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European Network of
Transmission System Operators
for Electricity

THE HARMONISED ELECTRICITY MARKET ROLE MODEL

VERSION: 2011-01

ASSOCIATED ORGANISATIONS:

EFET European Federation of Energy Traders

ebIX

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41   **REVISION HISTORY**

Version	Release	Date	Paragraphs	Comments
0	8	2001-02-10		Initial version for comment
1	0	2002-06-17		Initial release of document
2	0	2003-02-12		Add more detail to market domains
3	0	2004-04-29		Add new domain of "unit" "functional group" and "balance group", include the UCTE environment and adopt model to more correctly reflect the overall market.
3	1	2004-09-22	3.1 introduction 5 and 6	Definition of Role and party Addition of Metered data responsible Correction of metered data aggregator responsible
3	2	2005-03-29	6	Clarified definitions in order to bring it into line as a harmonised version
4	0	2006-07-06	5 and 6	Introduced new domains Resource Object, Reserve Object and new roles Resource Provider, Capacity Trader, Interconnection Trade Responsible, Nomination Validator. Modified definition Market Operator, System Operator and Transmission Capacity Allocator

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Version	Release	Date	Paragraphs	Comments
5	0	2007-12-01	5 and 6	Rationalised the relationships to focalise where possible on responsibility. Improved definition layout. Added new roles: Reconciliation Responsible, Reconciliation Accountable, Market Information Aggregator
2008-01		2008-07-01	Change version number	The version number is changed in order to take into consideration the 2 publications per year (yyyy-01 and yyyy-02).
			Definition changes	Market Operator
				Balance Supplier
				Grid Operator
				Resource Object
				Capacity Trader
			Domain name change	CBT to ITC
2008-02		2008-12-08	New roles	MOL Responsible for ERRP
				Reserve Allocator for ERRP
			Change relation	Suppress the relation between the Metered Data Responsible and the Local metering point.
				Add the relation between the Metered Data Responsible and the Metering Point

Version	Release	Date	Paragraphs	Comments
2009-01		2009-06-26	Modified definition	Adjusted all names in figure to upper camel case.
				Modified example for Capacity Market Area
				Added example to Common Capacity Area
				Modified definition of Grid Access Provider
				Modified definition of Market Information Aggregator
			Changed relation	Modified name of relation of Grid Access Provider with Local Metering Point.
2011-01		2011-12-06	Complete review	Complete review of document text (the approval procedures have been removed and the main text (including the introduction) has been updated).
				Add new Roles "Block Energy Trader", "Capacity Coordinator" as well as the domain "Accounting Point"
				Modification of different relations.
				For Approval by the:
				• ENTSO-E Market Committee.
				• The EFET Management Committee
				• The ebIX Plenary.

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1 INTRODUCTION

The Role Model has been developed in order to facilitate the dialogue between the market participants from different countries through the designation of a single name for each role and domain that are prevalent within the electricity market. Its focus is essentially to enable a common terminology for IT development.

This document describes a model identifying all the roles that can be played for given domains within the electricity market. The Role Model has been developed by ENTSO-E and the associated organisations EFET and ebIX. It covers both the electricity wholesale and retail markets. Roles are of a logical nature that act within or upon a given domain.

The document covers the roles as identified in current development being carried out in information exchange. It will naturally grow or evolve as this work progresses. The reader is therefore encouraged to ensure that the document is the latest available version. This may be found at the following URL:

https://www.entsoe.eu/resources/edi-library/ (Drop down menu *ENTSO-E Harmonized Electricity Role Model*).

A Role Model of this nature shall be the formal means of identifying roles and domains that are used in information interchange in the electricity market. It is important to stress that it is not a model of the electricity market but rather a Role Model related to the information interchange.

The necessity for such a model arises from the possibility that a single party in the market may assume multiple roles. This implies that the roles need to be atomically decomposed where necessary in order to satisfy the minimal information flows for a given process required within the electricity market.

2 ABOUT THE ROLE MODEL

A "Role Model" provides a common definition of the roles and domains employed in the electricity market which enables people to use a common language in the development of information interchange.

A party on the market may play several roles, for example a TSO frequently plays both the role of System Operator and the role of Imbalance Settlement Responsible. However two different roles have been defined since these roles are not always played by the same party. Even in a large organisation the roles may not be played by the same business unit. Consequently it is necessary to clearly define the roles in order to be in a position to correctly use them as required.

It is important to differentiate between the roles that can be found on a given marketplace and the parties that can play such roles. ENTSO-E and the associated organisations have

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78 identified a given role whenever it has been found necessary to distinguish it in an
79 information interchange process.

80 The Model consequently identifies all the roles that intervene in the exchange of information
81 in the electricity market. These roles define the external interfaces managed by a party for
82 given processes.

83 It also identifies the different domains that are necessary in the electricity market for
84 information interchange. A domain represents a grouping of entities with common
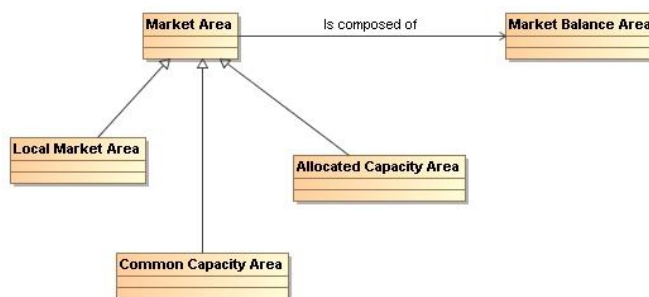85 characteristics.

86 To build a Role Model diagram the UML class diagramming technique has been used. The
87 diagram makes use of two UML symbols, the "actor" symbol (not to be confused with a party
88 on a marketplace) is used to represent a role and the "class" symbol is used to define a
89 domain.
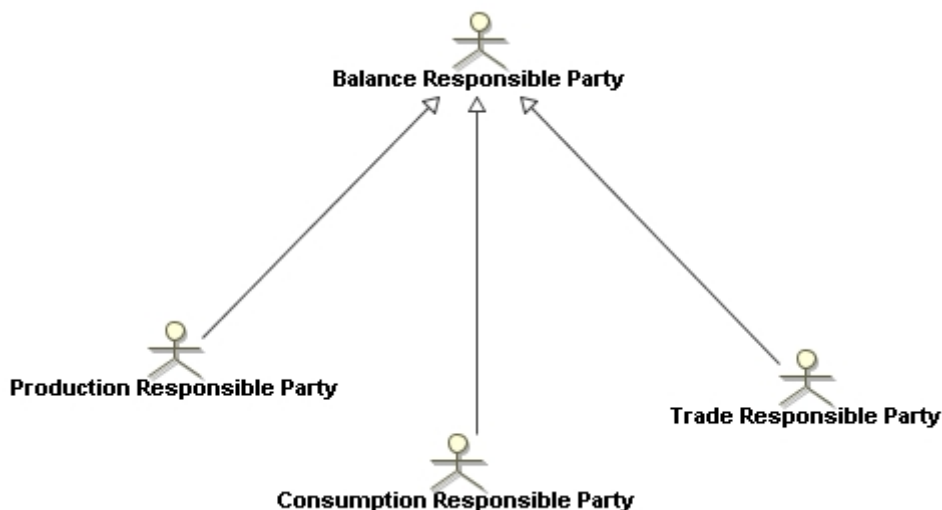
90

91 **FIGURE 1:THE UML ACTOR SYMBOL IN THE ROLE MODEL**

92 The Role Model shown in figure 1 shows the actor symbol used to identify roles. It also
93 introduces the concept of a "generalisation" relationship. The generalisation relationships in
94 the figure show that three roles inherit the basic properties of a "Balance Responsible Party".

95

96 **FIGURE 2: THE CLASS SYMBOL IN THE ROLE MODEL**

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97 The class symbols outlined in figure 2 show an example of domains and indicate that a
98 Market Area is a generalisation of Local Market Areas, Common Capacity Areas and
99 Allocated Capacity Areas. One also sees that a Market Area is composed of Market Balance
100 Areas.
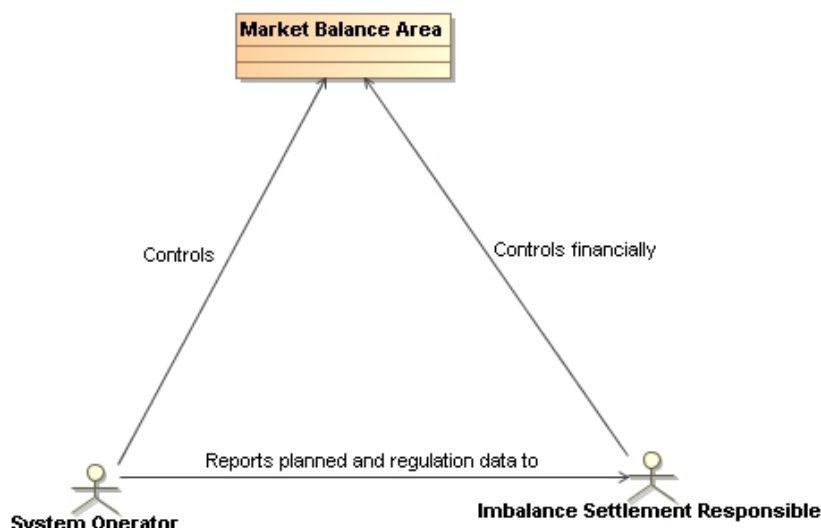
101

102 **FIGURE 3: ROLE AND DOMAIN RELATIONSHIPS**

103 Figure 3 shows how roles may interact. The relationship that exists between the roles and
104 domains are shown by the arrows drawn between them. For example the System Operator
105 controls a Market Balance Area and reports the planned and regulation data to the
106 Imbalance Settlement Responsible who controls financially the Market Balance Area.

107 Naturally enough the role model does not show all the relationships that may exist between
108 the roles and the domains. The relationships in the model are there only to highlight the
109 major relationship that justifies the presence of a role or a domain. In other words not all
110 relationships are present.

111 # 3 PROCEDURES FOR THE USE OF THE ROLE MODEL

112 ## 3.1 INTRODUCTION

113 _A role_ represents the external intended behaviour of a party. Parties cannot share a role.
114 Businesses carry out their activities by performing roles, e.g. system operator, trader. Roles
115 describe external business interactions with other parties in relation to the goal of a given
116 business transaction.

117 _A domain_ represents a delimited area that is uniquely identified for a specific purpose and
118 where energy consumption, production or trade may be determined.

119 *An actor* represents a party that participates in a business transaction. Within a given
120 business transaction an actor assumes a specific role or a set of roles. An actor is a
121 composition of one or more roles and as such does not appear in the model.

122 The objective of decomposing the electricity market into a set of autonomous roles and
123 domains is to enable the construction of business processes where the relevant role
124 participates to satisfy a specific transaction. Business processes should be designed to
125 satisfy the requirements of the roles and not of the parties.

126 It is not the intent of the Role Model to define the business processes and their transactions.
127 Business processes and their transactions shall be completely defined in an implementation
128 guide.

129 ## 3.2 ROLE CONSTRAINTS

130 A role must be able to stand alone within the model. In other words it must represent a
131 relatively autonomous function. A good guide to determining the validity for the insertion of a
132 role is to determine whether it provides:

133   1. All the information relevant to interoperability. It must be able to participate in the
134   development of a business process by being a key factor in the construction of
135   the allowable sequences of information exchanges and satisfy the conditions in
136   which it is allowed to send information. In this respect it has to be autonomous.
137   That is to say it must have the business responsibility which enables it to:

138   ➤ receive information from another role,

139   ➤ determine the actions to be carried out on the information in
140   question,

141   ➤ terminate, if necessary, prematurely, the exchange with respect to
142   predefined rules,

143   ➤ send information to the role in question or to another role,

144   ➤ manage error conditions.

145   2. Satisfy the process constraints in which the role participates. Such constraints
146   impose restrictions on how roles may or must react. These constraints will be
147   defined within the business process specification. Such constraints include:

148   ➤ demands on quality of service imposed by the business process
149   requirements for a role, such as network acknowledgement or
150   security features;

151   ➤ constraints on the characteristics of the party that can play the role;

152   ➤ constraints on the preconditions that must be met before a role can
153   be played;

154   ➤ constraints on the ability of a party to assign all or part of a role to
155   another party;

156   ➤ The role shall be generic. The model is intended to be employed
157   throughout the industry. Consequently roles that are specific or that

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158 are particular to only one European context shall not appear in the
159 model.

160 In essence this means that a separate role shall be identified when it can be
161 played by a third party (= a party that can carry out the task on behalf of another
162 party or as an independent entity). E.g. the Transmission Capacity Allocator can
163 carry out the capacity allocation on behalf of the System Operator.

164 3.3 ROLE MODEL USE

165 The Role Model shall be used as the basis for the construction of the business processes
166 that are necessary for the electricity market. The generic nature of the Role Model should
167 cover all the roles that can be used in a heterogeneous environment.

168 If, during the course of the construction of a process, a role is found to be missing from the
169 Role Model a maintenance request should be made requesting its inclusion in the model.

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4 THE ROLE MODEL

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173 5 ROLE MODEL DEFINITIONS

174 5.1 ROLES

	ROLES	
TYPE	**ROLE NAME**	**DESCRIPTION**
Actor	Balance Responsible Party	A party that has a contract proving financial security and identifying balance responsibility with the Imbalance Settlement Responsible of the Market Balance Area entitling the party to operate in the market. This is the only role allowing a party to nominate energy on a wholesale level. **Additional information:** The meaning of the word "balance" in this context signifies that that the quantity contracted to provide or to consume must be equal to the quantity really provided or consumed. Equivalent to "Program responsible party" in the Netherlands. Equivalent to "Balance group manager" in Germany. Equivalent to "market agent" in Spain.
Actor	Balance Supplier	A party that markets the difference between actual metered energy consumption and the energy bought with firm energy contracts by the Party Connected to the Grid. In addition the Balance Supplier markets any difference with the firm energy contract (of the Party Connected to the Grid) and the metered production. **Additional information:** There is only one Balance Supplier for each Accounting Point.
Actor	Billing Agent	The party responsible for invoicing a concerned party.
Actor	Block Energy Trader	A party that is selling or buying energy on a firm basis (a fixed volume per market time period).

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ROLES		
TYPE	ROLE NAME	DESCRIPTION
Actor	Capacity Coordinator	A party, acting on behalf of the System Operators involved, responsible for establishing a coordinated Offered Capacity and/or NTC and/or ATC between several Market Balance Areas.
Actor	Capacity Trader	A party that has a contract to participate in the Capacity Market to acquire capacity through a Transmission Capacity Allocator. **Note:** The capacity may be acquired on behalf of an Interconnection Trade Responsible or for sale on secondary capacity markets.
Actor	Consumer	A party that consumes electricity. **Additional information:** This is a Type of Party Connected to the Grid.
Actor	Consumption Responsible Party	A party who can be brought to rights, legally and financially, for any imbalance between energy nominated and consumed for all associated Accounting Points. **Additional information:** This is a type of Balance Responsible Party.
Actor	Control Area Operator	Responsible for : 1. The coordination of exchange programs between its related Market Balance Areas and for the exchanges between its associated Control Areas. 2. The load frequency control for its own area. 3. The coordination of the correction of time deviations.
Actor	Control Block Operator	Responsible for : 1. The coordination of exchanges between its associated Control Blocks and the organisation of the coordination of exchange programs between its related Control Areas. 2. The load frequency control within its own block and ensuring that its Control Areas respect their obligations in respect to load frequency control and time deviation.

		ROLES
TYPE	**ROLE NAME**	**DESCRIPTION**
		3. The organisation of the settlement and/or compensation between its Control Areas.
Actor	Coordination Center Operator	Responsible for : 1. The coordination of exchange programs between its related Control Blocks and for the exchanges between its associated Coordination Center Zones. 2. Ensuring that its Control Blocks respect their obligations in respect to load frequency control. 3. Calculating the time deviation in cooperation with the associated coordination centers. 4. Carrying out the settlement and/or compensation between its Control Blocks and against the other Coordination Center Zones.
Actor	Grid Access Provider	A party responsible for providing access to the grid through an Accounting Point and its use for energy consumption or production to the Party Connected to the Grid.
Actor	Grid Operator	A party that operates one or more grids.
Actor	Imbalance Settlement Responsible	A party that is responsible for settlement of the difference between the contracted quantities and the realised quantities of energy products for the Balance Responsible Parties in a Market Balance Area. **Note:** The Imbalance Settlement Responsible has not the responsibility to invoice. The Imbalance Settlement Responsible may delegate the invoicing responsibility to a more generic role such as a Billing Agent.
Actor	Interconnection Trade Responsible	Is a Balance Responsible Party or depends on one. He is recognised by the Nomination Validator for the nomination of already allocated capacity. **Additional information:** This is a type of Balance Responsible Party.

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ROLES		
TYPE	ROLE NAME	DESCRIPTION
Actor	Market Information Aggregator	A party that provides market related information that has been compiled from the figures supplied by different actors in the market. This information may also be published or distributed for general use. **Note:** The Market Information Aggregator may receive information from any market participant that is relevant for publication or distribution.
Actor	Market Operator	The unique power exchange of trades for the actual delivery of energy that receives the bids from the Balance Responsible Parties that have a contract to bid. The Market Operator determines the market energy price for the Market Balance Area after applying technical constraints from the System Operator. It may also establish the price for the reconciliation within a Metering Grid Area.
Actor	Meter Administrator	A party responsible for keeping a database of meters.
Actor	Meter Operator	A party responsible for installing, maintaining, testing, certifying and decommissioning physical meters.
Actor	Metered Data Collector	A party responsible for meter reading and quality control of the reading.
Actor	Metered Data Responsible	A party responsible for the establishment and validation of metered data based on the collected data received from the Metered Data Collector. The party is responsible for the history of metered data for a Metering Point.
Actor	Metered Data Aggregator	A party responsible for the establishment and qualification of metered data from the Metered Data Responsible. This data is aggregated according to a defined set of market rules.

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		ROLES
TYPE	ROLE NAME	DESCRIPTION
Actor	Metering Point Administrator	A party responsible for registering the parties linked to the metering points in a Metering Grid Area. He is also responsible for maintaining the Metering Point technical specifications. He is responsible for creating and terminating metering points.
Actor	MOL Responsible	Responsible for the management of the available tenders for all Acquiring System Operators to establish the order of the reserve capacity that can be activated.
Actor	Nomination Validator	Has the responsibility of ensuring that all capacity nominated is within the allowed limits and confirming all valid nominations to all involved parties. He informs the Interconnection Trade Responsible of the maximum nominated capacity allowed. Depending on market rules for a given interconnection the corresponding System Operators may appoint one Nomination Validator.
Actor	Party Connected to the Grid	A party that contracts for the right to consume or produce electricity at an Accounting Point.
Actor	Producer	A party that produces electricity. **Additional information:** This is a type of Party Connected to the Grid.
Actor	Production Responsible Party	A party who can be brought to rights, legally and financially, for any imbalance between energy nominated and produced for all associated Accounting Points. **Additional information:** This is a type of Balance Responsible Party.
Actor	Reconciliation Accountable	A party that is financially accountable for the reconciled volume of energy products for a profiled Accounting Point.

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		ROLES
TYPE	ROLE NAME	DESCRIPTION
Actor	Reconciliation Responsible	A party that is responsible for reconciling, within a Metering Grid Area, the volumes used in the imbalance settlement process for profiled Accounting Points and the actual metered quantities. **Note:** The Reconciliation Responsible may delegate the invoicing responsibility to a more generic role such as a Billing Agent.
Actor	Reserve Allocator	Informs the market of reserve requirements, receives tenders against the requirements and in compliance with the prequalification criteria, determines what tenders meet requirements and assigns tenders.
Actor	Resource Provider	A role that manages a resource object and provides the schedules for it.
Actor	Scheduling Coordinator	A party that is responsible for the schedule information and its exchange on behalf of a Balance Responsible Party. For example in the Polish market a Scheduling Coordinator is responsible for information interchange for scheduling and settlement.

ROLES		
TYPE	ROLE NAME	DESCRIPTION
Actor	System Operator	A party that is responsible for a stable power system operation (including the organisation of physical balance) through a transmission grid in a geographical area. The System Operator will also determine and be responsible for cross border capacity and exchanges. If necessary he may reduce allocated capacity to ensure operational stability. Transmission as mentioned above means "the transport of electricity on the extra high or high voltage network with a view to its delivery to final customers or to distributors. Operation of transmission includes as well the tasks of system operation concerning its management of energy flows, reliability of the system and availability of all necessary system services". (definition taken from the ENTSO-E RGCE Operation handbook Glossary). **Note:** additional obligations may be imposed through local market rules.
Actor	Trade Responsible Party	A party who can be brought to rights, legally and financially, for any imbalance between energy nominated and consumed for all associated Accounting Points. **Note:** A power exchange without any privileged responsibilities acts as a Trade Responsible Party. **Additional information:** This is a type of Balance Responsible Party.

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ROLES		
TYPE	ROLE NAME	DESCRIPTION
Actor	Transmission Capacity Allocator	Manages the allocation of transmission capacity for an Allocated Capacity Area. For explicit auctions: The Transmission Capacity Allocator manages, on behalf of the System Operators, the allocation of available transmission capacity for an Allocated capacity Area. He offers the available transmission capacity to the market, allocates the available transmission capacity to individual Capacity Traders and calculates the billing amount of already allocated capacities to the Capacity Traders.

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176 **5.2 DOMAINS**

DOMAINS	
DOMAIN NAME	DESCRIPTION
Accounting Point	An entity under balance responsibility where balance supplier change can take place and for which commercial business processes are defined. **Additional information:** These entities are usually defined in a contract. Typical business processes where this would be used may be "compensation management", "settlement", "calculation of energy volumes", etc This is a type of metering point.
Allocated Capacity Area	A market area where the transmission capacity between the Balance Areas is given to the Balance Responsible Parties according to rules carried out by a Transmission Capacity Allocator. Trade between balance areas is carried out on a bilateral or unilateral basis. **Additional information:** This is a type of Market Area. **Note:** Example are also France-Spain (Pyrenees) and Portugal-Spain.
Balance Group	A collection of Metering Points for imbalance settlement Note: Equivalent to "Balance Group" (Bilanzgruppe) in the Austrian market or (Bilanzkreis) in the German market **German definition:** It is composed of a various number of metering points within a Market Balance Area. **Additional information:** This is a type of Functional group.

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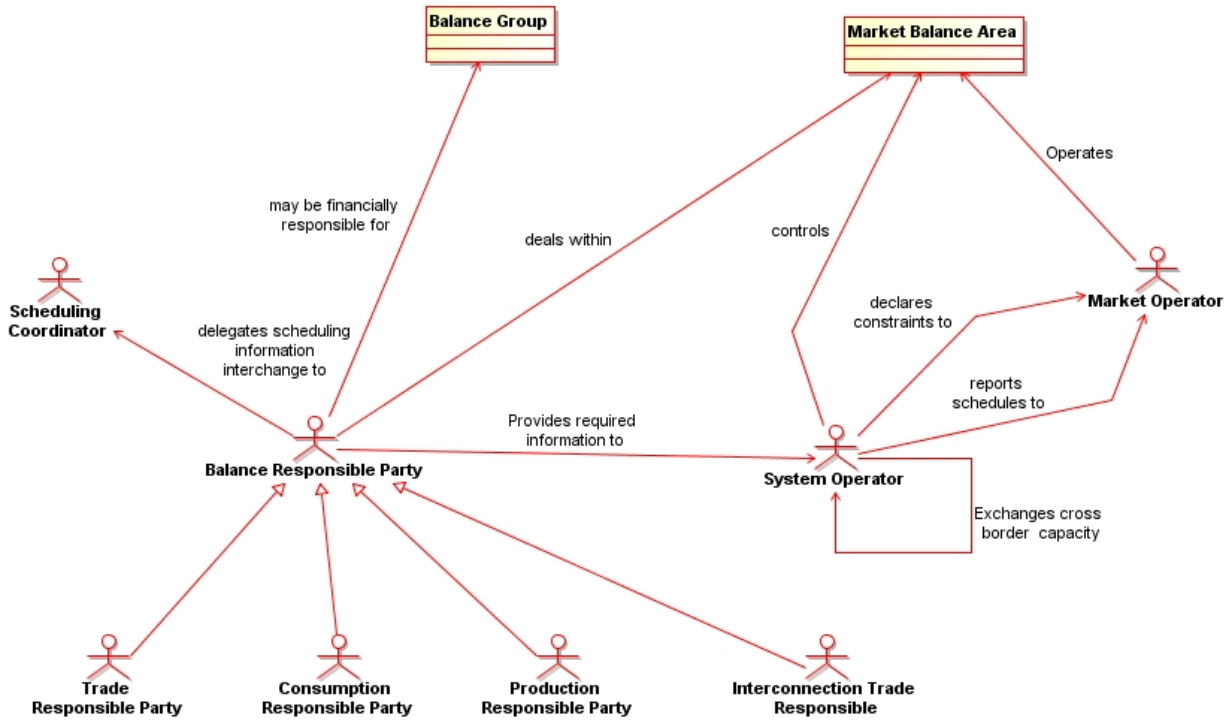
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Capacity Market Area	A market area where the transmission capacity between the Market Balance Areas is given to the Balance Responsible Parties in a price based process separated from trading carried out by a Transmission Capacity Allocator. Trade between Market Balance Areas is carried out on a bilateral or unilateral basis. For example The auctioning system between TenneT and RWE Net. **Additional information:** This is a type of Market Area
Certificate Area	A Certificate Market Area where a common set of rules relative to taxes and pricing for defined types of energy production are applied. **Additional information:** This is a type of Market Area.
Common Capacity Area	A Market Area where the available transmission capacity between the Market Balance Areas is given to the Balance Responsible Parties based on their bidding to the Market Operator. Trade between Market Balance Areas is carried out through the Market Operator. **Additional information:** This is a type of Market Area.
Control Area	The composition of one or more Market Balance Areas under the same technical load frequency control responsibility Note: In some cases there may be some Metering Points that belong to a Market Balance Area that is not a part of the Control Area. However these do not impact the general definition, for example, a village in one country connected to the grid of another.
Control Block	The composition of one or more Control Areas, working together to ensure the load frequency control on behalf of RGCE.
Control Entity	A geographic area consisting of one or more Metering Grid Areas with an energy delivery responsibility. Each area is synchronously connected to another area. In most cases such areas have a load frequency responsibility and therefore may have to report to a higher level control entity.
Coordination Center Zone	The composition of a number of Control Blocks under the responsibility of the same Coordination Center Operator.

Functional Group	A collection of Metering Points for consumption and generation within a Market Balance Area.
ITC	The Inter TSO Compensation (ITC) market is composed of a group of System Operators that accept a common set of rules for the invoicing of energy flows over the border. **Additional information:** This is a type of Market Area.
Local Market Area	A Market Area where there is no transmission capacity restrictions between the Market Balance Areas. **Additional information:** This is a type of Market Area.
Market Area	An area made up of several Market Balance Areas interconnected through AC or DC links. Trade is allowed between different Market Balance Areas with common market rules for trading across the interconnection.
Market Balance Area	A geographic area consisting of one or more Metering Grid Areas with common market rules for which the settlement responsible party carries out a balance settlement and which has the same price for imbalance. A Market Balance Area may also be defined due to bottlenecks.
Meter	A physical device containing one or more registers.
Metering Grid Area	A Metering Grid Area is a physical area where consumption, production and exchange can be metered. It is delimited by the placement of meters for period measurement for input to, and withdrawal from the area. It can be used to establish the sum of consumption and production with no period measurement and network losses.
Metering point	An entity where energy products are measured or computed.

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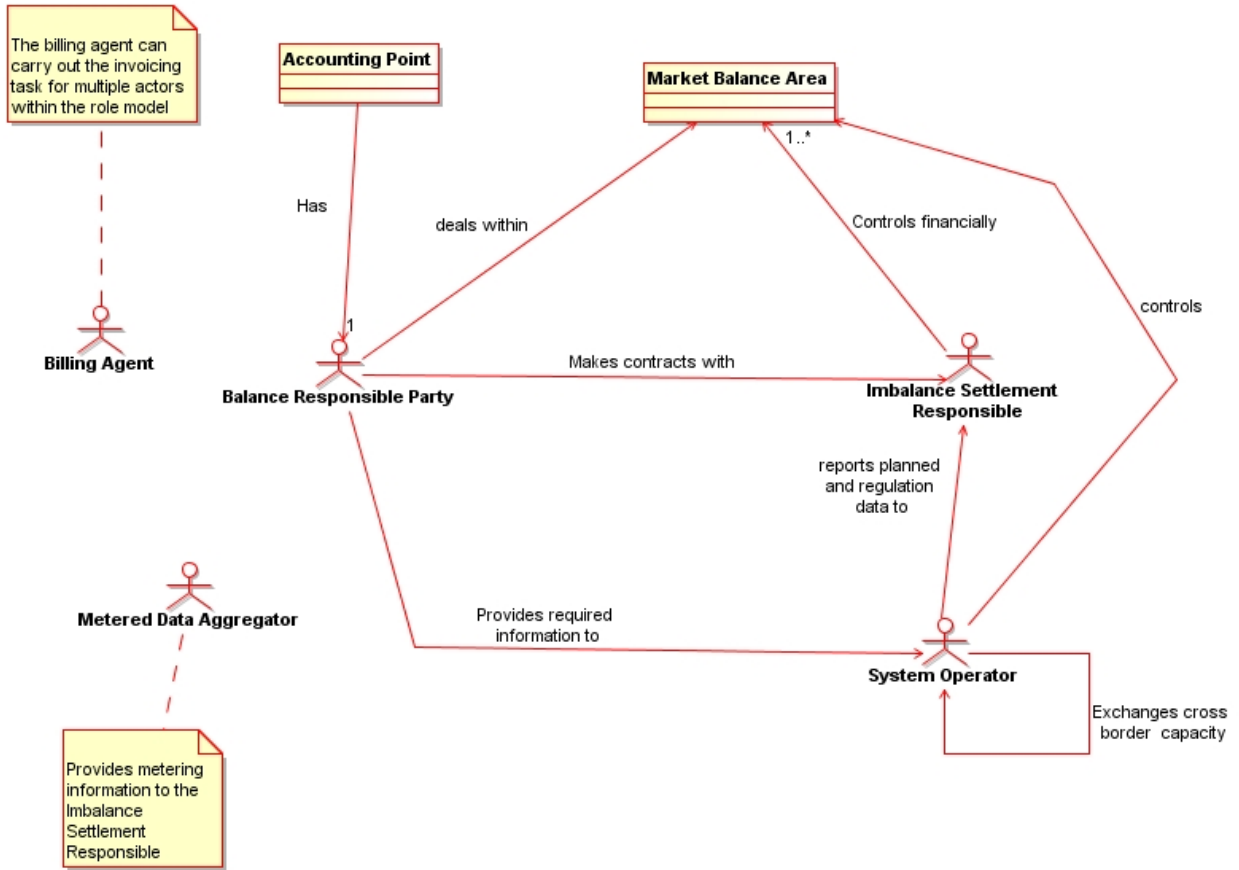|	
National Area	An area covered by a single set of national electricity arrangements established at government level. This is not necessarily the same as the geographical boundaries of a nation. **Additional information:** This is a type of Market Area
Register	A physical or logical counter measuring energy products.
Reserve Object	A resource technically pre-qualified using a uniform set of standards to supply reserve capabilities to a System Operator associated with one or more Metering Points and tele-measuring devices. **Additional information:** This is a type of Resource Object
Resource Object	A resource that can either produce or consume energy and that is reported in a schedule. **Additional information:** This is a type of Functional Group
RGCE Interconnected Group	The composition of a number of coordination center zones, operating under RGCE rules, where the exchange and compensation programmes within the zone must sum up to zero.

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6 THE ENTSO-E SCHEDULING SYSTEM WITHIN THE ROLE MODEL

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7 THE ENTSO-E SETTLEMENT PROCESS WITHIN THE ROLE MODEL

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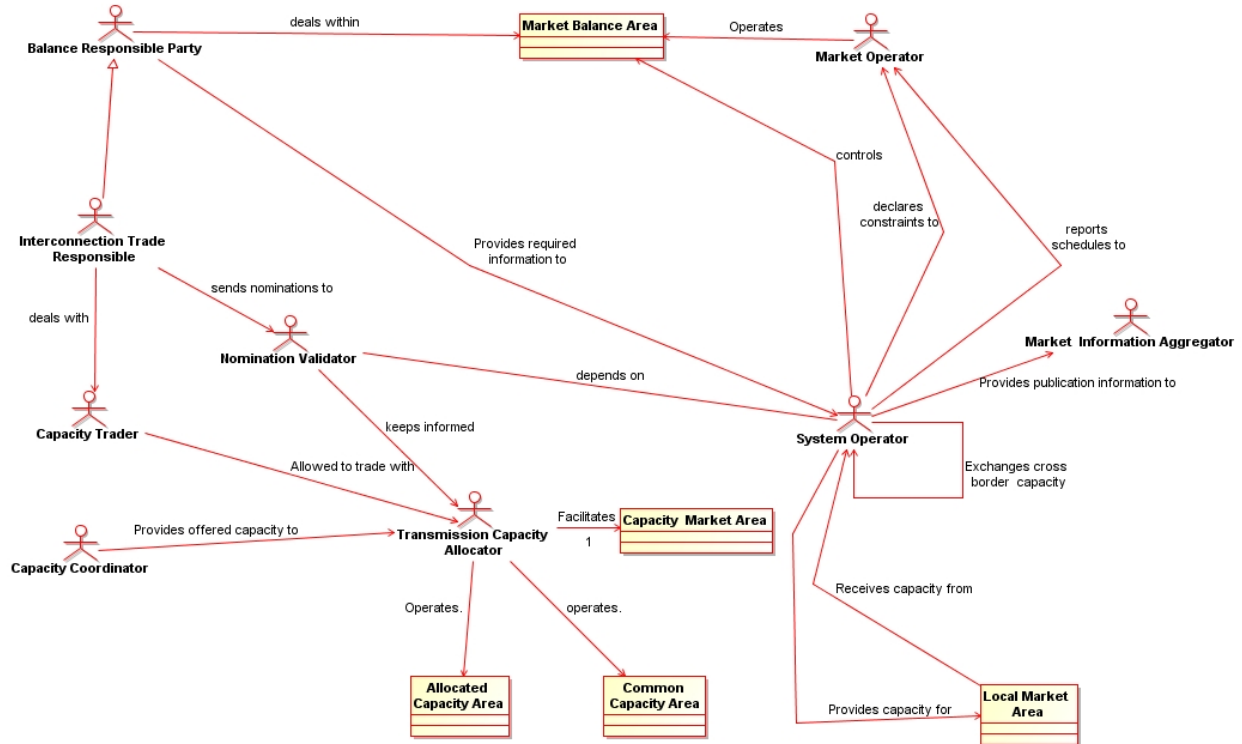## 8 THE ENTSO-E RESERVE RESOURCE PROCESS SYSTEM WITHIN THE ROLE MODEL

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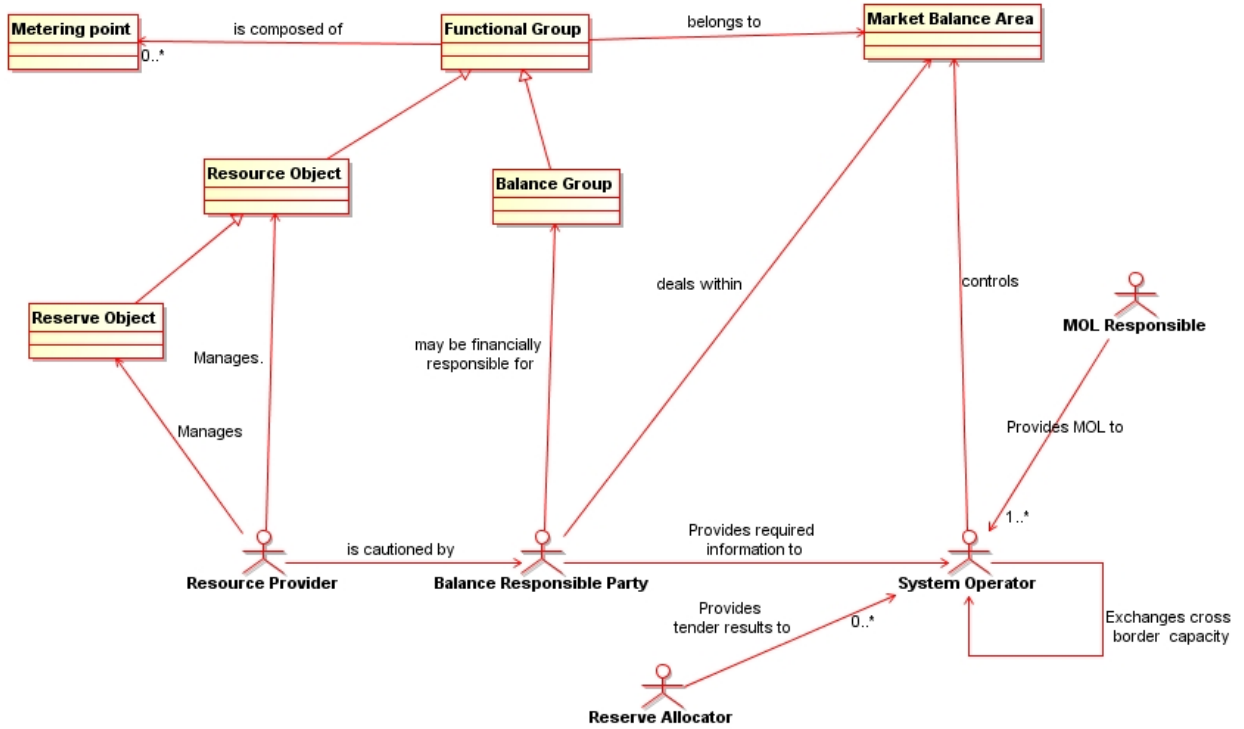
9 THE ENTSO-E CAPACITY ALLOCATION AND NOMINATION PROCESS WITHIN THE ROLE MODEL

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