

DIN EN 62325-451-5

ICS 27.010; 35.240.50; 35.240.63

**Kommunikation im Energiemarkt –
Teil 451-5: Problemstellungs- und Status-Anfragen-Geschäftsprozesse,
kontextbezogene Modelle und Einbindungsmodelle für den
europäischen Markt
(IEC 62325-451-5:2015);
Englische Fassung EN 62325-451-5:2015**

Framework for energy market communications –
Part 451-5: Problem statement and status request business processes, contextual and
assembly models for European market
(IEC 62325-451-5:2015);
English version EN 62325-451-5:2015

Cadre pour les communications pour le marché de l'énergie –
Partie 451-5: Processus métier d'énoncé de problème et de demande de position,
modèles contextuels et modèles d'assemblage pour le marché européen
(IEC 62325-451-5:2015);
Version anglaise EN 62325-451-5:2015

Gesamtumfang 54 Seiten

DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik in DIN und VDE

Anwendungsbeginn

Anwendungsbeginn für die von CENELEC am 2015-03-24 angenommene Europäische Norm als DIN-Norm ist 2017-05-01.

Nationales Vorwort

Vorausgegangener Norm-Entwurf: E DIN IEC 62325-451-5:2014-07.

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

Die enthaltene IEC-Publikation wurde vom TC 57 „Power systems management and associated information exchange“ erarbeitet.

Das IEC-Komitee hat entschieden, dass der Inhalt dieser Publikation bis zu dem Datum (stability date) unverändert bleiben soll, das auf der IEC-Website unter „<http://webstore.iec.ch>“ zu dieser Publikation angegeben ist. Zu diesem Zeitpunkt wird entsprechend der Entscheidung des Komitees die Publikation

- bestätigt,
- zurückgezogen,
- durch eine Folgeausgabe ersetzt oder
- geändert.

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

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

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

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

Da sich die Benutzer der vorliegenden Norm der englischen Sprache als Fachsprache bedienen, wird die Englische Fassung der EN 62325-451-5 veröffentlicht. Zu deren Abschnitt 1, der den Anwendungsbereich festlegt, und Abschnitt 3, der die Begriffe festlegt, wurde eine Übersetzung angefertigt und als informativer Nationaler Anhang NA der vorliegenden Norm hinzugefügt. Für die meisten der verwendeten Begriffe existieren keine gebräuchlichen deutschen Benennungen, da sich die deutschen Anwender in der Regel ebenfalls der englischen Benennungen bedienen. Diese Norm steht nicht in unmittelbarem Zusammenhang mit Rechtsvorschriften und ist nicht als Sicherheitsnorm anzusehen.

Das Original-Dokument enthält Bilder in Farbe, die in der Papierversion in einer Graustufen-Darstellung wiedergegeben werden. Elektronische Versionen dieses Dokuments enthalten die Bilder in der originalen Farbdarstellung.

Nationaler Anhang NA (informativ)

Auszugsweise Übersetzung^{N1)}

1 Anwendungsbereich

Basierend auf dem Markt-Profil nach europäischer Art (IEC 62325-351), spezifiziert dieser Teil der IEC 62325-451 ein Paket für die Problemstellungs- und Status-Anfragen-Geschäftsprozesse und die damit verbundenen Dokument-kontextbezogenen Modelle, Einbindungsmodelle (en: assembly models) und XML-Schemata zum Gebrauch innerhalb von Märkten nach europäischer Art.

Die relevanten aggregierten Kernkomponenten (en: aggregate core components; ACCs), die in IEC 62325-351 definiert sind, wurden kontextualisiert in die aggregierten Geschäfts-Informationseinheiten (en: aggregated business information entities; ABIEs), um die Anforderungen dieses Geschäftsprozesses zu erfüllen. Die kontextualisierten ABIEs wurden in die relevanten Dokument-kontextbasierten Modelle eingebunden. Verwandte Einbindungsmodelle und XML-Schemata für den Informationsaustausch zwischen Marktteilnehmern werden automatisch aus dem zusammengesetzten Dokument-kontextbasierenden Modell erstellt.

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

ABIE

(en: aggregate business information entity)

Wiederverwendung einer aggregierten Kernkomponente (ACC) in einem festgelegten Geschäftsbereich

[QUELLE: ISO/TS 15000-5:2005, Abschnitt 9, modifiziert (Anpassung des Begriffs)]

3.2

aggregierte Kernkomponente

ACC

(en: aggregate core component)

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

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

[QUELLE: ISO/TS 15000-5:2005, Abschnitt 9, modifiziert (Anpassung des Begriffs)]

3.3

Anwendungsprogramm-Schnittstelle

API

(en: application program interface)

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

^{N1)} Nationale Fußnote: Die Nummerierung aus IEC 62325-451-5:2015-02 wurde beibehalten.

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

IsBasedOn

(en: based on; IsBasedOn)

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

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

3.6

Geschäftskontext

(en: business context)

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

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

3.7

Profil des Europäischen Marktes

ESMP

(en: European style market profile)

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

3.8

Informationsmodell

(en: information model)

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

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

3.9

Marktmanagementsystem

MMS

(en: market management system)

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

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

3.10

Geschäfts-Informationseinheiten-Nachrichten

MBIE

(en: message business information entity)

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

English Version

**Framework for energy market communications - Part 451-5:
Problem statement and status request business processes,
contextual and assembly models for European market
(IEC 62325-451-5:2015)**

Cadre pour les communications pour le marché de l'énergie
- Partie 451-5: Processus métier d'énoncé de problème et
de demande de position, modèles contextuels et modèles
d'assemblage pour le marché européen
(IEC 62325-451-5:2015)

Kommunikation im Energiemarkt - Teil 451-5:
Problemstellungs- und Status-Anfragen-
Geschäftsprozesse, kontextbezogene Modelle und
Einbindungsmodelle für den europäischen Markt
(IEC 62325-451-5:2015)

This European Standard was approved by CENELEC on 2015-03-24. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

The text of document 57/1518/FDIS, future edition 1 of IEC 62325-451-5, prepared by IEC/TC 57 "Power systems management and associated information exchange" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62325-451-5:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2015-12-24
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-03-24

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 62325-451-5:2015 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61968-11	NOTE	Harmonized as EN 61968-11.
IEC 61970-301	NOTE	Harmonized as EN 61970-301.
IEC 62325-451-2	NOTE	Harmonized as EN 62325-451-2.
IEC 62325-451-3	NOTE	Harmonized as EN 62325-451-3.

CONTENTS

INTRODUCTION.....	7
1 Scope.....	8
2 Normative references	8
3 Terms and definitions	9
4 Document contextual model and message assembly model basic concepts.....	10
4.1 Overview	10
4.2 European style market package structure	11
4.3 From the European style market profile to the document contextual model	13
4.4 From the document contextual model to the message assembly model.....	13
4.5 From the assembly model to the XML schema	13
5 The problem statement and status request business process.....	13
5.1 Business context for the problem statement process	13
5.2 Business context for the status request process.....	14
5.2.1 Overview of the status request process	14
5.2.2 Use case for the status request process	14
5.2.3 Sequence diagrams for the status request process	15
5.3 Business rules	17
5.3.1 General	17
5.3.2 Business rules for the problem statement process	17
5.3.3 Business rules for the status request process	17
6 Contextual and assembly models	18
6.1 Problem statement contextual model	18
6.1.1 Overview of the model.....	18
6.1.2 IsBasedOn relationships from the European style market profile	18
6.1.3 Detailed Problem statement contextual model.....	19
6.2 Problem statement assembly model.....	24
6.2.1 Overview of the model.....	24
6.2.2 IsBasedOn relationships from the European style market profile	24
6.2.3 Detailed Problem statement assembly model	25
6.2.4 Datatypes	27
6.2.5 Enumerations.....	31
6.3 Status request contextual model.....	32
6.3.1 Overview of the model.....	32
6.3.2 IsBasedOn relationships from the European style market profile	32
6.3.3 Detailed Status request contextual model	32
6.4 Status request assembly model	35
6.4.1 Overview of the model.....	35
6.4.2 IsBasedOn relationships from the European style market profile	35
6.4.3 Detailed Status request assembly model	36
6.4.4 Datatypes	37
6.4.5 Enumerations.....	39
7 XML schema	40
7.1 XML schema URN namespace rules	40
7.2 Code list URN namespace rules	40

7.3	URI rules for model documentation	40
7.3.1	Datatype	40
7.3.2	Class	41
7.3.3	Attribute	41
7.3.4	Association end role name	41
7.4	ProblemStatement_MarketDocument schema	41
7.4.1	Schema Structure	41
7.4.2	Schema description	43
7.5	StatusRequest_MarketDocument schema	46
7.5.1	Schema Structure	46
7.5.2	Schema description	47
	Bibliography	49
	Annex ZA (normative) Normative references to international publications with their corresponding European publications	50
	Figure 1 – IEC 62325-450 modelling framework	11
	Figure 2 – Overview of European style market profile dependency	12
	Figure 3 – Problem statement business case	13
	Figure 4 – Status request business case	15
	Figure 5 – Status request scenario 1	16
	Figure 6 – Status request scenario 2	16
	Figure 7 – Problem statement contextual model	18
	Figure 8 – Problem statement assembly model	24
	Figure 9 – Status request contextual model	32
	Figure 10 – Status request assembly model	35
	Figure 11 – ProblemStatement_MarketDocument XML schema structure	42
	Figure 12 – StatusRequest_MarketDocument XML schema structure	46
	Table 1 – IsBasedOn dependency	18
	Table 2 – Attributes of Problem statement contextual model::ProblemStatement_MarketDocument	19
	Table 3 – Association ends of Problem statement contextual model::ProblemStatement_MarketDocument with other classes	19
	Table 4 – Attributes of Problem statement contextual model::Delivery_MarketDocument	20
	Table 5 – Attributes of Problem statement contextual model::Domain	21
	Table 6 – Attributes of Problem statement contextual model::MarketDocument	21
	Table 7 – Association ends of Problem statement contextual model::MarketDocument with other classes	21
	Table 8 – Attributes of Problem statement contextual model::MarketParticipant	22
	Table 9 – Association ends of Problem statement contextual model::MarketParticipant with other classes	22
	Table 10 – Attributes of Problem statement contextual model::MarketRole	22
	Table 11 – Attributes of Problem statement contextual model::Process	22
	Table 12 – Attributes of Problem statement contextual model::Reason	23
	Table 13 – Attributes of Problem statement contextual model::Time_Period	23

Table 14 – IsBasedOn dependency	24
Table 15 – Attributes of Problem statement assembly model::ProblemStatement_MarketDocument	25
Table 16 – Association ends of Problem statement assembly model::ProblemStatement_MarketDocument with other classes	26
Table 17 – Attributes of Problem statement assembly model::Reason	26
Table 18 – Attributes of ESMPDataTypes::ESMP_DateTimeInterval	27
Table 19 – Attributes of ESMPDataTypes::AreaID_String	27
Table 20 – Restrictions of attributes for ESMPDataTypes::AreaID_String	27
Table 21 – Attributes of ESMPDataTypes::ESMP_DateTime	28
Table 22 – Restrictions of attributes for ESMPDataTypes::ESMP_DateTime	28
Table 23 – Attributes of ESMPDataTypes::ESMPVersion_String	28
Table 24 – Restrictions of attributes for ESMPDataTypes::ESMPVersion_String	28
Table 25 – Attributes of ESMPDataTypes::ID_String	29
Table 26 – Restrictions of attributes for ESMPDataTypes::ID_String	29
Table 27 – Attributes of ESMPDataTypes::MarketRoleKind_String	29
Table 28 – Attributes of ESMPDataTypes::MessageKind_String	29
Table 29 – Attributes of ESMPDataTypes::PartyID_String	30
Table 30 – Restrictions of attributes for ESMPDataTypes::PartyID_String	30
Table 31 – Attributes of ESMPDataTypes::ProcessKind_String	30
Table 32 – Attributes of ESMPDataTypes::ReasonCode_String	30
Table 33 – Attributes of ESMPDataTypes::ReasonText_String	31
Table 34 – Restrictions of attributes for ESMPDataTypes::ReasonText_String	31
Table 35 – Attributes of ESMPDataTypes::YMDHM_DateTime	31
Table 36 – Restrictions of attributes for ESMPDataTypes::YMDHM_DateTime	31
Table 37 – IsBasedOn dependency	32
Table 38 – Attributes of Status request contextual model::StatusRequest_MarketDocument	33
Table 39 – Association ends of Status request contextual model::StatusRequest_MarketDocument with other classes	33
Table 40 – Attributes of Status request contextual model::AttributeInstanceComponent	34
Table 41 – Attributes of Status request contextual model::MarketParticipant	34
Table 42 – Association ends of Status request contextual model::MarketParticipant with other classes	34
Table 43 – Attributes of Status request contextual model::MarketRole	35
Table 44 – IsBasedOn dependency	35
Table 45 – Attributes of Status request assembly model::StatusRequest_MarketDocument	36
Table 46 – Association ends of Status request assembly model::StatusRequest_MarketDocument with other classes	36
Table 47 – Attributes of Status request assembly model::AttributeInstanceComponent	37
Table 48 – Attributes of ESMPDataTypes::AttributeValue_String	37
Table 49 – Restrictions of attributes for ESMPDataTypes::AttributeValue_String	37
Table 50 – Attributes of ESMPDataTypes::ESMP_DateTime	37
Table 51 – Restrictions of attributes for ESMPDataTypes::ESMP_DateTime	38
Table 52 – Attributes of ESMPDataTypes::ID_String	38

Table 53 – Restrictions of attributes for ESMPDataTypes::ID_String 38

Table 54 – Attributes of ESMPDataTypes::MarketRoleKind_String 39

Table 55 – Attributes of ESMPDataTypes::MessageKind_String 39

Table 56 – Attributes of ESMPDataTypes::PartyID_String 39

Table 57 – Restrictions of attributes for ESMPDataTypes::PartyID_String 39

INTRODUCTION

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

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

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

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

This document provides for the European style market profile the problem statement and status request business processes that can be used throughout a European style market. This standard was originally based upon the work of the European Transmission System Operators (ETSO) Task Force EDI (Electronic Data Interchange) and then on the work of the European 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 part of IEC 62325-451 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 TS 61970-2, *Energy management system application program interface (EMS-API) – Part 2: Glossary*

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

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

IEC 62325-450, *Framework for energy market communications – Part 450: Profile and context modelling rules*

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

IEC 62361-1001, *Power systems management and associated information exchange – Interoperability in the long term – Part 100: CIM profiles to XML schema mapping*

¹ Under consideration.

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 IEC 60050, *International Electrotechnical Vocabulary*, for general glossary definitions.

3.1

aggregate business information entity

ABIE

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

[SOURCE: ISO/TS 15000-5:2005, Clause 9, modified (modification of the definition)]

3.2

aggregate core component

ACC

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

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

[SOURCE: ISO/TS 15000-5:2005, Clause 9, modified (modification of the definition)]

3.3

application program interface

API

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

3.4

assembly model

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

3.5

based on

IsBasedOn

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

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

3.6

business context

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

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

3.7

European style market profile

ESMP

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

3.8 **information model**

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

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

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

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

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

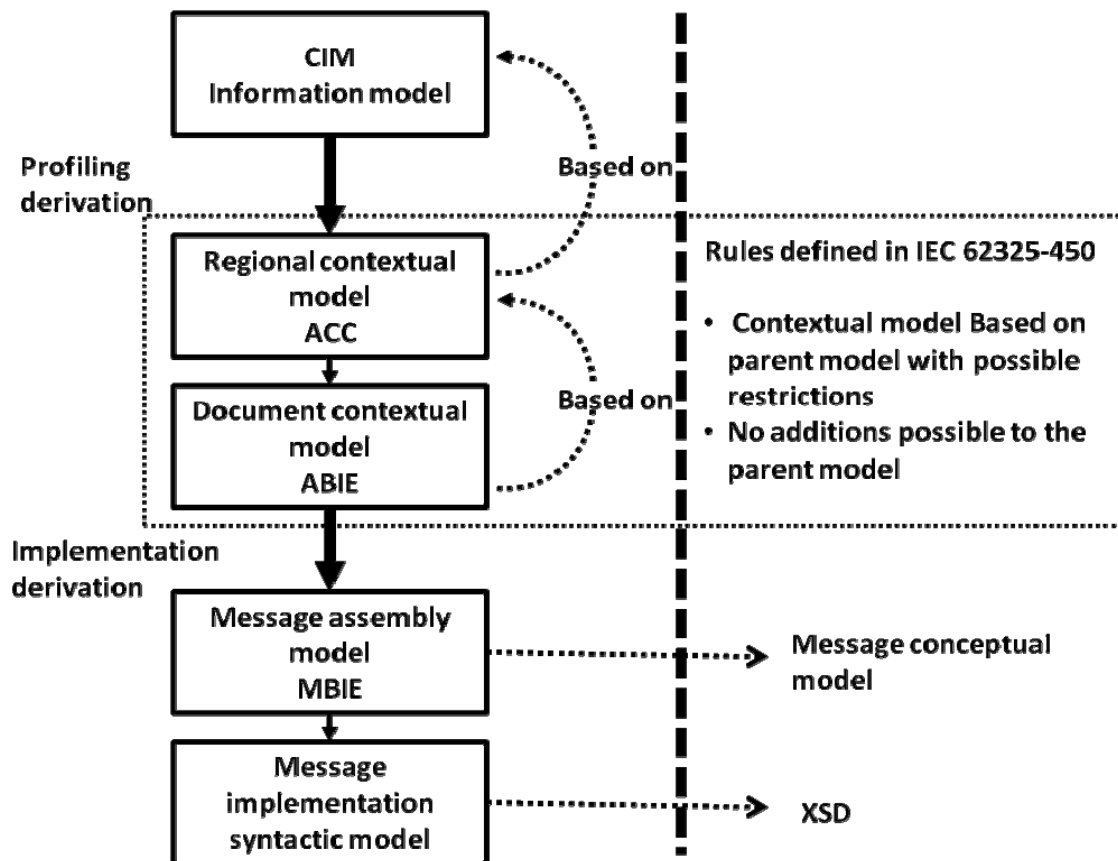
3.10 **message business information entity** **MBIE**

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

4 Document contextual model and message assembly model basic concepts

4.1 Overview

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



IEC

Figure 1 – IEC 62325-450 modelling framework

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

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

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

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.

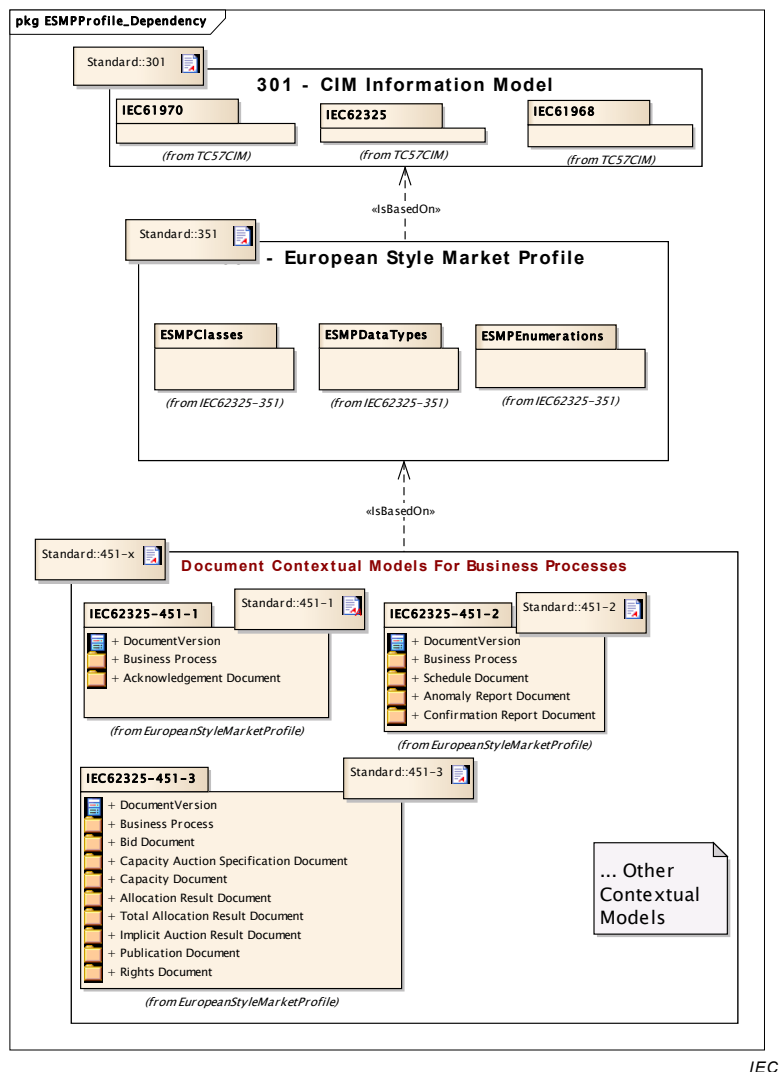


Figure 2 – Overview of European style market profile dependency

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 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);
- an automated support in the case where an escalation procedure has to be put into place when an expected event does not occur or a critical situation has to be resolved.

Figure 3 displays the two parties involved in this kind of data exchange:

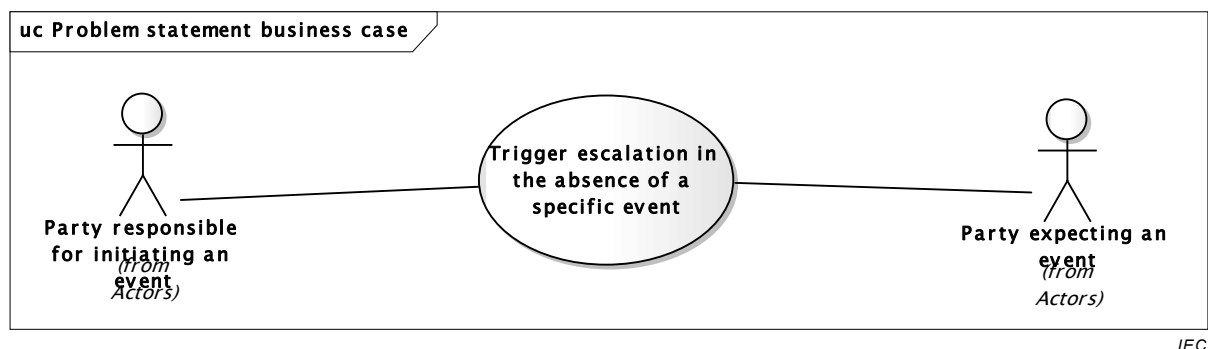


Figure 3 – Problem statement business case