e.g. MAW.

1341 Table 25 shows all association ends of Bid_TimeSeries with other classes.

1342 **Table 25 - Association ends of Bid Assembly Model::Bid_TimeSeries with other classes.**

mult.	Role	Class type name	Description
[1..*]	Period	Series_Period	Association Based On : Bid Contextual Model::Series_Period.Period[1..*] ----- Bid Contextual Model::Bid_TimeSeries.[]

1343 **6.2.3.3 Point**

1344 The quantity that is bid for the interval in question.

1345 The identification of the values being addressed within a specific interval of time.

1346 IsBasedOn: Bid Contextual Model::Point

1347 Table 26 shows all attributes of Point.

1348 **Table 26 - Attributes of Bid Assembly Model::Point.**

mult.	Attribute name	Attribute type	Description
[1..1]	position	Position_Integer	A sequential value representing the relative position within a given time interval.
[0..1]	price.amount	Amount_Decimal	A number of monetary units specified in a unit of currency. --- The price expressed for each unit of quantity. The price amount is mandatory in the case of capacity auctions and must not be provided in the case of rule based allocations depending on local market rules (for example "first come first serve").
[1..1]	quantity	Decimal	The principal quantity identified for a point.

1349 **6.2.3.4 Series_Period**

1350 The identification of the period of time corresponding to a given time interval and resolution.

1351 IsBasedOn: Bid Contextual Model::Series_Period

1352 Table 27 shows all attributes of Series_Period.

1353 **Table 27 - Attributes of Bid Assembly Model::Series_Period.**

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

1354 Table 28 shows all association ends of Series_Period with other classes.

1355 **Table 28 - Association ends of Bid Assembly Model::Series_Period with other classes.**

mult.	Role	Class type name	Description
[1..*]	Point	Point	Association Based On : Bid Contextual Model::Point.Point[1..*] ----- Bid Contextual Model::Series_Period.[]

1356 **6.2.4 Datatypes**1357 **6.2.4.1 ESMP_DateTimeInterval compound**

1358 This datatype enables to express the start date and time, and the end date and time of a time
 1359 interval with a specific pattern. This pattern is the YYYY-MM-DDThh:mmZ.

1360 Table 29 shows all attributes of ESMP_DateTimeInterval.

1361 **Table 29 - Attributes of ESMPDataTypes::ESMP_DateTimeInterval.**

mult.	Attribute name	Attribute type	Description
[1..1]	start	YMDHM_DateTime	The start date and time of the interval with a minute resolution.
[1..1]	end	YMDHM_DateTime	The end date and time of the interval with a minute resolution.

1362 **6.2.4.2 Amount_Decimal datatype**

1363 The coded identification of a monetary value.

1364 Table 30 shows all attributes of Amount_Decimal.

1365 **Table 30 - Attributes of ESMPDataTypes::Amount_Decimal.**

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

1366 **6.2.4.3 AreaID_String datatype**

1367 The coded identification of a domain, i.e. balance area, grid area, etc.

1368 In the ESMP context, it is an authorized issuing office that provides an agreed identification
 1369 coding scheme for domain identification.

1370 Table 31 shows all attributes of AreaID_String.

1371 **Table 31 - Attributes of ESMPDataTypes::AreaID_String.**

mult.	Attribute name	Attribute type	Description
[1..1]	codingScheme	CodingSchemeTypeList	DomainQualification.
[1..1]	value	String	Main Core value Space.

1372 **6.2.4.4 BusinessKind_String datatype**

1373 The coded identification of the business type.

1374 Table 32 shows all attributes of BusinessKind_String.