

INTERNATIONAL STANDARD

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

**Cadre pour les communications pour le marché de l'énergie –
Partie 301: Extensions du modèle d'information commun (CIM) pour les marchés**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FRAMEWORK FOR ENERGY MARKET COMMUNICATIONS –**Part 301: Common information model (CIM) extensions for markets**

FOREWORD

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International Standard IEC 62325-301 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

This second edition cancels and replaces the first edition published in 2014. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Environmental weather support
- b) Demand-side communication for North American markets
- c) Transparency regulations and flow-based market coupling along with network codes support for European Markets
- d) Registered resource updates.

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

FDIS	Report on voting
57/1947/FDIS	57/1961/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.

Throughout this document, references are made to the UML model. References to specific UML packages and classes are made by citing the name of package or class in single quotes, example, 'IEC 61970' or 'IdentifiedObject'.

A list of all parts of the IEC 62325 series, 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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This part of IEC 62325 is one of a series of standards for deregulated energy market data exchanges. This standard series was originally based upon the work of the European transmission system operators TF 14 EDI (Electronic data interchange) and the Electric Power Research Institute (EPRI) TR 1009455 and TR 1011431 (CIM extensions to support market operations, phase 1 and phase 2).

The principal objective of the IEC 62325 series is to produce standards which facilitate the integration of market application software developed independently by different vendors into a market management system, as well as integration of market management systems and market participant systems. This is accomplished by defining message exchanges to enable these applications or systems to access 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 profile specifications, which are contained in other parts of IEC 62325, specify the content of the messages exchanged. Profile specifications in other parts of IEC 62325 support both European style markets based on the European regulations, Third Party Access and zonal market concepts, and North American style markets characterized by day ahead unit commitment by a market operator, intraday and realtime balancing through central dispatch, and settlement based on locational marginal prices. These markets are used in the US and in other parts of the world and are not exclusively limited to North America.

The CIM is an abstract model that represents all the major objects in an electric utility enterprise typically needed to model the operational aspects of a utility. This model includes public classes and attributes for these objects, as well as the relationships between them.

The IEC 62325 series are part of a series of standards dealing with the CIM. IEC 61970 defines the EMS application programming interfaces and IEC 61968 defines System interfaces for distribution management. IEC 62325-301 corresponds to IEC 61970-301 and IEC 61968-11 which describe parts of the common information model relevant to modeling interfaces for EMS, DMS and MMS systems. While there are multiple IEC standard series dealing with different parts of the CIM, there is a single, unified information model comprising the CIM behind all these individual standard series.

FRAMEWORK FOR ENERGY MARKET COMMUNICATIONS –

Part 301: Common information model (CIM) extensions for markets

1 Scope

This part of IEC 62325 specifies the common information model (CIM) for energy market communications.

The CIM is an abstract model that represents all the major objects in an electric utility enterprise typically involved in utility operations and electricity market management. By providing a standard way of representing power system resources as object classes and attributes, along with their relationships, the CIM facilitates the integration of market management system (MMS) applications developed independently by different vendors, between entire MMS systems developed independently, or between an MMS system and other systems concerned with different aspects of market management, such as capacity allocation, day-ahead management, balancing, settlement, etc.

The CIM facilitates integration by defining a common language (i.e. semantics) based on the CIM to enable these applications or systems to access public data and exchange information independent of how such information is represented internally.

The object classes represented in the CIM are abstract in nature and may be used in a wide variety of applications. 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 modeled. Collections of these packages are progressed as separate international standards. This particular document specifies a set of packages which provide a logical view of the functional aspects of market management within an electricity market, and other functional aspects including environmental aspects that are closely related to electricity markets and that are shared between all applications. Other standards specify more specific parts of the model that are needed by only certain applications. Subclause 4.2 provides the current grouping of packages into standards documents.

This new edition of IEC 62325-301 contains support for demand-side communication within a wholesale market. The IEC 62325-301 additions include support for demand-side resource registration and enrollment of a market participating resource as well as support for deployment and performance evaluation of demand side resources. A new package has been included in this edition of IEC 62325-301 to support environmental (weather) data. This new package 'Environmental' provides support for weather conditions including forecasts, observations, measurements, phenomena, and alerts. Additional updates have been added within the 'MarketManagement' package to support the transparency regulations, flow based market coupling and new network codes to support the European Markets. These updates include new classes, attributes and associations within the IEC 62325 packages as well as updates to existing classes, attributes and associations to accurately represent the existing use cases.