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Entwurf

**Kommunikation im Energiemarkt –
Teil 451-5: Problemstellungs- und Status-Anfragen-Geschäftsprozesse,
kontextbezogene Modelle und Einbindungsmodelle für den
europäischen Markt
(IEC 57/1411/CD:2013), Text in Englisch**

Framework for energy market communications –
Part 451-5: Problem statement and status request business processes, contextual and
assembly models for European market
(IEC 57/1411/CD:2013), Text in English

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Nationales Vorwort

Die englische Originalfassung des internationalen Dokuments IEC 57/1411/CD:2013 „Framework for energy market communications – Part 451-5: Problem statement and status request business processes, contextual and assembly 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.

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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.

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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**)

aggregierte Geschäfts-Informationseinheit ist eine Wiederverwendung einer aggregierten Kernkomponente (ACC) in einem festgelegten Geschäftsbereich (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.

ANMERKUNG zum Begriff 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

Einbindungsmodell

(en: **assembly Model**)

Modell, das Informationen in einem Geschäftskontext für die Einbindung in elektronische Dokumente für den Datenaustausch aufbereitet

3.5

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)

3.6

Geschäftskontext

(en: **business context**)

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

3.7

Profil des Europäischen Marktes

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

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

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

Repräsentation von Konzeptionen, Beziehungen, Beschränkungen, Regeln und Operationen zur Festlegung von Datensemantiken für ein ausgewähltes Diskursuniversum

ANMERKUNG zum Begriff Es kann gemeinsam anwendbare, feste und geordnete Datenstrukturanforderungen an den Domänenkontext enthalten

3.9**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.

ANMERKUNG zum Begriff Diese Softwaresysteme für einen Elektrizitätsmarkt können eine Unterstützung bei der Kapazitätsaufteilung, der Energieplanung, Hilfs- oder anderen Diensten, Echtzeit-Abläufen und Abrechnungen einschließen

3.10**Geschäfts-Informationseinheiten-Nachrichten****(en: message business information entity – MBIE)**

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

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FRAMEWORK FOR ENERGY MARKET COMMUNICATIONS –

**Part 451-5: Problem statement and status request business processes,
contextual and assembly models for European market**

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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International Standard IEC 62325-451-5 has been prepared by subcommittee 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.

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

- 203 • reconfirmed,
- 204 • withdrawn,
- 205 • replaced by a revised edition, or
- 206 • amended.

207

208 The National Committees are requested to note that for this publication the stability date
 209 is 20XX.

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

212 Document history

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

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

Name of intervening person	Document received		Brief description of the changes introduced	Document sent	
	From	Date		To	Date
Maurizio Monti	Project leader	2013-07-29	From the outlines submitted with the NP, draft the Committee Draft document and review made in the project group.	IEC Secretary	2013-08-29
Margareta Nöth	Maurizi o Monti	2013-08-30	CD draft for circulation	CO	2013-09-26

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

219

220 INTRODUCTION

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

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

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

231 The European style market profile is based on different parts of the CIM IEC standard. The
232 CIM is defined through a series of standard, i.e. IEC 62325-301, IEC 61970-301 and IEC
233 61968-11 standards.

234 This document provides for the European style market profile the problem statement and
235 status request business processes that can be used throughout a European style market. This
236 standard was originally based upon the work of the European Transmission System Operators
237 (ETSO) Task Force EDI (Electronic Data Interchange) and then on the work of the European
238 Network of Transmission System Operators (ENTSO-E) Working Group EDI.

FRAMEWORK FOR ENERGY MARKET COMMUNICATIONS –

Part 451-5: Problem statement and status request business processes, contextual and assembly models for European market

1 Scope

Based on the European style market profile (IEC 62325-351), this particular International Standard specifies a package for the problem statement and status request business processes 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 62325-351 have been contextualised into aggregated business information entities (ABIEs) to satisfy the requirements of this business process. The contextualised ABIEs have been assembled into the relevant document contextual models. Related assembly models and XML schema for the exchange of information between market participants are automatically generated from the assembled document contextual models.

2 Normative references

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

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

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

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

IEC 62361-100, *Power systems management and associated information exchange - Interoperability in the long term - 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.

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

280 **3.1**

281 **aggregate business information entity**

282 **ABIE**

283 aggregate business information entity is a re-use of an aggregate core component (ACC) in a
284 specified business

285 [SOURCE: ISO 15000-5]

286 **3.2**

287 **aggregate core component**

288 **ACC**

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

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

293 [SOURCE: ISO 15000-5]

294 **3.3**

295 **application program interface**

296 **API**

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

299 **3.4**

300 **assembly model**

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

303 **3.5**

304 **based on or IsBasedOn**

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

307 [SOURCE: IEC 62325-450]

308 **3.6**

309 **business context**

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

312 [SOURCE: UN/Cefact]

313 **3.7**

314 **European style market profile**

315 **ESMP**

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

317 **3.8**

318 **information model**

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

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

323 **3.9**324 **market management system**325 **MMS**

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

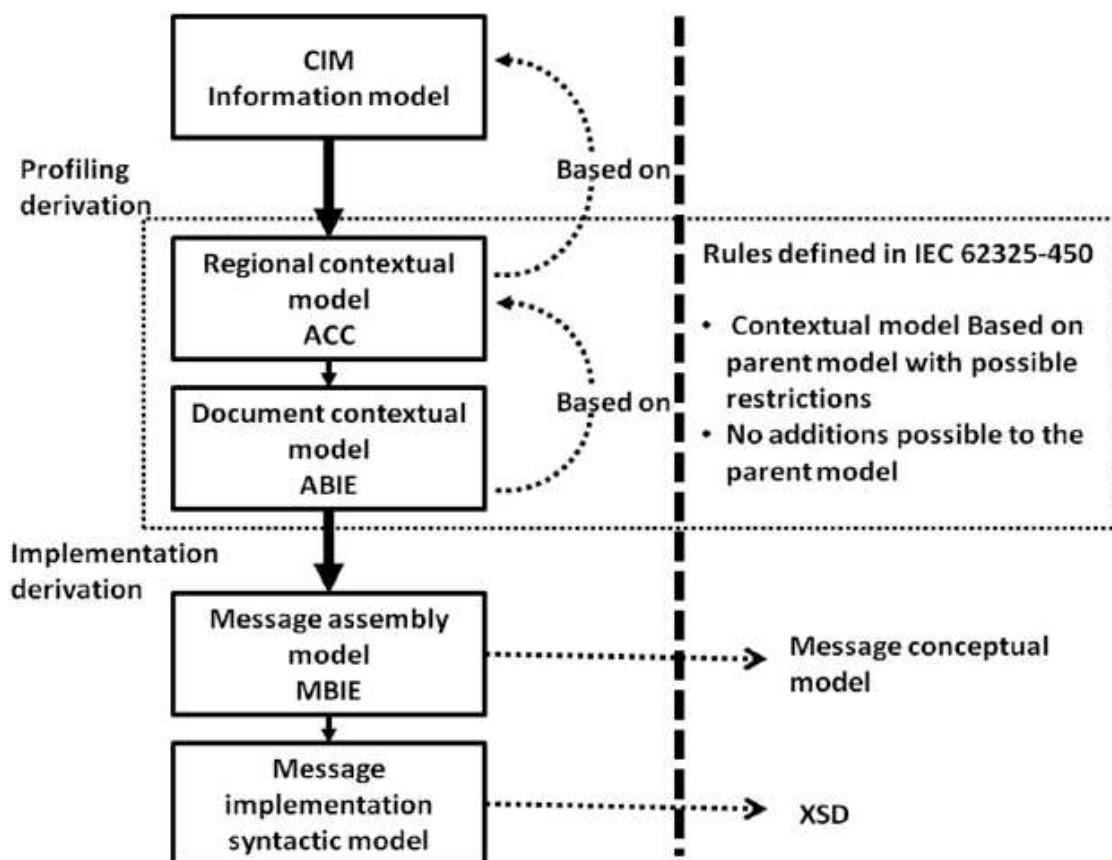
329 Note 1 to entry: These software systems in an electricity market may include support for capacity allocation,
 330 scheduling energy, ancillary or other services, real-time operations and settlements.

331 **3.10**332 **message business information entity**333 **MBIE**

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

335 **4 Document contextual model and message assembly model basic concepts**336 **4.1 Overview**

337 IEC 62325-450 defines a set of CIM profiles that follows a layered modelling framework as
 338 outlined in Figure 1 going from the common information model (CIM, IEC 61968-11, IEC
 339 61970-301 and IEC 62325-301), to different regional contextual models and their subsequent
 340 contextualized documents for information exchange; the final step being the message
 341 specifications for information interchange.



342
343 **Figure 1 - IEC 62325-450 modelling framework**

344 The regional contextual models are the basic core components that are necessary to build
 345 electronic documents for information interchange. This is defined in the European style
 346 market contextual model (IEC 62325-351). These core components are also termed
 347 aggregate core components (ACCs).

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

Once a document contextual model has been built that satisfactorily meets the business requirements, a message assembly model can be automatically generated from it.

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

4.2 European style market package structure

Figure 2 describes the main package structure of the European style market profile.

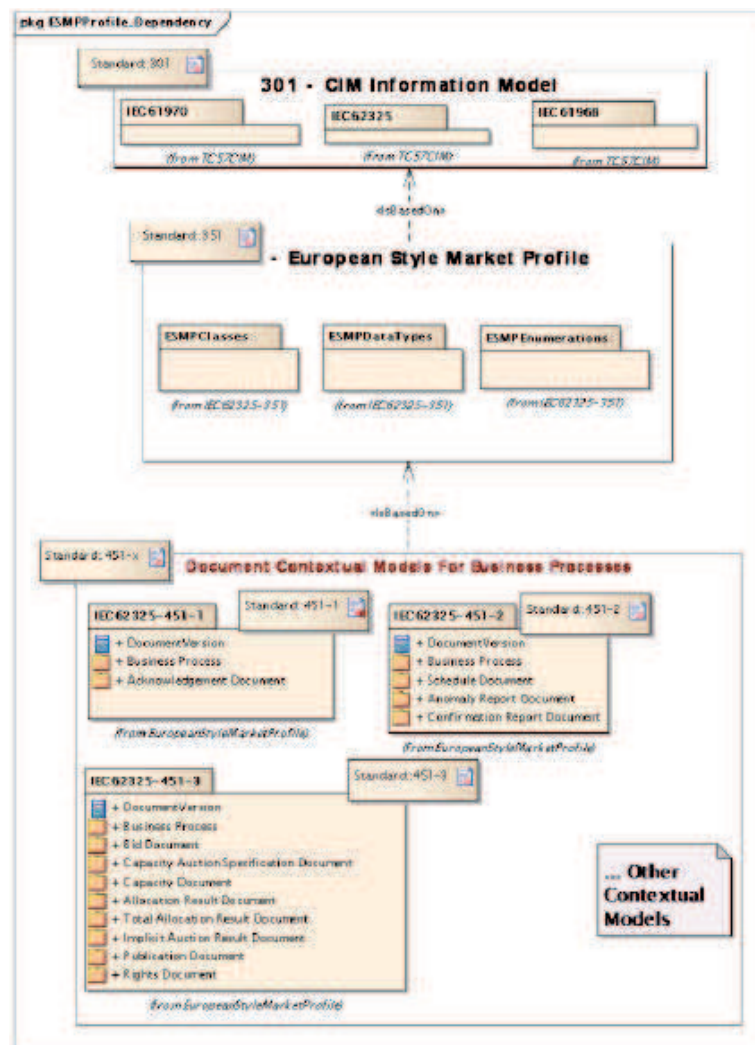


Figure 2 - Overview of European style market profile dependency

For each business process, a business process package is described in an IEC 62325-451-x (x 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.

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

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

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

- ESMPDataTypes: Defining all the core datatypes used within the ESMP classes.

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

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

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

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

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

4.4 From the document contextual model to the message assembly model

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

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

4.5 From the assembly model to the XML schema

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

5 The problem statement and status request business process

5.1 Business context for the problem statement process

The objective of the problem statement process is to provide:

- a means of informing a party that a document could not be issued by the expected time and thus will be delayed (the approval of this delay depends upon the rules that have been established between the parties);