

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Application integration at electric utilities – System interfaces for distribution management –**

**Part 4: Interfaces for records and asset management**

**Intégration d'applications pour les services électriques – Interfaces système pour la gestion de la distribution –**

**Partie 4: Interfaces pour la gestion des dossiers et des actifs**



## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2019 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 Central Office  
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 It also gives information on projects, replaced and withdrawn publications.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 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.

#### 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).

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

The world's leading online dictionary on electrotechnology, containing more than 22 000 terminological entries in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

#### IEC Glossary - [std.iec.ch/glossary](http://std.iec.ch/glossary)

67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

---

### 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 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.

#### 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).

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

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 000 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

#### Glossaire IEC - [std.iec.ch/glossary](http://std.iec.ch/glossary)

67 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



---

**Application integration at electric utilities – System interfaces for distribution management –  
Part 4: Interfaces for records and asset management**

**Intégration d'applications pour les services électriques – Interfaces système pour la gestion de la distribution –  
Partie 4: Interfaces pour la gestion des dossiers et des actifs**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

---

ICS 33.200

ISBN 978-2-8322-6595-6

**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.**

## CONTENTS

FOREWORD.....	8
INTRODUCTION.....	10
1 Scope.....	12
2 Normative references .....	12
3 Terms and definitions .....	13
4 Reference and information models .....	13
4.1 General.....	13
4.2 Reference model.....	13
4.2.1 General .....	13
4.2.2 Network Operation Monitoring (NMON).....	16
4.2.3 Asset Monitoring and Measurement (AMM).....	16
4.2.4 Asset Decision Support (ADS) .....	16
4.2.5 Substation and Network Inventory (EINV) .....	17
4.2.6 Geographical Inventory (GINV).....	17
4.2.7 Maintenance and Inspection (MAI).....	17
4.2.8 Work Scheduling and Dispatching (SCHD).....	17
4.3 Interface Reference Model.....	17
4.4 Records and asset management .....	18
5 Records and asset management message types .....	19
5.1 General.....	19
5.2 AssetList messages .....	19
5.2.1 General .....	19
5.2.2 Applications.....	19
5.2.3 Message format.....	20
5.3 AssetCatalogue messages.....	21
5.3.1 General .....	21
5.3.2 Applications.....	21
5.3.3 Message format.....	22
5.4 TypeAssetCatalogue messages .....	27
5.4.1 General .....	27
5.4.2 Applications.....	27
5.4.3 Message format.....	28
5.5 AssetTemplate messages .....	30
5.5.1 General .....	30
5.5.2 Applications.....	30
5.5.3 Message format.....	31
5.6 AssetDetail messages.....	36
5.6.1 General .....	36
5.6.2 Applications.....	36
5.6.3 Message format.....	37
5.7 AssetHistory message .....	47
5.7.1 General .....	47
5.7.2 Applications.....	47
5.7.3 Message format.....	48
5.8 Asset Work History .....	53
5.8.1 General .....	53

5.8.2	Applications	53
5.8.3	Message format	53
5.9	AssetPSRDetails message	58
5.9.1	General	58
5.9.2	Applications	58
5.9.3	Message format	59
5.10	AssetProcedures message	85
5.10.1	General	85
5.10.2	Applications	85
5.10.3	Message format	85
5.11	Procedures message	87
5.11.1	General	87
5.11.2	Applications	87
5.11.3	Message format	87
5.12	ProcedureDataSets message	89
5.12.1	General	89
5.12.2	Applications	89
5.12.3	Message format	90
5.13	AssetMeasurements message	95
5.13.1	General	95
5.13.2	Applications	95
5.13.3	Message format	95
5.14	MeasurementDetails message	97
5.14.1	General	97
5.14.2	Applications	97
5.14.3	Message format	97
5.15	MeasurementValues message	103
5.15.1	General	103
5.15.2	Applications	103
5.15.3	Message format	103
5.16	Analytics message	105
5.16.1	General	105
5.16.2	Applications	105
5.16.3	Message format	106
5.17	AssetAnalytics message	108
5.17.1	General	108
5.17.2	Applications	108
5.17.3	Message format	108
5.18	AssetGroupAnalytics message	113
5.18.1	General	113
5.18.2	Applications	113
5.18.3	Message format	114
5.19	AssetHealthEvents message	115
5.19.1	General	115
5.19.2	Applications	115
5.19.3	Message format	116
6	Document conventions	118
6.1	UML diagrams	118
6.2	Message definitions	118

6.2.1	General .....	118
6.2.2	Mandatory vs. optional.....	118
6.2.3	Verb tense .....	118
6.3	Synchronous versus asynchronous messages .....	118
6.4	Depiction of simple acknowledgment messages.....	119
Annex A (normative)	Description of message type verbs.....	120
Annex B (informative)	Use cases .....	122
B.1	Business use cases .....	122
B.2	System use cases.....	123
B.2.1	General .....	123
B.2.2	Analytical evaluation of asset health .....	123
B.2.3	Replacement of asset .....	131
Annex C (informative)	Asset management .....	138
C.1	General.....	138
C.2	Condition-based maintenance (CBM).....	138
C.3	Asset management and ISO 55000 .....	140
Annex D (informative)	Asset models and information exchange – The case for formal instance templates .....	143
D.1	CIM asset containment .....	143
D.2	Common instance templates for interoperability .....	143
D.2.1	General .....	143
D.2.2	Instance template documentation .....	144
D.2.3	Instance templates for breakers.....	145
Annex E (informative)	Asset models and information exchange.....	157
E.1	General.....	157
E.2	Asset replacement .....	158
E.3	Data for asset condition analytics.....	158
E.4	Data for operational analytics.....	159
Annex F (informative)	Asset measurement models and information exchange.....	161
F.1	General.....	161
F.2	Ad hoc measurements .....	162
F.3	Online measurements .....	164
Annex G (informative)	Analytics models and information exchange.....	166
Figure 1	– Illustration of Asset-related message flows.....	14
Figure 2	– Illustration of Measurements-related message flows .....	15
Figure 3	– Illustration of Analytics-related message flows .....	16
Figure 4	– AssetList message exchange .....	20
Figure 5	– AssetList message format .....	20
Figure 6	– AssetCatalogue message exchange.....	22
Figure 7	– AssetCatalogue message format.....	23
Figure 8	– AssetCatalogue message: Asset element.....	24
Figure 9	– AssetCatalogue message: BusbarSectionInfo element .....	24
Figure 10	– AssetCatalogue message: PowerTransformerInfo element .....	25
Figure 11	– AssetCatalogue message: CatalogAssetType element .....	25
Figure 12	– AssetCatalogue message: Manufacturer element .....	26

Figure 13 – Type Asset Catalogue message exchange .....	28
Figure 14 – TypeAssetCatalogue message format .....	29
Figure 15 – Asset Template query exchange .....	30
Figure 16 – Asset template creation exchange .....	31
Figure 17 – AssetTemplate message showing the AssetContainer element.....	32
Figure 18 – AssetTemplate message showing the Asset and Medium elements .....	33
Figure 19 – AssetTemplate message showing the Bushing, InterrupterUnit, and OperatingMechanism elements .....	34
Figure 20 – Asset Detail message exchange.....	37
Figure 21 – Asset Detail message format.....	37
Figure 22 – AssetDetail message: Asset element.....	38
Figure 23 – AssetDetail message: AssetDeployment element (included in the Asset element shown in Figure 22).....	39
Figure 24 – AssetDetail message: SwitchOperationSummary element (included as BreakerOperation association within the Asset element shown in Figure 22).....	40
Figure 25 – AssetDetail message: Location element .....	41
Figure 26 – AssetDetail message: Ownership element.....	42
Figure 27 – AssetDetail message: Joint element .....	43
Figure 28 – AssetDetail message: Streetlight element .....	44
Figure 29 – AssetDetail message: Structure element .....	45
Figure 30 – AssetDetail message: StructureSupport element .....	46
Figure 31 – Asset History message exchange.....	48
Figure 32 – AssetHistory message format.....	49
Figure 33 – AssetHistory message: ActivityRecord element .....	50
Figure 34 – AssetHistory message: FailureEvent element.....	51
Figure 35 – AssetHistory message: Author element .....	52
Figure 36 – Asset Work History message exchange.....	53
Figure 37 – AssetWorkHistory message format.....	54
Figure 38 – AssetWorkHistory message: WorkTask element.....	55
Figure 39 – AssetWorkHistory message: MaintenanceWorkTask element .....	56
Figure 40 – AssetWorkHistory message: RepairWorkTask element.....	57
Figure 41 – AssetPSRDetails message exchange 1 .....	59
Figure 42 – AssetPSRDetails message exchange 2 .....	59
Figure 43 – AssetPSRDetails message format .....	60
Figure 44 – AssetPSRDetails message: ACLineSegment element.....	61
Figure 45 – AssetPSRDetails message: Accumulator element .....	62
Figure 46 – AssetPSRDetails message: AsynchronousMachine element.....	63
Figure 47 – AssetPSRDetails message: Breaker element .....	64
Figure 48 – AssetPSRDetails message: BusbarSection element .....	65
Figure 49 – AssetPSRDetails message: Clamp element.....	66
Figure 50 – AssetPSRDetails message: CompositeSwitch element.....	67
Figure 51 – AssetPSRDetails message: EnergyConsumer element.....	68
Figure 52 – AssetPSRDetails message: EnergySource element.....	69
Figure 53 – AssetPSRDetails message: ExternalNetworkInjection element .....	70

Figure 54 – AssetPSRDetails message: FrequencyConverter element .....	71
Figure 55 – AssetPSRDetails message: GroundingImpedance element .....	72
Figure 56 – AssetPSRDetails message: NonRotatingEnergy element .....	73
Figure 57 – AssetPSRDetails message: PetersenCoil element.....	74
Figure 58 – AssetPSRDetails message: PowerTransformer element.....	75
Figure 59 – AssetPSRDetails message: PowerTransformerEnd element.....	76
Figure 60 – AssetPSRDetails message: TransformerTank element.....	77
Figure 61 – AssetPSRDetails message: ProtectedSwitch element .....	78
Figure 62 – AssetPSRDetails message: SeriesCompensator element .....	79
Figure 63 – AssetPSRDetails message: ShuntCompensator element.....	80
Figure 64 – AssetPSRDetails message: StaticVarCompensator element.....	81
Figure 65 – AssetPSRDetails message: Switch element .....	82
Figure 66 – AssetPSRDetails message: SynchronousMachine element .....	83
Figure 67 – AssetPSRDetails message: TapChanger element .....	84
Figure 68 – AssetProcedures message exchange .....	85
Figure 69 – AssetProcedures message format .....	86
Figure 70 – Procedures message format.....	88
Figure 71 – Procedures message format: AssetTemperaturePressureAnalog element .....	89
Figure 72 – ProcedureDataSets message exchange .....	90
Figure 73 – ProcedureDataSets message format .....	91
Figure 74 – ProcedureDatasets message: AnalogValue element.....	92
Figure 75 – ProcedureDataSets message: LabTestDataSet element.....	93
Figure 76 – ProcedureDataSets message format: Specimen element.....	94
Figure 77 – Asset Measurements message exchange.....	95
Figure 78 – AssetMeasurements message format .....	96
Figure 79 – MeasurementDetails message format.....	98
Figure 80 – MeasurementDetails message format: Analog element.....	99
Figure 81 – MeasurementDetails message format: CalculationMethodHierarchy element.....	100
Figure 82 – MeasurementDetails message format: AssetTemperaturePressureAnalog element.....	101
Figure 83 – MeasurementDetails message format: TestStandard element.....	102
Figure 84 – MeasurementValues message format.....	104
Figure 85 – Analytics message exchanges.....	106
Figure 86 – Analytics message format .....	107
Figure 87 – AssetAnalytics message format 1.....	109
Figure 88 – AssetAnalytics message format 2.....	110
Figure 89 – AssetAnalytics message format: AnalyticScore element .....	111
Figure 90 – AssetAnalytics message format: HealthScore element .....	111
Figure 91 – AssetAnalytics message format: RiskScore element.....	112
Figure 92 – AssetGroupAnalytics message format .....	114
Figure 93 – AssetHealthEvents message exchanges .....	116
Figure 94 – AssetHealthEvents message format .....	117
Figure B.1 – IEC 62913 Conceptual model (source: IEC 62913-1) .....	122

Figure B.2 – Brief description of the use case on "decide asset renewal priorities and optimise maintenance programmes" (source: IEC 62913-2-1) .....	123
Figure C.1 – Illustration of condition-based maintenance (CBM) .....	138
Figure C.2 – Illustration of asset management .....	140
Figure C.3 – ISO 55000/1/2 asset management concept and clauses. ....	141
Figure D.1 – Asset component flexibility provided by CIM .....	143
Figure D.2 – Classes utilized in common instance templates .....	144
Figure D.3 – SF <sub>6</sub> dead tank breaker variants .....	146
Figure D.4 – Common instance template for SF <sub>6</sub> dead tank breaker with 1 tank, 1 mechanism, single breaks.....	146
Figure D.5 – Common instance template for SF <sub>6</sub> dead tank breaker with 3 tanks, 1 mechanism, single breaks.....	147
Figure D.6 – Common instance template for SF <sub>6</sub> dead tank breaker with 3 tanks, 3 mechanisms, double breaks.....	148
Figure D.7 – SF <sub>6</sub> live tank breaker variants .....	148
Figure D.8 – Common instance template for SF <sub>6</sub> live tank breaker with 3 insulating stacks on one base, 1 mechanism, single breaks.....	149
Figure D.9 – Common instance template for SF <sub>6</sub> live tank breaker with 6 insulating stacks on 3 bases, 3 mechanisms, 4 breaks .....	150
Figure D.10 – Bulk oil breaker variants .....	150
Figure D.11 – Common instance template for bulk oil breaker with 1 tank, 1 mechanism ....	151
Figure D.12 – Common instance template for bulk oil breaker with 3 tanks, 1 mechanism .....	152
Figure D.13 – Minimum oil breaker variants .....	153
Figure D.14 – Common instance template for minimum oil breaker with 3 insulating stacks on one base, 1 mechanism, single break.....	154
Figure D.15 – Air blast breaker variants .....	154
Figure D.16 – Common instance template for air blast breaker with 3 insulating stacks on one base, 1 mechanism, double breaks .....	155
Figure D.17 – Common instance template for air blast breaker with 9 insulating stacks on 3 bases, 3 mechanisms, 6 breaks .....	156
Figure E.1 – Information exchange for asset replacement.....	158
Figure E.2 – Information exchange for asset condition data .....	159
Figure E.3 – Information exchange for operational analytics .....	160
Figure F.1 – Diagram illustrating objects instantiated for lab testing.....	162
Figure F.2 – Typical message exchanges for ad-hoc measurements .....	163
Figure F.3 – Objects instantiated for DGA monitoring.....	164
Figure F.4 – Message exchanges for online measurements .....	165
Figure G.1 – Illustrative analytics information exchange.....	167
Table 1 – Document overview for IEC 61968-4 .....	11
Table 2 – Business functions and abstract components .....	18
Table A.1 – Normative definitions of verbs.....	120
Table D.1 – Salient characteristics for each transmission breaker family.....	145

# INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

## **APPLICATION INTEGRATION AT ELECTRIC UTILITIES – SYSTEM INTERFACES FOR DISTRIBUTION MANAGEMENT –**

### **Part 4: Interfaces for records and asset management**

#### 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 IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61968 has been prepared by subcommittee IEC technical committee 57: Power systems management and associated information exchange.

This second edition cancels and replaces the first edition published in 2007. This edition constitutes a technical revision.

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

- a) removal of edition 1 profiles whose functionality has been superseded by other parts of IEC 61970 and IEC 61968 standards. In particular, NetworkDataSet and ChangeSet have been superseded by standards such as CDPSM (IEC 61968-13) and other ongoing efforts such as change modelling; and Presentation has been superseded by Diagram Layout Profile (IEC 61970-453);
- b) revision of the edition 1 profiles AssetList, AssetCatalogue and TypeAssetCatalogue to realign with current use cases and the latest CIM UML release. These profiles are based

on an old version of CIM UML and many of the classes in these profiles are no longer in the recent CIM UMLs;

- c) addition of several new profiles to enable the exchange of asset condition data, analytics results and alerts, assets' physical, functional and lifecycle details, and assets' work;
- d) informative annexes on how this document can be used to enable strategic asset management;
- e) informative annexes with illustrative examples for the application of this document;
- f) scope coordinated with IEC 61968-13 where applicable;
- g) use cases in IEC 62559-2 use case template;
- h) traceability of use cases to IEC 62913-2-1 use cases.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
57/2059/FDIS	57/2074/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<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 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

The IEC 61968 standard series, taken as a whole, defines interfaces for the major elements of an interface architecture for Distribution Management Systems (DMS). IEC 61968-1, *Interface architecture and general recommendations*, identifies and establishes requirements for standard interfaces based on an Interface Reference Model (IRM). IEC 61968-3 to -9 define interfaces relevant to each of the major business functions described by the Interface Reference Model.

As used in IEC 61968, a DMS consists of various distributed application components for the utility to manage electrical distribution networks. These capabilities include monitoring and control of equipment for power delivery, management processes to ensure system reliability, voltage management, demand-side management, outage management, work management, automated mapping and facilities management.

This series of standards is limited to the definition of interfaces and is implementation independent. They provide for interoperability among different computer systems, platforms, and languages. Methods and technologies used to implement functionality conforming to these interfaces are considered outside of the scope of these standards; only the interface itself is specified in these standards.

The purpose of this part of IEC 61968 is to define a standard for the integration of Records and Asset Management (AM), which would include Geographic Information Systems and Asset Risk Management Systems, with other systems and business functions within the scope of IEC 61968. The scope of this document is the exchange of information between Records and Asset Management Systems and other systems within the utility enterprise. The specific details of communication protocols those systems employ are outside the scope of this document. Instead, this document will recognize and model the general capabilities that can be potentially provided by records and asset management systems including asset risk assessment, asset planning, and condition-based asset management. In this way, this document will not be impacted by the specification, development and/or deployment of next generation records and asset management systems, either through the use of standards or proprietary means.

The IEC 61968 series of standards is intended to facilitate inter-application integration as opposed to intra-application integration. Intra-application integration is aimed at programs in the same application system, usually communicating with each other using middleware that is embedded in their underlying runtime environment, and tends to be optimised for close, real-time, synchronous connections and interactive request/reply or conversation communication models. IEC 61968, by contrast, is intended to support the inter-application integration of a utility enterprise that needs to connect disparate applications that are already built or new (legacy or purchased applications), each supported by dissimilar runtime environments. Therefore, these interface standards are relevant to loosely coupled applications with more heterogeneity in languages, operating systems, protocols and management tools. This series of standards is intended to support applications that need to exchange data every few seconds, minutes, or hours rather than waiting for a nightly batch run. This series of standards, which are intended to be implemented with middleware services that exchange messages among applications, will complement, not replace, utility data warehouses, database gateways, and operational stores.

As used in IEC 61968, a Distribution Management System (DMS) consists of various distributed application components for the utility to manage electrical distribution networks. These capabilities include monitoring and control of equipment for power delivery, management processes to ensure system reliability, voltage management, demand-side management, outage management, work management, automated mapping and facilities management. Standard interfaces are defined for each class of applications identified in the Interface Reference Model (IRM), which is described in IEC 61968-1.

This part of IEC 61968 contains the clauses listed in Table 1.

**Table 1 – Document overview for IEC 61968-4**

<b>Clause</b>	<b>Title</b>	<b>Purpose</b>
1	Scope	The scope and purpose of the document are described.
2	Normative references	Documents that contain provisions which, through reference in this text, constitute provisions of this International Standard.
3	Terms and definitions	Description of concepts and terms pertinent to records and asset management.
4	Reference and information models	Description of general approach to records and asset management systems, reference model, use cases, interface reference model, records and asset management functions and components, message type terms and static information model.
5	Records and asset management message types	Message types related to the exchange of information for documents related to records and asset management.
Annex A	Description of message type verbs	Description of the verbs that are used for the message types.
Annex B	Use cases	Description of use cases pertaining to this standard.
Annex C	Asset management	Description of an example asset management framework that leverages this standard.
Annex D	Asset models and information exchange – The case for formal instance templates	Description of the use of CIM to model typical electrical power utility assets.
Annex E	Asset Models and information exchange	Illustration of asset related messages and typical information exchanges.
Annex F	Asset measurements models and information exchange	Illustration of asset measurements related messages and typical information exchanges.
Annex G	Analytics models and information exchange	Illustration of asset analytics related messages and typical information exchanges.

# APPLICATION INTEGRATION AT ELECTRIC UTILITIES – SYSTEM INTERFACES FOR DISTRIBUTION MANAGEMENT –

## Part 4: Interfaces for records and asset management

### 1 Scope

This part of IEC 61968 specifies the information content of a set of message types that can be used to support many of the business functions related to records and asset management. Typical uses of the message types defined in this document include network extension planning, copying feeder or other network data between systems, network or diagram edits and asset inspection. Message types defined in other parts of IEC 61968 may also be relevant to these use cases.

### 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 61968-1:2012, *Application integration at electric utilities – System interfaces for distribution management – Part 1: Interface architecture and general recommendations*

IEC 61968-3:2017, *Application integration at electric utilities – System interfaces for distribution management – Part 3: Interface for network operations*

IEC 61968-6:2015, *Application integration at electric utilities – System interfaces for distribution management – Part 6: Interfaces for maintenance and construction*

IEC 61968-9:2013, *Application integration at electric utilities – System interfaces for distribution management – Part 9: Interfaces for meter reading and control*

IEC 61968-11:2018, *Application integration at electric utilities – System interfaces for distribution management – Part 11: Common information model (CIM) extensions for distribution*

IEC 61968-100:2013, *Application integration at electric utilities – System interfaces for distribution management – Part 100: Implementation profiles*

IEC 61970-301:2016, *Energy management system application program interface (EMS-API) – Part 301: Common information model (CIM) base*

IEC 62361-100:2016, *Power systems management and associated information exchange – Interoperability in the long term – Part 100: CIM profiles to XML schema mapping*

IEC TR 62361-103:2018, *Power systems management and associated information exchange – Interoperability in the long term – Part 103: Standard profiling*

ISO 55000:2014, *Asset management – Overview, principles and terminology*

ISO 55001:2014, *Asset management – Management systems – Requirements*