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Entwurf

**Kommunikation im Energiemarkt –
Teil 351: CIM Profile für den Europäischen Markt
(IEC 57/1252/CDV:2012);
Englische Fassung FprEN 62325-351:2012**

Framework for energy market communications –
Part 351: CIM European market model exchange profile
(IEC 57/1252/CDV:2012);
English version FprEN 62325-351:2012

Cadre pour les communications pour le marché de l'énergie –
Partie 351: Profil de modèle d'échange de marché de style européen basé sur le CIM
(CEI 57/1252/CDV:2012);
Version anglaise FprEN 62325-351:2012

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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 56 Seiten

DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik im DIN und VDE

Nationales Vorwort

Die Englische Fassung des europäischen Dokuments FprEN 62325-351:2012 „Kommunikation im Energiemarkt – Teil 351: CIM Profile für den Europäischen Markt“ (Entwurf in der Umfrage) ist unverändert in diesen Norm-Entwurf übernommen worden.

Die Internationale Elektrotechnische Kommission (IEC) und das Europäische Komitee für Elektrotechnische Normung (CENELEC) haben vereinbart, dass ein auf IEC-Ebene erarbeiteter Entwurf für eine Internationale Norm zeitgleich (parallel) bei IEC und CENELEC zur Umfrage (CDV-Stadium) und Abstimmung als FDIS (en: Final Draft International Standard) bzw. Schluss-Entwurf für eine Europäische Norm gestellt wird, um eine Beschleunigung und Straffung der Normungsarbeit zu erreichen. Dem entsprechend ist das internationale Dokument IEC 57/1252/CDV:2012 „Framework for energy market communications – Part 351: CIM European market model exchange profile“ unverändert in den Entwurf Englische Fassung FprEN 62325-351:2012 übernommen worden.

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

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

Für dieses Dokument ist das nationale Arbeitsgremium K 952 „Netzleittechnik“ der DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik 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 den vorliegenden Normentwurf erfüllt.

Da sich die Benutzer des vorliegenden Normentwurfs der englischen Sprache als Fachsprache bedienen, wird die Englische Fassung der EN 62325-351 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 Für allgemeine Glossardefinitionen siehe das Internationale Elektrotechnische Wörterbuch IEC 60050.

3.1

aggregierte Geschäfts-Informationseinheit

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

für ein bestimmtes Geschäftsfeld wiederverwendete aggregierte Kernkomponente (ACC) (ISO 15000-5)

3.2

aggregierte Kernkomponente

(en: **aggregate core component – ACC**)

Anhäufung zusammengehöriger Geschäftsinformationsteile, die unabhängig von einem bestimmten Geschäftskontext zusammen eine gesonderte Bedeutung für das Geschäft haben. Als Terme bei der Modellierung stellen diese unabhängig von einem bestimmten Geschäftskontext eine Objektklasse dar (ISO 15000-5)

3.3

Anwendungsprogramm-Schnittstelle

(en: **application program interface – API**)

Menge von öffentlichen Funktionen, die von einer ausführbaren Komponente zum Aufruf durch andere Anwendungskomponenten zur Verfügung gestellt wird

3.4

basiert auf oder IsBasedOn

(en: **based on or IsBasedOn**)

Einsetzen eines Artefakts, das Einschränkungen besitzt, die nach den Anforderungen eines bestimmten Geschäftskontextes vorgenommen wurden (IEC 62325-450)

3.5

Geschäftskontext

(en: **business context**)

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

3.6

Profil des Europäischen Marktes

(en: **European style market profile – ESMP**)

Profil, das am Europäischen Markt ausgerichtet und Ziel dieser Internationalen Norm ist

3.7

Informationsmodell

(en: **information model**)

Repräsentation von Konzeptionen, Beziehungen, Beschränkungen, Regeln und Operationen zur Festlegung von Datensemantiken für ein ausgewähltes Diskursuniversum. Es kann gemeinsam anwendbare, feste und geordnete Datenstrukturanforderungen an den Domänenkontext enthalten

3.8**Marktmanagementsystem****(en: market management system – MMS)**

Computersystem, das eine Softwareplattform für die grundlegenden Supportdienstleistungen und eine Reihe von Anwendungen mit der Funktionalität beinhaltet, die für das effiziente Management des Elektrizitätsmarktes notwendig ist. Diese Softwaresysteme für einen Elektrizitätsmarkt können eine Unterstützung bei der Kapazitätsaufteilung, der Energieplanung, Hilfs- oder anderen Diensten, Echtzeit-Abläufen und Abrechnungen einschließen

3.9**Profil****(en: profile)**

grundlegender Strukturrahmen aller Daten, die erforderlich sind, um für eine spezielle Umgebung geeignet zu sein

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

Framework for energy market communications –

Part 351: CIM European market model exchange profile

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

International Standard IEC 62325-351 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

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

FDIS	Report on voting
XX/XX/FDIS	XX/XX/RVD

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

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

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

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

- 230 • reconfirmed,
231 • withdrawn,
232 • replaced by a revised edition, or
233 • amended.

234

235 The National Committees are requested to note that for this publication the stability
236 date is

237 THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL
238 BE DELETED AT THE PUBLICATION STAGE.

239

240

INTRODUCTION

241 This International Standard is one of the IEC 62325 series for deregulated energy
242 market data exchanges.

243 The principal objective of the IEC 62325 series of Standards is to produce standards
244 which facilitate the integration of market application software developed
245 independently by different vendors into a market management system, between
246 market management systems and market participant systems. This is accomplished
247 by defining message exchanges to enable these applications or systems access to
248 public data and exchange information independent of how such information is
249 represented internally.

250 The common information model (CIM), i.e. IEC 62325-301, IEC 61970-301 and IEC
251 61968-11 standards, specifies the basis for the semantics for message exchange.

252 This European style market profile is based on different parts of the CIM IEC standard
253 and specifies the content of the messages exchanged.

254 This International Standard provides the European style market profile specifications
255 that support the European style design electricity markets. These electricity markets
256 are based on the European regulations, and on the concepts of third party access and
257 zonal market. This standard was originally based upon the work of the European
258 Transmission System Operators (ETSO) Task Force EDI (Electronic Data
259 Interchange) and then on the work of the European Network of Transmission System
260 Operators (ENTSO-E) Working Group EDI.

261 ISO (www.iso.org/patents) and IEC (<http://patents.iec.ch>) maintain on-line data bases of
262 patents relevant to their standards. Users are encouraged to consult the data bases for the
263 most up to date information concerning patents.

Framework for energy market communications –
Part 351: CIM European market model exchange profile

1 Scope

This International Standard is applicable to European style electricity markets.

This International Standard specifies a UML package which provides a logical view of the functional aspects of European style market management within an electricity markets.

This package is based on the common information model (CIM). The use of the CIM goes far beyond its application in a market management system.

Due to the size of the complete CIM, the object classes contained in the CIM are grouped into a number of logical packages, each of which represents a certain part of the overall power system being modelled. Collections of these packages are progressed as separate International Standards.

From the CIM packages, regional contextual models are built to cover the market information interchange requirements for a given region, i.e. the business context. A region may be a continent where common electricity market designs are used for the exchange of information (Europe, North America, Asia, etc.). It may also be a specific country or an organization that has particular needs and wishes to benefit from the CIM.

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 61968 Part 11, *System Interfaces for Distribution Management: Common Information Model Extensions for Distribution*.

IEC 61970-301, *Energy Management System Application Program Interface (EMS-API): Common Information Model*.

IEC 62325-450, *Profile and Context Modeling Rules*.

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

Aggregate business information entity - ABIE

An Aggregate business information entity is a re-use of an Aggregate core component (ACC) in a specified business (ISO 15000-5).

3.2**Aggregate core component – ACC**

A collection of related pieces of business information that together convey a distinct business meaning, independent of any specific business context. Expressed in modelling terms, it is the representation of an object class, independent of any specific business context (ISO 15000-5).

3.3**Application program interface - API**

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

3.4**Based on or IsBasedOn**

The use of an artefact that has been restricted according to the requirements of a specific business context (IEC 62325 part 450).

3.5**Business context**

The formal description of a specific business circumstance as identified by the values of a set of context categories, allowing different business circumstances to be uniquely distinguished (UN/Cefact).

3.6**European style market profile - ESMP**

The European style market profile, the object of this International Standard.

3.7**Information model**

An information model is a representation of concepts, relationships, constraints, rules, and operations to specify data semantics for a chosen domain of discourse. It can provide shareable, stable, and organized structure of information requirements for the domain context.

3.8**Market management system - MMS**

A computer system comprised of a software platform providing basic support services and a set of applications providing the functionality needed for the effective management of the electricity market. These software systems in an electricity market may include support for capacity allocation, scheduling energy, ancillary or other services, real-time operations and settlements.

3.9**Profile**

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

4 European style market concepts

4.1 From the CIM information model to the European style market profile

The European style market profile is a regional contextual model as defined in IEC 62325 part 450. IEC 62325 part 450 provides the contextual derivation rules to be applied from the abstract CIM core concepts to generate the regional contextual model.

The common information model (CIM) is an abstract model. A CIM-compliant implementation does not need to include all classes, attributes, or associations in the CIM standard. Profiles should be defined to specify which elements must be included (i.e. mandatory elements) in a particular use of the CIM, as well as which elements are optional.

As stated in IEC 62325-450, the definition of CIM profiles follows a layered modelling framework from the CIM information model down to the specification of messages based on CIM concepts through the definition of different regional contextual models and their subsequent contextualized documents for information exchange.

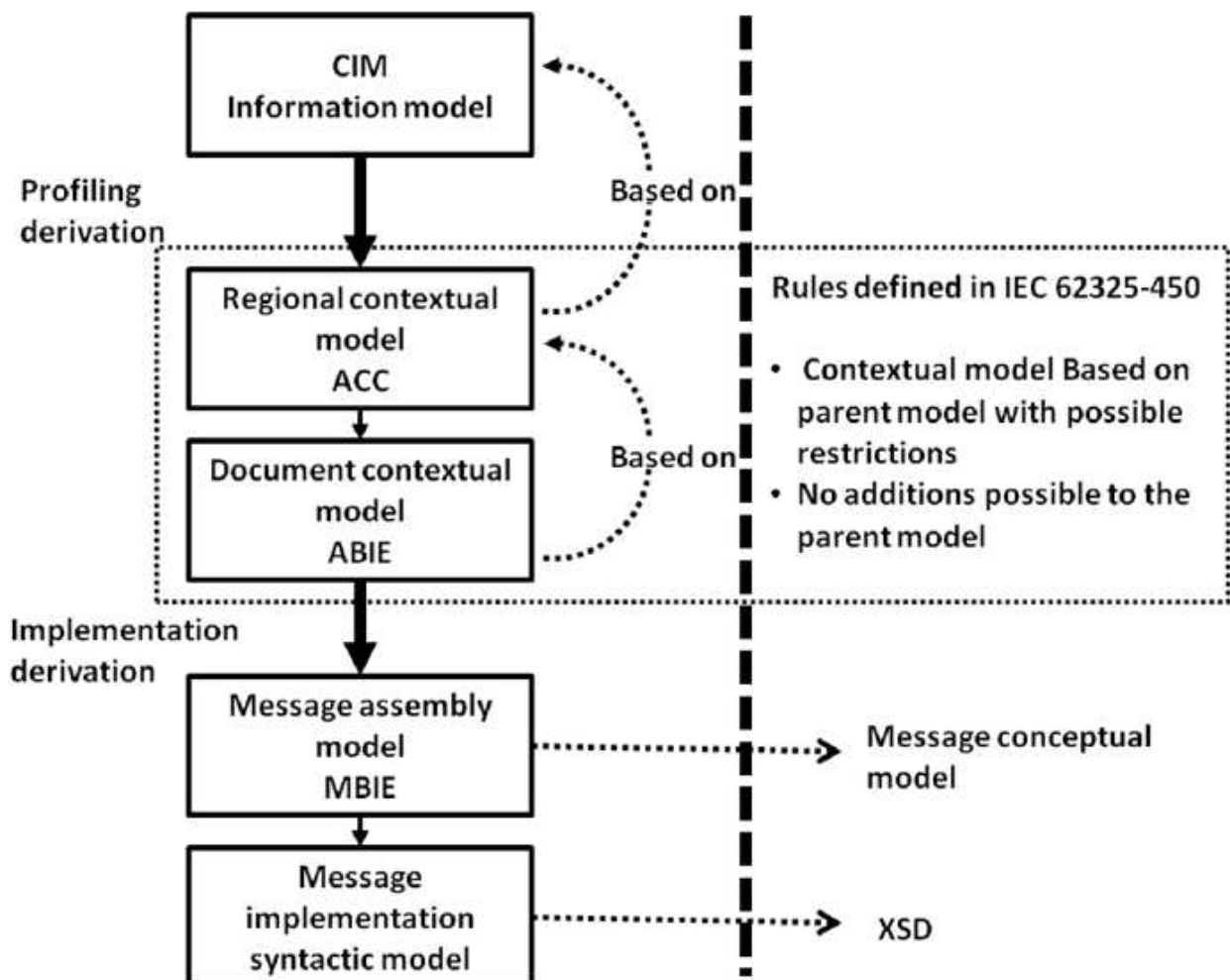


Figure 1 - IEC 62325-450 modelling framework

From the CIM which provides the overall semantic model for the electricity industry, regional contextual models are built to cover the electricity market information interchange requirements for a given region, i.e. the business context, in compliance with IEC 62325 part 450 rules.

The European style market profile is a regional contextual model based on the CIM artefacts where some particular artefacts are refined respecting a set of defined rules to cater for specific European style market requirements. These artefacts are based on the CIM artefacts on which they are built.

The European style market profile (ESMP) is the cornerstone to derive contextualized documents catering for specific information interchange functional requirements. These document contextual models are defined in other standards of the IEC 62325 series; and a dedicated IEC 62325 part 451-i (i going from 1 to n) per main business process describes the related information interchange requirements. Additional constraints are thus introduced on the European style market profile on which they are built.

The final modelling step applies standardized message assembly rules in order to provide an information structure for information interchange. All syntactic specific electronic documents are built from the message assembly models. This last level is covered by IEC 62361-100 standard, "Naming and design rules for CIM profiles to XML schema mapping".

4.1.1 Applying the framework to the European style electricity market

Within Europe a target has been defined for the implementation of the internal energy market (IEM) and in particular the electricity market. The harmonization of business processes has been carried out in particular for the data interchange between market participants such as transmission system operators (TSO), distribution system operators (DSO), market participants, balance responsible parties, etc. These business processes address a number of energy market activities such as congestion management, scheduling, reserve resource management, explicit auction for transmission capacity, settlement, reconciliation, etc.

The result of this harmonization work has been taken into account to define the European style market profile based on the CIM UML model. The European style market profile is thus a regional contextual model as defined in IEC 62325 part 450.

The European style market profile is a first level of contextual model that covers generically all the required information conveyed in the different exchanged messages gathered by the defined business processes.

The European style market profile is therefore the smallest sub-set of the CIM information model (derived by restrictions) from which all the exchanges of information are derived for all the European style market business processes.

4.1.2 Examples for building a European style market profile

Each UML artefact can be potentially restricted in order to refine and define the business requirements applied to the current European style market profile.

The example in Figure 2 illustrates how the CIM information model is restricted into a profile for the European style market.

a) Classes: it is possible to restrict each class of the CIM by selecting a subset of its attribute list since all CIM attributes are optional (i.e. their multiplicity is 0..1). For example, the CIM MarketDocument class is restricted into the profile class with only two attributes, aliasName and type.

b) Attributes: it is possible to restrict each attribute in the profile by applying restrictions to its related datatypes (see Datatypes below) and its multiplicity. The new multiplicity must be included in the multiplicity from the parent BasedOn class. For example, in the European style market profile, the attribute aliasName from MarketParticipant is mandatory (i.e. multiplicity = 1..1) while in the parent BasedOn class from the CIM, the attribute is optional (i.e. multiplicity = 0..1).

- 414 c) Relationships: it is possible to restrict each relationship between CIM Classes at the
415 profile level. The kinds of restriction uniquely concern the multiplicity and qualification of
416 the end role.
- 417 d) Datatypes: it is possible to restrict the CIM Datatypes by defining facets on the value
418 space of the datatype. For example, the CIM attribute type of MarketDocument is a CIM
419 String that in the profile it is restricted by an enumeration (i.e. MessageTypeList) to
420 indicate the list of valid types for a MarketDocument.

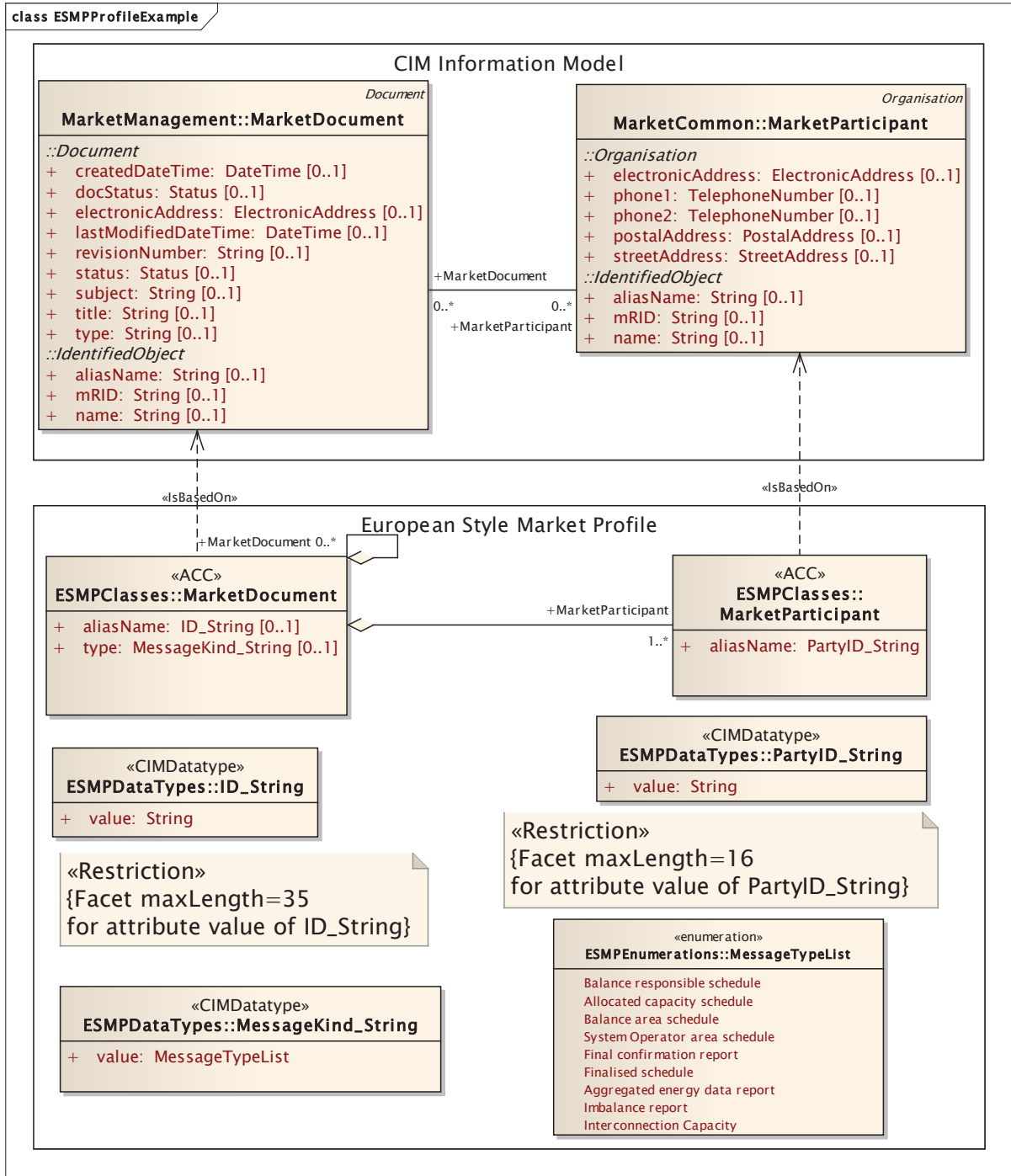


Figure 2 - Example of European style market profile (MarketParticipant)

Note: in the examples of this section, the list of attributes and enumerated literals are not complete. They are just given as examples.