

# TECHNICAL SPECIFICATION



**Framework for energy market communications –  
Part 503: Market data exchanges guidelines for the IEC 62325-351 profile**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## FRAMEWORK FOR ENERGY MARKET COMMUNICATIONS –

## Part 503: Market data exchanges guidelines for the IEC 62325-351 profile

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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC/TS 62325-503, which is a technical specification, has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

The text of this technical specification is based on the following documents:

DTS	Report on voting
57/1370/DTS	57/1401/RVC

Full information on the voting for the approval of this technical specification 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 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

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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## INTRODUCTION

This Technical Specification is part of the IEC 62325 series which defines protocols for deregulated energy market communications.

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, 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 the message exchange. The European style market profile specifications that support the European style design electricity markets are defined in IEC 62325-351. These electricity markets are based on the European regulations, and on the concepts of third party access and zonal markets. The IEC 62325-451-n International standards specify the content of the messages exchanged.

The purpose of this technical specification is to provide the guidelines to exchange the above mentioned messages. A European market participant (trader, distribution utilities, etc.) could benefit from a single, common, harmonized and secure platform for message exchange with the European Transmission System Operators (TSOs); thus reducing the cost of building different IT platforms to interface with all the parties involved.

This Technical Specification represents an important step in facilitating parties entering into electricity markets other than their national ones; they could use the same or similar information exchange system to participate in more than one market all over Europe.

This Technical Specification was originally based upon the work of the European Network of Transmission System Operators (ENTSO-E) Working Group EDI.

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## FRAMEWORK FOR ENERGY MARKET COMMUNICATIONS –

### Part 503: Market data exchanges guidelines for the IEC 62325-351 profile

#### 1 Scope

This technical specification is for European electricity markets.

This document specifies a standard for a communication platform which every Transmission System Operator (TSO) in Europe may use to reliably and securely exchange documents for the energy market. Consequently a European market participant (trader, distribution utilities, etc.) could benefit from a single, common, harmonized and secure platform for message exchange with the different TSOs; thus reducing the cost of building different IT platforms to interface with all the parties involved. This also represents an important step in facilitating parties entering into markets other than their national ones.

From now on the acronym “MADES” (MARket Data ExchangeS) will be used to designate these Technical Specifications.

MADES is a specification for a decentralized common communication platform based on international IT protocol standards:

- From a business application (BA) perspective, MADES specifies software interfaces to exchange electronic documents with other BAs. Such interfaces mainly provide means to send and receive documents using a so-called “MADES network”. Every step of the delivery process is acknowledged, and the sender can request about the delivery status of a document. This is done through acknowledgement, which are messages returned back to the sender. This makes MADES networks usable for exchanging documents in business processes requiring reliable delivery.
- MADES also specifies all services for the business application (BA); the complexities of recipient localisation, recipient connection status, message routing and security are hidden from the connecting BA. MADES services include directory, authentication, encryption, signing, message tracking, message logging and temporary message storage.

The purpose of MADES is to create a data exchange standard comprised of standard protocols and utilizing IT best practices to create a mechanism for exchanging data over any TCP/IP communication network, in order to facilitate business to business information exchanges as described in IEC 62325-351 and the IEC 62325-451 series.

A MADES network acts as a post-office organization. The transported object is a “message” in which the sender document is securely repackaged in an envelope (i.e. a header) containing all the necessary information for tracking, transportation and delivery.

#### 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 61970-2, *Energy management system application program interface (EMS-API) – Part 2: Glossary*

IETF RFC 1738, *Uniform resource locators (URL)*, <http://www.ietf.org/rfc/rfc1738.txt>

IETF RFC 3110, *RSA/SHA-1 SIGs and RSA KEYS in the domain name system (DNS)*, <http://www.ietf.org/rfc/rfc3110.txt>

IETF RFC 4122, *A universally unique identifier (UUID) URN namespace*, <http://www.ietf.org/rfc/rfc4122.txt>

ITU-T Recommendation X.509, *Information technology - Open systems interconnection - The directory: Public-key and attribute certificate frameworks*, <http://www.itu.int/rec/T-REC-X.509/en>

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61970-2 apply, as well as the following.

NOTE General glossary definitions can be found in IEC 60050, *International Electrotechnical Vocabulary*.

#### 3.1

##### **advanced encryption standard**

##### **AES**

symmetric cryptographic algorithm

#### 3.2

##### **distinguish encoding rule**

##### **DER**

format for X.509 digital certificates

#### 3.3

##### **European style market profile**

##### **ESMP**

European style market profile for which this Technical Specification is designed

#### 3.4

##### **market data exchange standard**

##### **MADES**

standard described in this document for the European market style market profile

#### 3.5

##### **profile**

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

#### 3.6

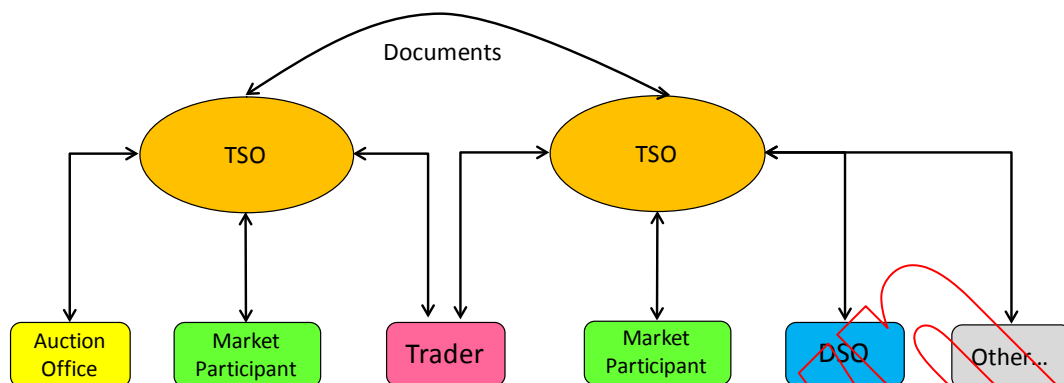
##### **transmission system operator**

##### **TSO**

company responsible for operating, maintaining and developing the transmission system for a control area and its interconnections

## 4 High level concepts

### 4.1 What is MADES intended for?



**Figure 1 – MADES overall view**

MADES' first intention is to provide TSOs with a standardized communication access point to securely exchange documents with other parties involved in the European electricity market as shown in Figure 1. These documents are mainly the ones used in the energy market and described in IEC 62325-351 and the IEC 62325-451 series. Such parties include TSOs, distribution system operators (DSO), balance responsible parties (BRP), capacity traders (CT), market operators (MO), producers, transmission capacity allocators (TCA), etc.

The MADES enables each party to implement MADES access points (referred to as endpoints) connected to his information system (IS), where he may securely send and receive documents to and from other parties.

MADES is a market data exchange standard comprised of standard protocols and utilizing IT best practices to create a mechanism for exchanging data over any TCP/IP communication network, in order to facilitate business-to-business information exchanges.

New market rules induce new business processes and activities, and generally require new information exchanges between parties. Experience shows that, for the exchanges to operate according to the business goals, the chosen technical solution results from an agreement of involved parties gathering various constraints, including implementation time scale, vendors' offer, already existing communication links, integration capabilities of existing information systems, confidentiality of exchanged information, legal risks, etc.

Where business processes require information to be exchanged between multiple systems or multiple parties, solutions developed bilaterally may become extremely complex, with each interface taking time, money and resources to be developed and be maintained. It is also a noticeable consequence that some parties acting in several countries, such as traders, may have to install different communication tools in order to interface with different trading solutions. The future vision is a single interface between all parties in all areas of the electricity market of Europe.

MADES can support any business process whatever the document types being transmitted might be (e.g. XML, binary) and whatever the sequence for the exchanges.

MADES is independent of the physical underlying communication Infrastructure, which can be any IP (Internet Protocol) network, such as Internet, a physical private infrastructure, or a multi access-point virtual private network (VPN).