

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



AMENDMENT 1  
AMENDEMENT 1

iTeh STANDARD

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

(standards.iteh.ai)

Interface de programmation d'application pour système de gestion d'énergie  
(EMS-API) –

Partie 301: Base de modèle d'information commun (CIM)

IEC 61970-301:2020/AMD1:2022  
<https://standards.iteh.ai/catalog/standards/sist/cd5ffd45-e51e-47d3-b662-d3ee19a4bb14/iec-61970-301-2020-amd1-2022>



## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2022 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Secretariat  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

### About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

### About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

#### IEC publications search - [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

#### IEC Products & Services Portal - [products.iec.ch](http://products.iec.ch)

Discover our powerful search engine and read freely all the publications previews. With a subscription you will always have access to up to date content tailored to your needs.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

The world's leading online dictionary on electrotechnology, containing more than 22 300 terminological entries in English and French, with equivalent terms in 19 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

#### IEC Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [sales@iec.ch](mailto:sales@iec.ch).

[www.standards.iec.ch/catalog/standards/sist/cd5ffd45-61b173-002-3-10-4bb14/iec-61970-301-2020-amd1-2022](http://www.standards.iec.ch/catalog/standards/sist/cd5ffd45-61b173-002-3-10-4bb14/iec-61970-301-2020-amd1-2022)

### A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

### A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

#### Recherche de publications IEC -

##### [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études, ...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

#### IEC Products & Services Portal - [products.iec.ch](http://products.iec.ch)

Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 300 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 19 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

#### Service Clients - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: [sales@iec.ch](mailto:sales@iec.ch).

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



AMENDMENT 1  
AMENDEMENT 1

iTeh STANDARD

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

(standards.iteh.ai)

Interface de programmation d'application pour système de gestion d'énergie  
(EMS-API) –  
Partie 301: Base de modèle d'information commun (CIM)

IEC 61970-301:2020/AMD1:2022  
<https://standards.iteh.ai/catalog/standards/sist/cd5ffd45-e51e-47d3-b662-d3ee19a4bb14/iec-61970-301-2020-amd1-2022>

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

ICS 33.200

ISBN 978-2-8322-1064-9

**Warning! Make sure that you obtained this publication from an authorized distributor.  
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ENERGY MANAGEMENT SYSTEM APPLICATION  
PROGRAM INTERFACE (EMS-API) –****Part 301: Common information model (CIM) base****AMENDMENT 1****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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

Amendment 1 to IEC 61970-301:2020 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

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

Draft	Report on voting
57/2439/FDIS	57/2450/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Amendment is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications/](http://www.iec.ch/standardsdev/publications/).

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

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

**IMPORTANT – The "colour inside" logo on the cover page of this document 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.**

## iTeh STANDARD PREVIEW (standards.iteh.ai)

### 4 CIM specification

#### 4.1 Overview

[IEC 61970-301:2020/AMD1:2022](https://standards.iteh.ai/catalog/standards/sist/cd5ffd45-ec1e-47d5-b062-83c12a45b19e/iec-61970-301-2020-amd1-2022)

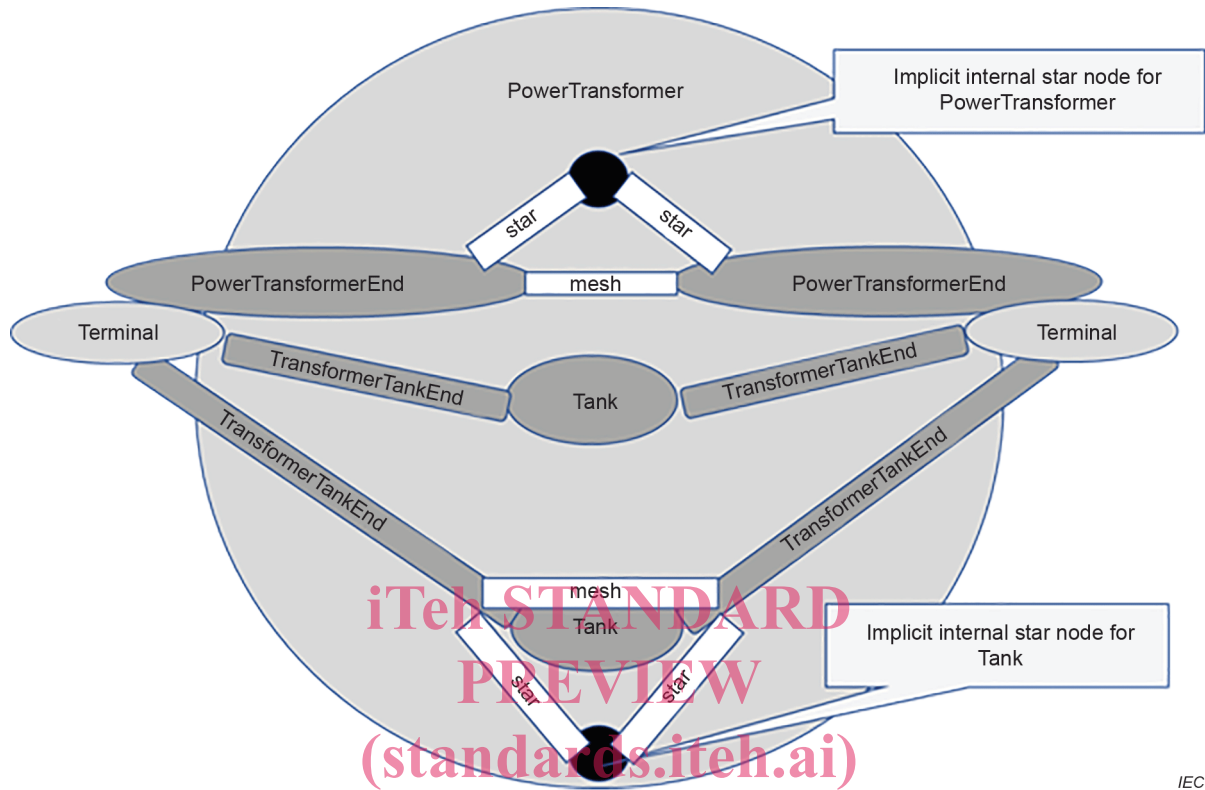
[https://standards.iteh.ai/catalog/standards/sist/cd5ffd45-](https://standards.iteh.ai/catalog/standards/sist/cd5ffd45-ec1e-47d5-b062-83c12a45b19e/iec-61970-301-2020-amd1-2022)

Replace the existing text of the third bullet point in Subclause 4.1 by the following new text:

- [iec61970cim17v40\\_iec61968cim13v13a\\_iec62325cim03v17a.eap](https://standards.iteh.ai/catalog/standards/sist/cd5ffd45-ec1e-47d5-b062-83c12a45b19e/iec-61970-301-2020-amd1-2022)

**Figure 12 – Transformer and Tank model**

Replace the existing Figure 12 with the following new figure:

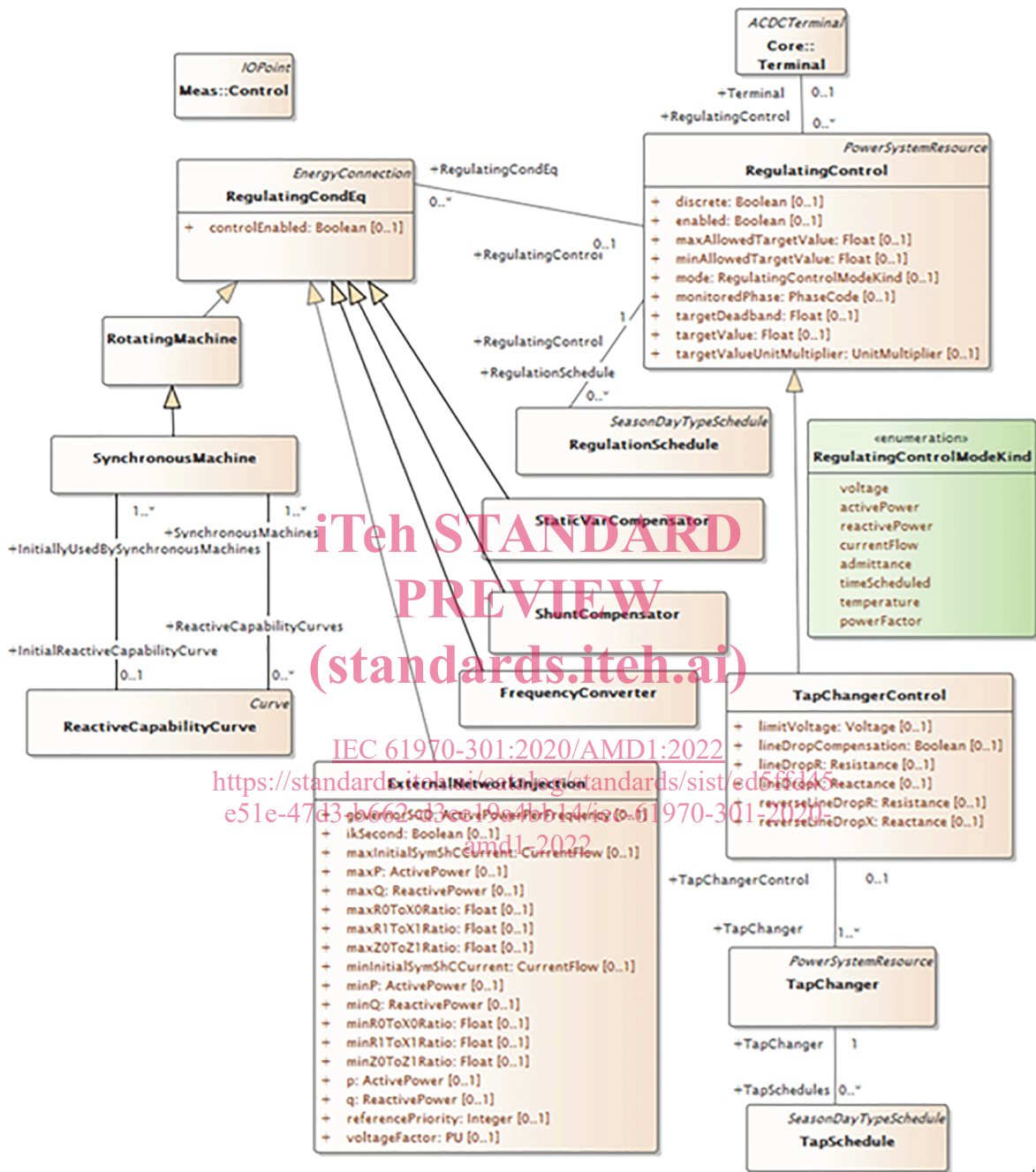


IEC

<https://standards.iteh.ai/catalog/standards/sist/cd5ffd45-e51e-47d3-b662-d3ee19a4bb14/iec-61970-301-2020-amd1-2022>

**Figure 36 – Regulating control models**

Replace the existing Figure 36 with the following new figure:



IEC

**4.5.16 Feeder model**

Replace, in the second sentence of the first paragraph of Subclause 4.5.16, "ConductingEquipment" by "ConnectivityNodeContainer".

**4.6.6 CIM profiles**

Replace, in footnote 1, "http://www.CIMTool.org" with "https://cimug-org.github.io/CIMTool/".

**Table 141 – Attributes of Core::Terminal**

*Remove, in the first "description" row " GroundSwitch".*

**Table 151 – Association ends of Wires::AsynchronousMachine with other classes**

*Replace, in the first column of the fourth row of Table 151 (RegulatingControl), "1" with "0".*

**Table 186 – Association ends of Wires::ExternalNetworkInjection with other classes**

*Replace, in the first column of the first row of Table 186 (RegulatingControl), "1" with "0".*

**Table 188 – Association ends of Wires::FrequencyConverter with other classes**

*Replace, in the first column of the first row of Table 188, "1" with "0".*

**Table 204 – Association ends of Wires::LinearShuntCompensator with other classes**

*Replace, in the first column of the third row of Table 204 (RegulatingControl), "1" with "0".*

**Table 212 – Association ends of Wires::NonlinearShuntCompensator with other classes**

*Replace, in the first column of the fourth row of Table 212 (RegulatingControl), "1" with "0".*

**Table 252 – Association ends of Wires::PowerElectronicsConnection with other classes**

*Replace, in the first column of the fourth row of Table 252 (RegulatingControl), "1" with "0".*

**Table 272 – Association ends of Wires::RegulatingCondEq with other classes**

*Replace, in the first column of the first row of Table 272 (RegulatingControl), "1" with "0".*

**Table 274 – Association ends of Wires::RegulatingControl with other classes**

*Replace, in the third column of the second row of Table 274 (RegulatingCondEq), "1" with "0".*

**Table 279 – Association ends of Wires::RotatingMachine with other classes**

*Replace, in the first column of the third row of Table 279 (RegulatingControl), "1" with "0".*

**6.4.75 ShuntCompensator**

*Replace, in the second sentence of the first paragraph of Subclause 6.4.75, "reactivePerSection" with "bPerSection".*

**Table 286 – Association ends of Wires::ShuntCompensator with other classes**

*Replace, in the first column of the third row of Table 286 (RegulatingControl), "1" with "0".*

**Table 291 – Association ends of Wires::StaticVarCompensator with other classes**

*Replace, in the first column of the second row of Table 291 (RegulatingControl), "1" with "0".*

**Table 300 – Association ends of Wires::SynchronousMachine with other classes**

*Replace, in the first column of the seventh row of Table 300 (RegulatingControl), "1" with "0".*



**Table 306 – Association ends of Wires::TapChangerControl with other classes**

Replace, in the third column of the third row of Table 306 (RegulatingCondEq), "1" with "0".

**Table 582 – Attributes of Meas::Control**

Replace, in the fourth column of the fifth row of Table 582, the existing text with the following new text:

Specifies the type of Control. For example, this specifies if the Control represents BreakerOpen, BreakerClose, GeneratorVoltageSetPoint, GeneratorRaise, GeneratorLower, etc.

**Annex A – Custom extensions**

**A.2.1 General**

Replace the existing text of the first paragraph of Subclause A.2.1 with the following new text:

[nsuri = <http://iec.ch/TC57/CIM100-European#>, nsprefix = eu]

**Table A.1 – Attributes of ExtEuCore::BoundaryPoint**

Replace, in the first and second bullet points of the fourth column of the second row of Table 582, "From" with "To".

**Table A.2 – Association ends of ExtEuCore::BoundaryPoint with other classes**

Replace existing Table A.2 with the following new table.

mult from	name	mult to	type	description
0..1	ConnectivityNode	1..1	ConnectivityNode	(European) The connectivity node that is designated as a boundary point.
0..1	DiagramObjects	0..*	DiagramObject	inherited from: IdentifiedObject
1..1	Names	0..*	Name	inherited from: IdentifiedObject
0..*	PSRType	0..1	PSRType	inherited from: PowerSystemResource
0..1	Controls	0..*	Control	inherited from: PowerSystemResource
0..1	Measurements	0..*	Measurement	inherited from: PowerSystemResource
1..1	OperatingShare	0..*	OperatingShare	inherited from: PowerSystemResource
0..*	ReportingGroup	0..*	ReportingGroup	inherited from: PowerSystemResource

**Bibliography**

Replace, in the sixth reference, "<http://www.cimtool.org>" with "<https://cimug-org.github.io/CIMTool>".

## COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

INTERFACE DE PROGRAMMATION D'APPLICATION POUR SYSTÈME  
DE GESTION D'ÉNERGIE (EMS-API) –

## Partie 301: Base de modèle d'information commun (CIM)

## AMENDEMENT 1

## AVANT-PROPOS

- 1) La Commission Electrotechnique Internationale (IEC) est une organisation mondiale de normalisation composée de l'ensemble des comités électrotechniques nationaux (Comités nationaux de l'IEC). L'IEC a pour objet de favoriser la coopération internationale pour toutes les questions de normalisation dans les domaines de l'électricité et de l'électronique. À cet effet, l'IEC – entre autres activités – publie des Normes internationales, des Spécifications techniques, des Rapports techniques, des Spécifications accessibles au public (PAS) et des Guides (ci-après dénommés "Publication(s) de l'IEC"). Leur élaboration est confiée à des comités d'études, aux travaux desquels tout Comité national intéressé par le sujet traité peut participer. Les organisations internationales, gouvernementales et non gouvernementales, en liaison avec l'IEC, participent également aux travaux. L'IEC collabore étroitement avec l'Organisation Internationale de Normalisation (ISO), selon des conditions fixées par accord entre les deux organisations.
- 2) Les décisions ou accords officiels de l'IEC concernant les questions techniques représentent, dans la mesure du possible, un accord international sur les sujets étudiés, étant donné que les Comités nationaux de l'IEC intéressés sont représentés dans chaque comité d'études.
- 3) Les Publications de l'IEC se présentent sous la forme de recommandations internationales et sont agréées comme telles par les Comités nationaux de l'IEC. Tous les efforts raisonnables sont entrepris afin que l'IEC s'assure de l'exactitude du contenu technique de ses publications; l'IEC ne peut pas être tenue responsable de l'éventuelle mauvaise utilisation ou interprétation qui en est faite par un quelconque utilisateur final.
- 4) Dans le but d'encourager l'uniformité internationale, les Comités nationaux de l'IEC s'engagent, dans toute la mesure possible, à appliquer de façon transparente les Publications de l'IEC dans leurs publications nationales et régionales. Toutes divergences entre toutes Publications de l'IEC et toutes publications nationales ou régionales correspondantes doivent être indiquées en termes clairs dans ces dernières.
- 5) L'IEC elle-même ne fournit aucune attestation de conformité. Des organismes de certification indépendants fournissent des services d'évaluation de conformité et, dans certains secteurs, accèdent aux marques de conformité de l'IEC. L'IEC n'est responsable d'aucun des services effectués par les organismes de certification indépendants.
- 6) Tous les utilisateurs doivent s'assurer qu'ils sont en possession de la dernière édition de cette publication.
- 7) Aucune responsabilité ne doit être imputée à l'IEC, à ses administrateurs, employés, auxiliaires ou mandataires, y compris ses experts particuliers et les membres de ses comités d'études et des Comités nationaux de l'IEC, pour tout préjudice causé en cas de dommages corporels et matériels, ou de tout autre dommage de quelque nature que ce soit, directe ou indirecte, ou pour supporter les coûts (y compris les frais de justice) et les dépenses découlant de la publication ou de l'utilisation de cette Publication de l'IEC ou de toute autre Publication de l'IEC, ou au crédit qui lui est accordé.
- 8) L'attention est attirée sur les références normatives citées dans cette publication. L'utilisation de publications référencées est obligatoire pour une application correcte de la présente publication.
- 9) L'attention est attirée sur le fait que certains des éléments du présent document peuvent faire l'objet de droits de brevet. L'IEC ne saurait être tenue pour responsable de ne pas avoir identifié de tels droits de brevets.

L'Amendement 1 à l'IEC 61970-301:2020 a été établi par le comité d'études 57 de l'IEC: Gestion des systèmes de puissance et échanges d'informations associés.

Le texte de cet Amendement est issu des documents suivants:

Projet	Rapport de vote
57/2439/FDIS	57/2450/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.