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Irish Standard
I.S. EN 61970-453:2014

Energy management system application program interface (EMS-API) - Part 453: Diagram layout profile

I.S. EN 61970-453:2014

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EUROPEAN STANDARD	**EN 61970-453**
NORME EUROPÉENNE	
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ICS 33.200 Supersedes EN 61970-453:2008

English Version

Energy management system application program interface (EMS-API) - Part 453: Diagram layout profile (IEC 61970-453:2014)

Interface de programmation d'application pour système de gestion d'énergie (EMS-API) - Partie 453: Profil de disposition du diagramme (CEI 61970-453:2014)	Schnittstelle für Anwendungsprogramme für Netzführungssysteme (EMS-API) - Teil 453: Diagramm Entwurfsprofile (IEC 61970-453:2014)

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Ref. No. EN 61970-453:2014 E

Foreword

The text of document 57/1409/FDIS, future edition 2 of IEC 61970-453, 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 61970-453:2014.

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)	2015-01-01
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2017-04-01

This document supersedes EN 61970-453:2008.

EN 61970-453:2014 includes the following significant technical changes with respect to EN 61970-453:2008:

a) The SVG elements and its data model have been replaced by the Diagram Layout Package, which is now an integral part of the IEC 61970-301 (CIM) model.

b) The exchange is in accordance with and is a part of the IEC 61970 profile concept.

c) A glue point object has been introduced to model explicit connections between graphics elements.

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Endorsement notice

The text of the International Standard IEC 61970-453:2014 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	Harmonised as EN 61968-11.
IEC 61970-1	NOTE	Harmonised as EN 61970-1.
IEC/TS 61970-2	NOTE	Harmonised as CLC/TS 61970-2.
IEC 61970-452	NOTE	Harmonised as EN 61970-452.

Annex ZA
(normative)

Normative references to international publications
with their corresponding European publications

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.

NOTE   When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60050	-	International Electrotechnical Vocabulary (IEV)	-	-
IEC 61970-301	-	Energy management system application program interface (EMS-API) - Part 301: Common information model (CIM) base	EN 61970-301	-
IEC 61970-501	-	Energy management system application program interface (EMS-API) - Part 501: Common Information Model Resource Description Framework (CIM RDF) schema	EN 61970-501	-
IEC/TR 62541-1	-	OPC unified architecture - Part 1: Overview and concepts	CLC/TR 62541-1	-

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IEC 61970-453

Edition 2.0   2014-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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**Energy management system application program interface (EMS-API) –
Part 453: Diagram layout profile**

**Interface de programmation d'application pour système de gestion d'énergie (EMS-API) –
Partie 453: Profil de disposition de diagramme**

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IEC 61970-453

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INTERNATIONAL STANDARD

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**Energy management system application program interface (EMS-API) –
Part 453: Diagram layout profile**

**Interface de programmation d'application pour système de gestion d'énergie (EMS-API) –
Partie 453: Profil de disposition de diagramme**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Part 453: Diagram layout 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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International Standard IEC 61970-453 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 2008. This edition constitutes a technical revision.

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

a) The SVG elements and its data model have been replaced by the Diagram Layout Package, which is now an integral part of the IEC 61970-301 (CIM) model.

b) The exchange is in accordance with and is a part of the IEC 61970 profile concept.

c) A glue point object has been introduced to model explicit connections between graphics elements.

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

FDIS	Report on voting
57/1409/FDIS	57/1430/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 parts in the IEC 61970 series, published under the general title *Energy management system application program interface (EMS-API)*, 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 standard is part of the IEC 61970 series that define an application program interface (API[1]) for an Energy Management System (EMS[2]).

The IEC 61970-3x series specify a Common Information Model (CIM[3]): a logical view of the physical aspects of EMS information. The IEC 61970-3x series includes IEC 61970-301, *Common Information Model (CIM) Base*.

This standard is one of the IEC 61970-4x series that define utility control centre component interface specifications (CIS[4]). IEC 61970-4x specifies the functional requirements for interfaces that a component (or application) shall implement to exchange information with other components (or applications) and/or to access publicly available data in a standard way. The component interfaces describe the specific message contents and services that can be used by applications for this purpose. The implementation of these messages in a particular technology is described in the IEC 61970-5x series.

Energy Management Systems employ a variety of schematic and quasi-geographic presentations in their user interfaces. These are sometimes generated automatically, but more often are hand-drawn and require considerable labour to create and maintain. Most of this labour goes into the arrangement, or 'layout' of the power system elements within the overall diagram. When network models are exchanged, as defined in IEC 61970-452 and IEC 61968-13 standards, it is desirable to be able to exchange these layouts.

IEC 61970-453 specifies guidelines for the exchange of diagram layout information for schematic data that is encoded using IEC 61970-552.

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[1] Footnote 1 applies to the French version only.

[2] Footnote 2 applies to the French version only.

[3] Footnote 3 applies to the French version only.

[4] Footnote 4 applies to the French version only.

ENERGY MANAGEMENT SYSTEM APPLICATION PROGRAM INTERFACE (EMS-API) –

Part 453: Diagram layout profile

1 Scope

This part of IEC 61970 is a member of the IEC 61970-450 to 499 series that, taken as a whole, defines, at an abstract level, the content and exchange mechanisms used for data transmitted between control centre components.

Included in this part of IEC 61970 are the general use cases for exchange of diagram layout data, and guidelines for linking the layout definitions with CIM data. Guidelines for management of schematic definitions through multiple revisions are also included.

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 60050, *International electrotechnical vocabulary*

IEC 61970-301, *Energy management system application program interface (EMS-API) – Part 301: Common information model (CIM) base*

IEC 61970-501, *Energy management system application program interface (EMS-API) – Part 501: Common Information Model Resource Description Framework (CIM RDF) schema*

IEC/TR 62541-1, *OPC Unified Architecture – Part 1: Overview and concepts*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050, as well as the following, apply.

3.1
domain object[5]
instance of a class that models a Real-World Object[6] with a unique identity

Note 1 to entry: A domain object inherits from a CIM *IdentifiedObject*. A domain object is normally not a diagram object.

3.2
diagram[7]
electronic equivalent of a seamless paper plan

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[5] Footnote 5 applies only to the French version.

[6] Footnote 6 applies only to the French version.

[7] Footnote 7 applies to the French version only.