SVENSK STANDARD SS-EN 61970-552

Fastställd	Utgåva	Sida	Ansvarig kommitté
2017-03-15	2	1 (1+37)	SEK TK 57

Gränssnitt för EMS (EMS-API) – Del 552: CIMXML-format för modellutbyte

Energy management system application program interface (EMS-API) – Part 552: CIMXML Model exchange format

Som svensk standard gäller europastandarden EN 61970-552:2016. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61970-552:2016.

Nationellt förord

Europastandarden EN 61970-552:2016

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 61970-552, Second edition, 2016 - Energy management system application program interface (EMS-API) - Part 552: CIMXML Model exchange format**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 61970-552, utgåva 1, 2014, gäller ej fr o m 2019-11-01.

ICS 33.200.00

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Telefon: 08 - 444 14 00.
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SEK Svensk Elstandard
Box 1284
164 29 Kista
Tel 08-444 14 00
www.elstandard.se

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61970-552

December 2016

ICS 33.200

Supersedes EN 61970-552:2014

English Version

Energy management system application program interface (EMS-API) - Part 552: CIMXML Model exchange format (IEC 61970-552:2016)

Interface de programmation d'application pour système de gestion d'énergie (EMS-API) -
Partie 552: Format d'échange de modèle CIMXML
(IEC 61970-552:2016)

Schnittstelle für Anwendungsprogramme für Netzführungssysteme (EMS-API) -
Teil 552: CIM-XML-Modell Austauschformat
(IEC 61970-552:2016)

This European Standard was approved by CENELEC on 2016-11-01. 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

Ref. No. EN 61970-552:2016 E

SEK Svensk Elstandard

European foreword

The text of document 57/1752/FDIS, future edition 2 of IEC 61970-552, 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 61970-552:2016.

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)	2017-08-01
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2019-11-01

This document supersedes EN 61970-552:2014.

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.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

Endorsement notice

The text of the International Standard IEC 61970-552:2016 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 61970-1	NOTE	Harmonized as EN 61970-1.

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 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu

Publication	Year	Title	EN/HD	Year
IEC 60050	Series	International Electrotechnical Vocabulary	-	-
IEC/TS 61970-2	-	Energy management system application program interface (EMS-API) - Part 2: Glossary	CLC/TS 61970-2	-
IEC 61970-501	2006	Energy management system application program interface (EMS-API) - Part 501: Common Information Model Resource Description Framework (CIM RDF) schema	EN 61970-501	2006
W3C	-	RDF/XML Syntax Specification	-	-
W3C	-	XSL Transformations (XSLT)	-	-
W3C	-	Document Object Model (DOM)	-	-

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 552: CIMXML Model exchange format

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 61970-552 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 2013. This edition constitutes a technical revision.

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

a) New Clause 4 that defines the versioning of CIMXML format described in this document.
b) Subclause 5.1, the statement on work flow support is removed.
c) Subclause 5.2, Statement about mandatory header added. Rules how to use the header added. The discussion on management of multiple CIMXML documents and archives is removed.

d) Subclause 5.3, FullModelDocumentElement removed, minor version added to profile URI and the meaning of the header is elaborated in Table 2.

e) Subclause 6.2 the description of rdf:ID and rdf:about has been updated.

f) Subclause 6.3 introduce the new urn:uuid form and discuss the backwards compatibility.

g) New Subclause 6.4 added on support of older UUID formats.

h) New Subclause 6.5 discussing object types added.

i) Subclause 7.2.3.3, Position of header described and duplicate rows removed.

j) Document identification and references between documents updated in Table 2 and Subclauses 7.2.3.4 and 7.2.4.6.

k) Subclause 7.2.3.7, A compound element can never be a root element.

l) Subclause 7.2.3.9, description of compound containment added.

m) Subclauses 7.2.3.4 and 7.2.4.7.3, More clarification of cascading delete.

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

FDIS	Report on voting
57/1752/FDIS	57/1773/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 website 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 61970 is part of the series of standards that define an Application Program Interface (API) for an Energy Management System (EMS).

IEC 61970-301 specifies a Common Information Model (CIM): a logical view of the physical aspects of an electric utility operations. The CIM is described using the Unified Modelling Language (UML), a language used to specify, visualize, and document systems in an object-oriented manner. UML is an analysis and design language; it is not a programming language. In order for software programs to use the CIM, it must be transformed into a schema form that supports a programmable interface.

IEC 61970-501 describes the translation of the CIM in UML form into a machine readable format as expressed in the Extensible Markup Language (XML) representation of that schema using the Resource Description Framework (RDF) Schema specification language.

This part of IEC 61970 specifies how the CIM RDF schema specified in IEC 61970-501 is used to exchange power system models using XML (referred to as CIMXML) defined in the 61970-45x series of profile standards, such as the CIM Transmission Network Model Exchange Profile described in IEC 61970-452.

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

Part 552: CIMXML Model exchange format

1 Scope

This part of IEC 61970 specifies the format and rules for exchanging modelling information based upon the CIM. It uses the CIM RDF Schema presented in IEC 61970-501 as the meta-model framework for constructing XML documents of power system modelling information. The style of these documents is called CIMXML format.

Model exchange by file transfer serves many useful purposes. Profile documents such as IEC 61970-452 and other profiles in the 61970-45x series of standards explain the requirements and use cases that set the context for this work. Though the format can be used for general CIM-based information exchange, specific profiles (or subsets) of the CIM are identified in order to address particular exchange requirements. The initial requirement driving the solidification of this specification is the exchange of transmission network modelling information for power system security coordination.

This part of IEC 61970 supports a mechanism for software from independent suppliers to produce and consume CIM described modelling information based on a common format. The proposed solution:

- is both machine readable and human readable, although primarily intended for programmatic access,
- can be accessed using any tool that supports the Document Object Model (DOM) and other standard XML application program interfaces,
- is self-describing,
- takes advantage of current World Wide Web Consortium (W3C) recommendations.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. 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* (all parts)

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

IEC 61970-501:2006, *Energy management system application program interface (EMS-API) – Part 501: Common Information Model Resource Description Framework (CIM RDF) schema*

W3C, *RDF/XML Syntax Specification*

W3C, *XSL Transformations (XSLT)*

W3C, *Document Object Model (DOM)*