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**Integration von Anwendungen in Anlagen der Elektrizitätsversorgung –
Systemschnittstellen für Netzführung –
Teil 8: Schnittstellen für den Kundenbetrieb
(IEC 61968-8:2015);
Englische Fassung EN 61968-8:2016**

Application integration at electric utilities –
System interfaces for distribution management –
Part 8: Interfaces for customer operations
(IEC 61968-8:2015);
English version EN 61968-8:2016

Intégration d'applications pour les services électriques –
Interfaces système pour la gestion de distribution –
Partie 8: Interfaces pour l'assistance à la clientèle
(IEC 61968-8:2015);
Version anglaise EN 61968-8:2016

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Anwendungsbeginn

Anwendungsbeginn für die von CENELEC am 2015-07-01 angenommene Europäische Norm als DIN-Norm ist 2017-03-01.

Nationales Vorwort

Vorausgegangener Norm-Entwurf: E DIN IEC 61968-8:2013-04.

Für dieses Dokument ist das nationale Arbeitsgremium K 952 „Netzleittechnik“ der DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik in DIN und VDE (www.dke.de) zuständig.

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Da sich die Benutzer der vorliegenden Norm der englischen Sprache als Fachsprache bedienen, wird die englische Fassung der IEC 61968-8:2015 veröffentlicht. Zu deren Abschnitt 1, der den Anwendungsbereich festlegt, und deren Abschnitt 3, der die Begriffe und Abkürzungen festlegt, wurde eine Übersetzung angefertigt und als informativer Nationaler Anhang NA der vorliegenden Norm hinzugefügt. Für die meisten der verwendeten Begriffe existieren keine gebräuchlichen deutschen Benennungen, da sich die deutschen Anwender in der Regel ebenfalls der englischen Benennungen bedienen. Diese Norm steht nicht in unmittelbarem Zusammenhang mit Rechtsvorschriften und ist nicht als Sicherheitsnorm anzusehen.

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Nationaler Anhang NA (informativ)

Auszugsweise Übersetzung^{N1)}

1 Anwendungsbereich

Dieser Teil der IEC 61968 spezifiziert den Informationsinhalt eines Satzes von Nachrichtentypen, der dazu verwendet werden kann, viele Geschäftsfunktionen zu unterstützen, die sich auf Kundendienst beziehen. Typische Anwendungen der Nachrichtentypen beinhalten Dienst-Anfragen, Kundenvereinbarungen und Beschwerde-Management.

Der Zweck dieses Teils der IEC 61968 ist es, eine Norm für die Unterstützung des Kundendienstes (CD) zu definieren, die Kundendienst, Beschwerdemanagement und abrechnungsbezogene Komponenten mit anderen Systemen und Geschäftsfunktionen innerhalb des Anwendungsbereiches der IEC 61968 integriert. Der Anwendungsbereich dieser Norm ist der Informationsaustausch zwischen einem Kundendienstsystem und anderen Systemen innerhalb des Versorgungsunternehmens.

3 Begriffe und Abkürzungen

3.1 Begriffe

Für die Anwendung dieser Norm gelten die Begriffe nach IEC 60050-300, IEC 61968-2, IEC 62051 und IEC 62055-31.

Im Falle eines Unterschiedes zwischen den Definitionen in dieser Norm und denen, die in anderen zitierten IEC-Normen, haben die nach IEC 61968-2 definierten Vorrang vor den anderen aufgeführten, und die in diesem Dokument aufgeführten haben Vorrang vor den im IEC 61968-2 definierten.

3.2 Abkürzungen

CIM	allgemeines Informationsmodell (en: Common Information Model)
CIS	Kundeninformationssystem (en: Customer information system)
CRM	Kundenbeziehungsmanagement (en: Customer relationship management)
CSR	Kundendienstvertreter (en: Customer service representative)
ERT	geschätzte Zeit zur Wiederherstellung (en: Estimated restoration time)
IVR	Interaktive Sprachausgabe (en: Interactive voice response)
NO	Netzwerkbetriebszentrum (en: Network Operations)
OMS	Ausfallverwaltungssystem (en: Outage Management System)
POS	Verkaufspunkt (en: Point of sale)
UML	Einheitliche Modellierungssprache (en: Unified modelling language)
WM	Arbeitsplanung (en: Work Management)
XSD	XML Schema Definition (en: XML schema definition)

^{N1)} Nationale Fußnote: Die Nummerierung der IEC 61968-8:2015 wurde beibehalten.

– Leerseite –

English Version

**Application integration at electric utilities – System interfaces for
distribution management – Part 8: Interfaces for customer
operations
(IEC 61968-8:2015)**

Intégration d'applications pour les services électriques –
Interfaces système pour la gestion de distribution – Partie 8:
Interfaces pour l'assistance à la clientèle
(IEC 61968-8:2015)

Integration von Anwendungen in Anlagen der
Elektrizitätsversorgung – Systemschnittstellen für
Netzführung – Teil 8: Schnittstellen für den Kundenbetrieb
(IEC 61968-8:2015)

This European Standard was approved by CENELEC on 2015-07-01. 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.

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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.

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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

European foreword

The text of document 57/1548/FDIS, future edition 1 of IEC 61968-8, 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 61968-8:2016.

The following dates are fixed:

- latest date by which the document has (dop) 2016-11-13
to be implemented at national level by
publication of an identical national
standard or by endorsement
- latest date by which the national (dow) 2019-05-13
standards conflicting with the
document have to be withdrawn

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.

Endorsement notice

The text of the International Standard IEC 61968-8:2015 was approved by CENELEC as a European Standard without any modification.

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INTRODUCTION

The purpose of this part of IEC 61968 is to define a standard for the integration of Customer Support (CS), which would include Customer Service, Trouble Management and Point of Sale related components integrated with other systems and business functions within the scope of IEC 61968. The scope of this standard is the exchange of information between a customer support system and other systems within the utility enterprise.

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: *Application integration at electric utilities – System interfaces for distribution management – Interface Architecture and General Requirements*.

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

Table 1 – Document overview for IEC 61968-8

Clause	Title	Purpose
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, definitions and abbreviations	
4.	Reference and information models	Description of general approach to customer support, reference model, interface reference model, customer support functions and components, message type terms and static information model.
5.	Customer support message types	Message types related to the exchange of information for documents related to customer services.
Annex A	Sample XML schemas for message payloads	To provide XSD information for information use only.

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

Part 8: Interfaces for customer operations

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 customer support. Typical uses of the message types include service request, customer agreement, and trouble management.

The purpose of this part of IEC 61968 is to define a standard for the integration of customer support (CS), which would include customer service, trouble management and point of sale related components integrated with other systems and business functions within the scope of IEC 61968. The scope of this standard is the exchange of information between a customer support system and other systems within the utility enterprise.

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

IEC TS 61968-2, *Application integration at electric utilities – System interfaces for distribution management – Part 2: Glossary*

IEC 61968-6, *Application integration at electric utilities – System interfaces for distribution management – Part 6: Interfaces for maintenance and construction*¹

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

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

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

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this standard, the terms and definitions given in IEC 60050-300, IEC 61968-2, IEC 62051 and IEC 62055-31 apply.

Where there is a difference between the definitions in this standard and those contained in other referenced IEC standards, then those defined in IEC 61968-2 shall take precedence over the others listed, and those defined in this document shall take precedence over those defined in IEC 61968-2.

¹ To be published.

3.2 Abbreviations

CIM	Common information model
CIS	Customer information system
CRM	Customer relationship management
CSR	Customer service representative
ERT	Estimated restoration time
IVR	Interactive voice response
NO	Network operations
OMS	Outage management system
POS	Point of sale
UML	Unified modelling language
WM	Work management
XSD	XML schema definition

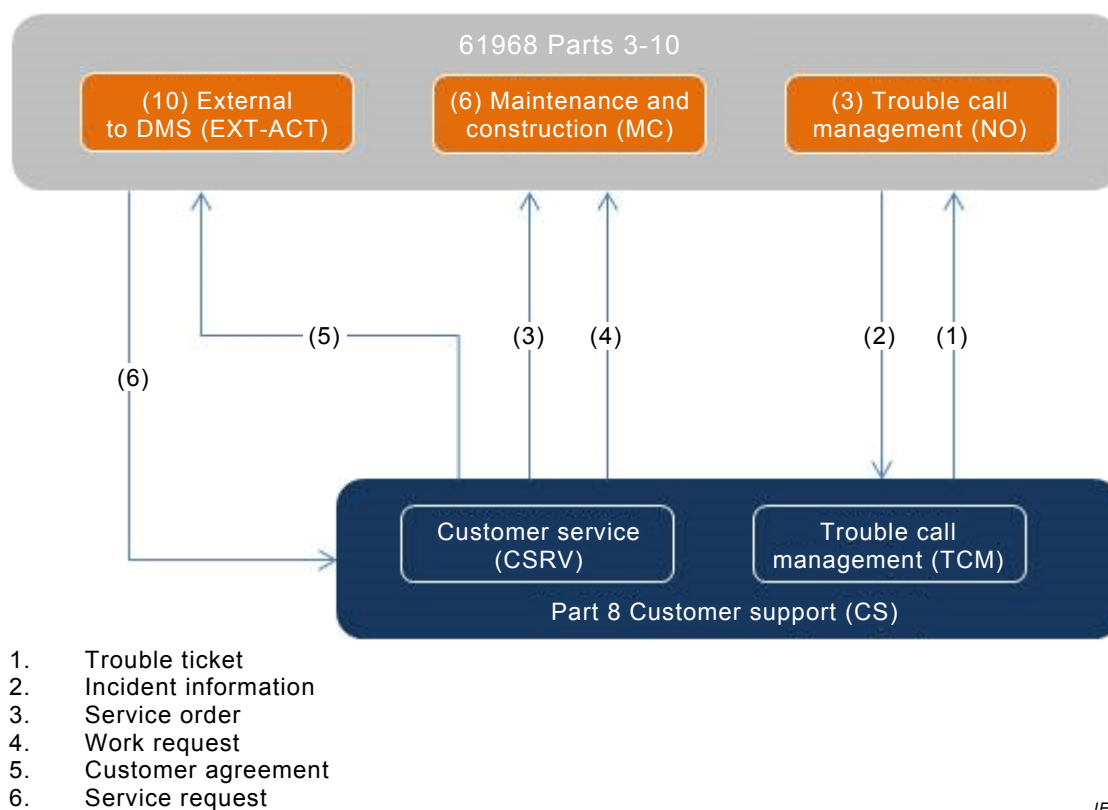
4 Reference and information models

4.1 Reference model

4.1.1 General

The diagram in Figure 1 serves as a reference model and provides examples of the logical components and data flows related to the context of this part of IEC 61968.

Figure 1 describes the information flows between the components defined in this part of IEC 61968 and the components in the reference model defined in IEC 61968-1.



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Figure 1 – IEC 61968-8 context model

4.1.2 Customer support (CS)

Typical tasks of customer support:

- Customer services may include, but are not limited to, customer enquiries, new service, program enrollment and service or work request updates.
- Trouble call management may include, but are not limited to, trouble calls reported from customers and non-customers, outage notifications and restoration updates.

4.2 Customer support functions and components

Table 2 shows these functions and typical abstract components that are expected to be producers of information for these message types. Typical consumers of the information include, but are not restricted to, the other components as listed in IEC 61968-1.

Table 2 – Business functions and abstract components

Customer support (CS)	Customer service (CSRV)	Service requests
		Construction billing inquiry
		Billing inquiry
		Work status
		Self-service inquiry
		Customer connection
		Turn on, turn off
		Line losses
		Service level agreements
		Customer information analysis
		Customer information management
		Customer relationship management
	Trouble call management (TCM)	Outage calls
		Power quality
		Planned outage notifications
		Media communication
		Performance indices
		Restoration projection/confirmation
		Outage history
	Point of sale (POS)	

4.3 Static information model

4.3.1 General

The information model relevant to customer support consists of classes that provide a template for the attributes for each message.

The classes are defined in detail in IEC 61968-11, *Application integration at electric utilities – System interfaces for distribution management – Part 11: Common Information Model (CIM) Extensions for Distribution* or in IEC 61970-301, *Energy management system application program interfaces (EMS-API) – Part 301: Common information model (CIM) base*.

4.3.2 Classes for customer support

Table 3 lists classes used within message types. Usually all the attributes of these classes are contained within a message type. The descriptions provided describe usage within this part.

Classes described as type "Customer" are defined in the 61968/customer package of the CIM.

Table 3 – Customer support classes

Class/Noun	Package	Description
Customer	Customers	Organisation receiving services from service supplier
CustomerAgreement	Customers	Agreement between the customer and the service supplier to pay for service at a specific service location. It records certain billing information about the type of service provided at the service location and is used during charge creation to determine the type of service
DemandResponseProgram	Metering	Demand response program
Incident	Operations	Description of a problem in the field that may be reported in a trouble ticket or come from another source. It may have to do with an outage
Location	Common	The place, scene, or point of something where someone or something has been, is, and/or will be at a given moment in time. It can be defined with one or more position points (coordinates) in a given coordinate system
Outage	Operations	Document describing details of an active or planned outage in a part of the electrical network. A non-planned outage may be created upon: – a breaker trip, – a fault indicator status change, – a meter event indicating customer outage, – a reception of one or more customer trouble calls, or – an operator command, reflecting information obtained from the field crew. Outage restoration may be performed using a switching plan which complements the outage information with detailed switching activities, including the relationship to the crew and work. A planned outage may be created upon: – a request for service, maintenance or construction work in the field, or – an operator-defined outage for what-if/contingency network analysis. The associated outage plan defines operational restrictions and atomic switch actions to define the changes that, after applied, would result in a total or partial equipment outage as required for network analysis.
ServiceCategory	Customers	Category of service provided to the customer
ServiceLocation	Customers	A real estate location, commonly referred to as premise
TroubleTicket	Customers	A document that provides details about trouble in the power network
Work	Work	Document used to request, initiate, track and record work

NOTE The class definitions provided here are for convenience purposes only. The normative definitions are provided by IEC 61968-11, which describes the distribution extensions to the IEC CIM standard.

5 Customer support message types

5.1 General

The purpose of this section is to describe the message types related to IEC 61968-8. It is important to note that some of these message types may also be used by other parts of IEC 61968. The general approach to the realization of message structures and XML schemas for IEC 61968 messages is described in IEC 61968-1 and IEC 61968-100.

It is also important to note that the use cases and sequence diagrams provided in this standard are informative in nature, and are intended to provide examples of usage for the normative messages definitions. There is no intent by this standard to standardize specific business processes.

5.2 Trouble ticket

5.2.1 General

Many electric utilities depend on the calls from the customers to begin the process to identify the location of the faulted section of the electric distribution circuit. The trouble ticket is the communication mechanism between the utility and the customer that is used to initiate an analysis to determine where best to deploy field personnel for service restoration. The trouble ticket is typically created based on direct conversation with the customer. The trouble ticket is also created based on customer report via an automated call taking system and on an outage report from an AMI meter. The trouble ticket contains the information of a customer call. Once created, the trouble ticket may be sent to the OMS for further processing.

Figure 2 provides a sequence diagram showing the use case for communication between the CIS and OMS using the trouble ticket message. Figure 3 presents an XSD diagram showing the contents of the trouble ticket message.

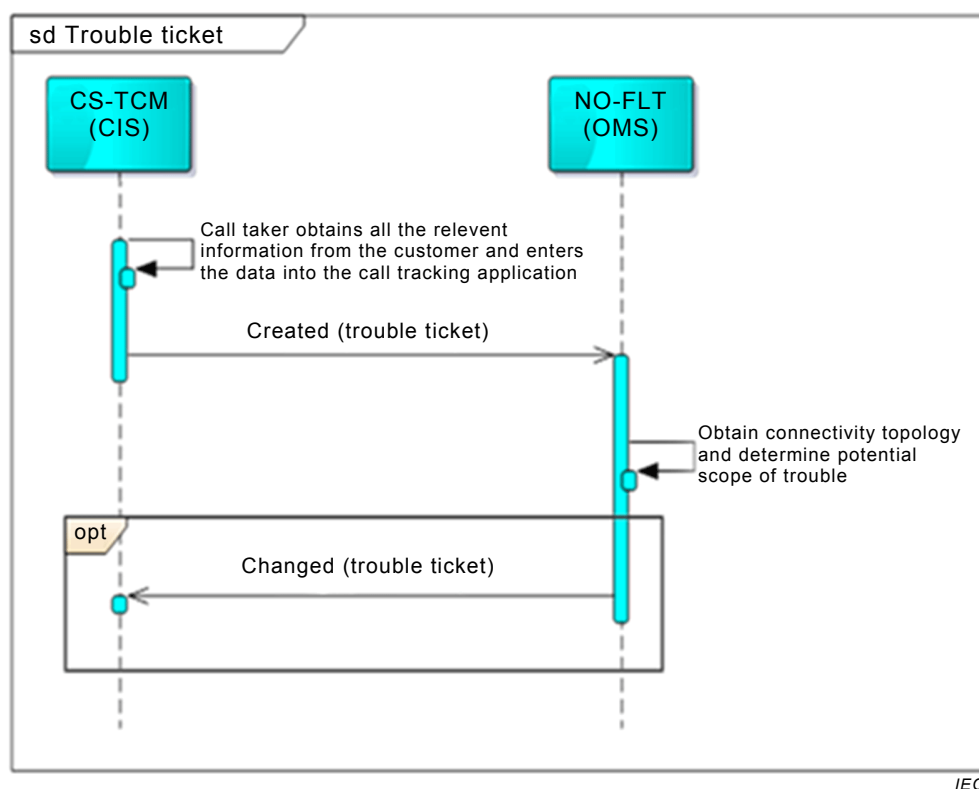


Figure 2 – Example of trouble ticket exchange between CIS and OMS

5.2.2 Message format

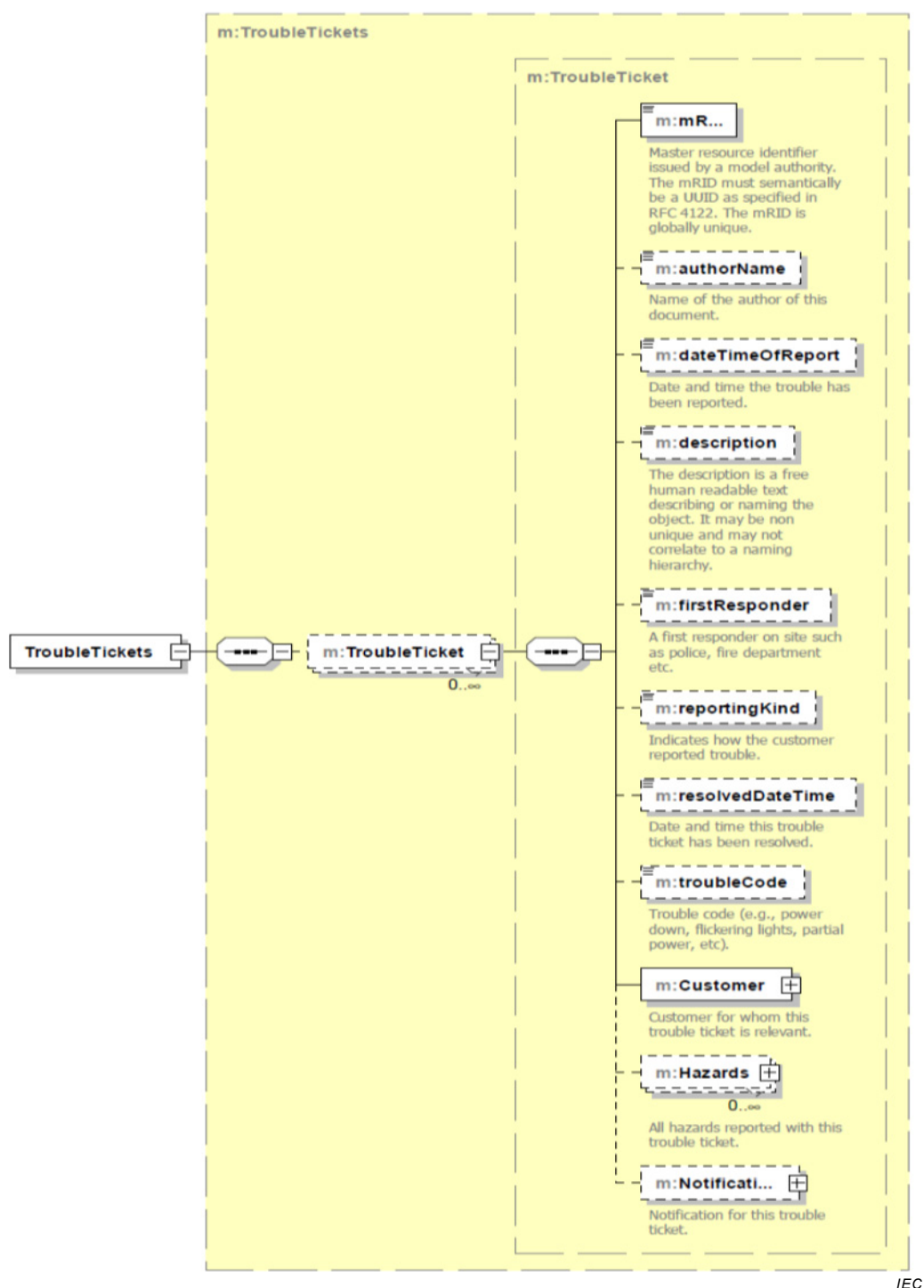


Figure 3 – Trouble ticket message

5.3 Incident information

5.3.1 General

When there is an outage and it is a confirmed outage, utilities typically can provide an estimated restoration time (ERT) depending on where the event is within the outage management processes. A request is made to outage management for a status update on a particular trouble ticket assigned to an outage incident, or to determine if an incident already exists before creating a trouble ticket (See Figure 4 showing the use case for this message exchange).

When making a trouble call, some callers request for a call back at a certain point in the restoration phase; e.g. at the time of arrival of the crew or when the supply is restored. This message needs to be created when the call back is due and lists the customers requiring call back. While the incident information message is generated by the Outage Management System (OMS), it is included in this document to complete the interaction between the CIS and the OMS and will be removed from this standard when the message is included in the IEC 61968-3. Figure 5 details the contents of the incident information message and includes the required elements of the CIS as well as the OMS.

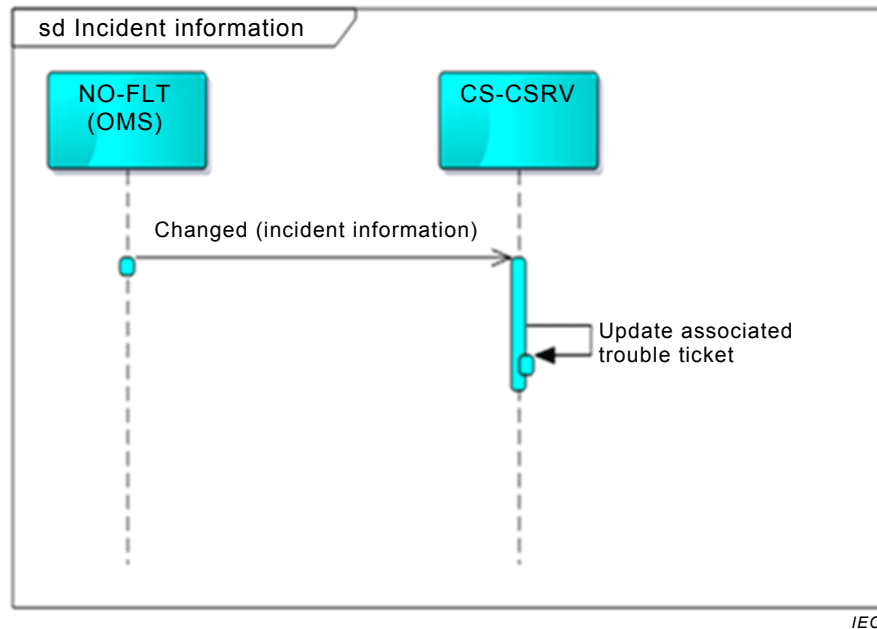


Figure 4 – Example of incident information exchange between OMS and CIS

5.3.2 Message format

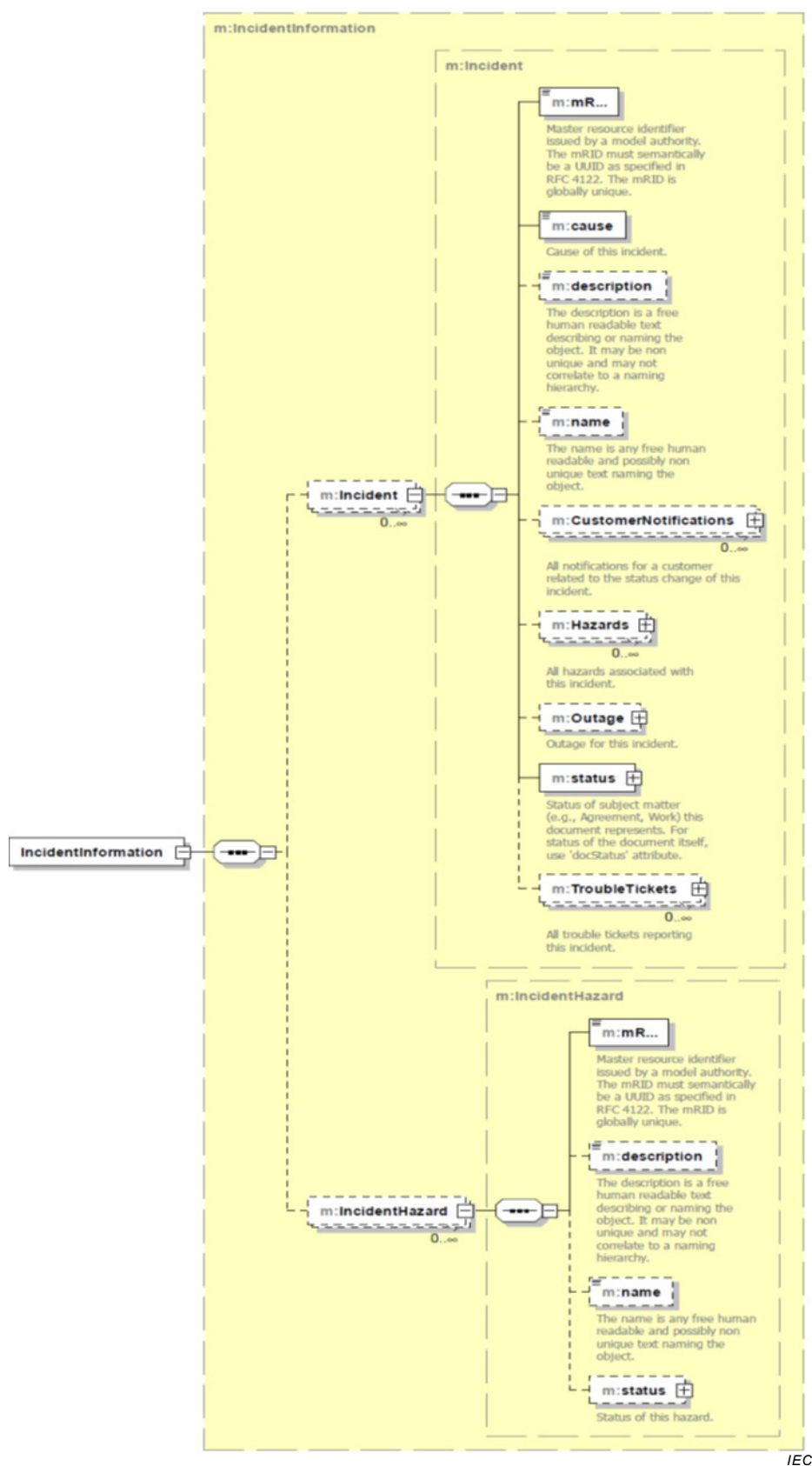


Figure 5 – Incident information message

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5.4 Service request

5.4.1 General

Customers initiate service requests as their main point of contact with the utility. Service requests by a customer may include but are not limited to:

- Request to turn an existing service on or off (move in/move out, seasonal, etc.)
- Request a new service (electrification of a garage, new house, etc.)
- Request investigation into power quality or other concern about an existing service (not a trouble or outage call)
- Enroll or de-enroll in a customer program (demand response, etc.)
- Account issues (billing inquiries, high bill complaints, etc.)

Service requests may be initiated:

- In person at a utility office with a customer service representative (CSR)
- Over the internet to CIS or CRM systems
- Through an automated IVR system
- Over the telephone with a CSR

Once a service request is received, the CIS sends it to the WMS for further processing (see Figure 6).

Service requests may:

- Be manually handled by a customer service representative
- Cause a service order to be created and assigned to a field service technician/crew
- Cause a work request to be created in work management, which in turn may generate a work order or some other action

Service requests are typically handled by a manual process, but increasingly require an electronic representation between front end systems such as IVR and CRM, which send a service request message (see Figure 7 for message contents) to the customer information system.

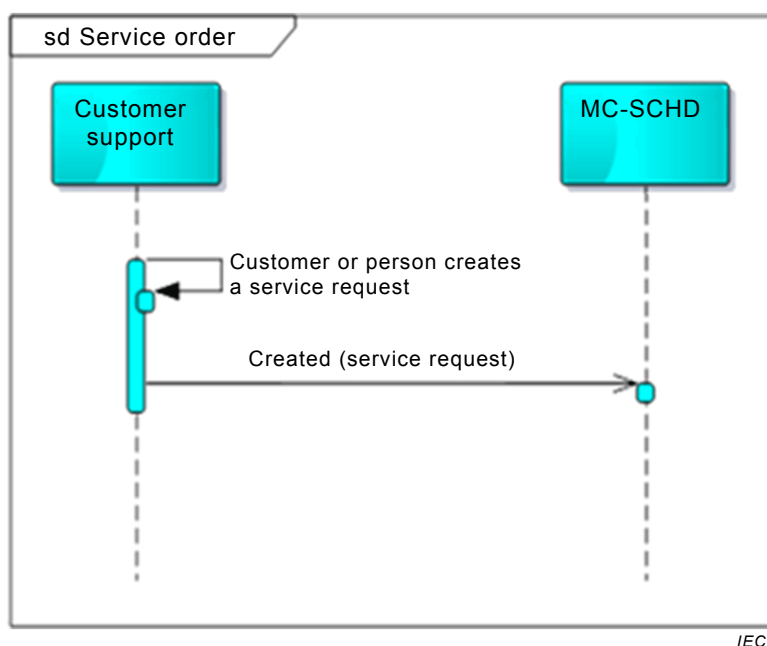
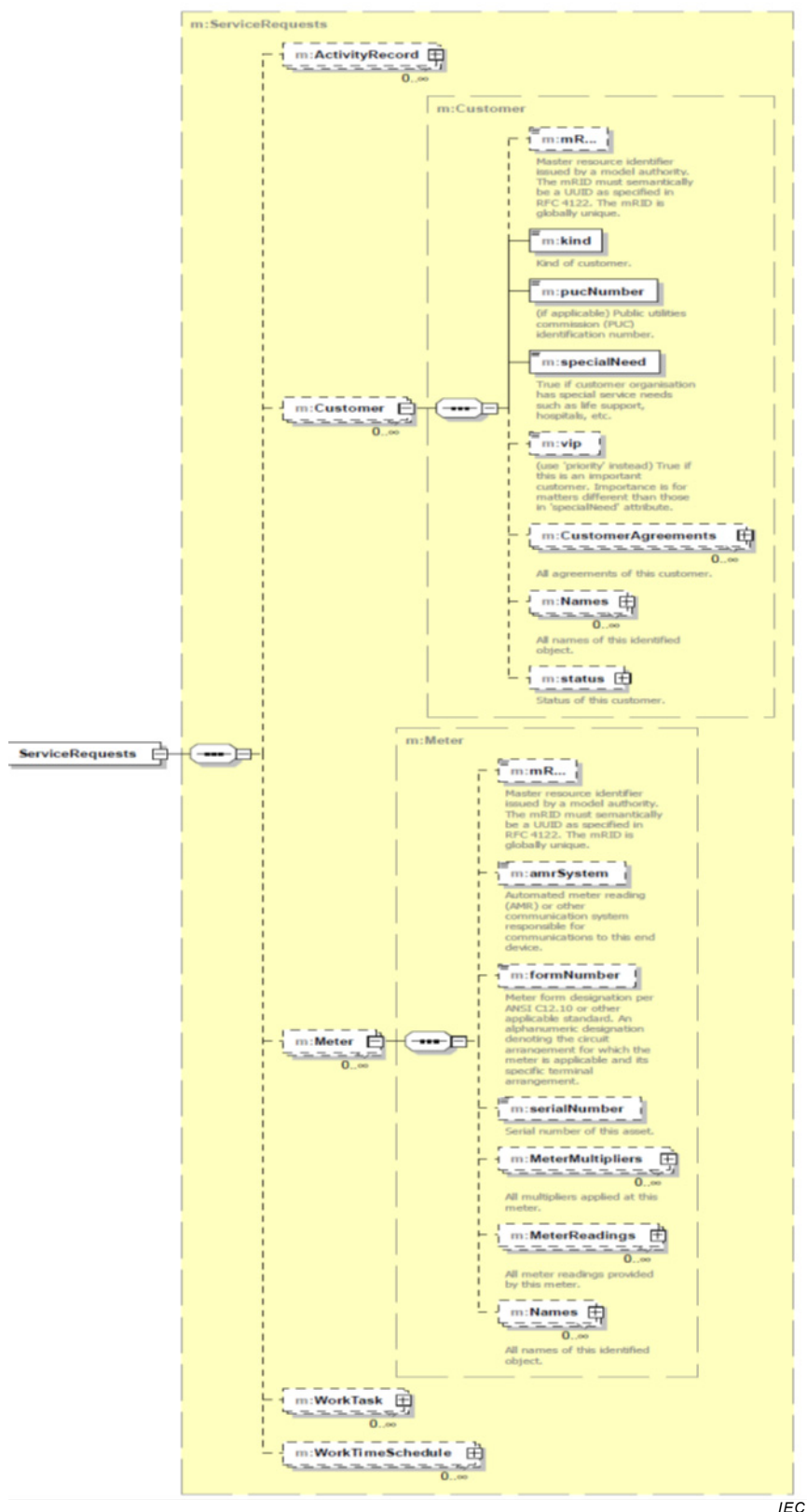


Figure 6 – Example of a service request exchange between CIS and WMS

5.4.2 Message format



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Figure 7 – Service request message

5.5 Service order

5.5.1 General

A service order is an IEC 61968-6 message and is created when customer service needs to have some work done at a customer premise. The service order is created as one possible response to a service request.

The service order contains the information for a field service technician or crew to perform the work required by the customer such as:

- Service connection / disconnection
- Power quality / high bill investigation
- Meter service, such as meter replacement

Figure 8 shows the work flow between CIS and WMS when a service order message is exchanged.

Service orders by definition define work to be performed on an existing service and therefore typically include account and existing premise information. If a new service is required, a maintenance or construction order is required instead. The final task of a maintenance order for installing a new service is usually a meter set. This job is often performed by field service crews or technicians, so that meter set may occur as a service order, or as part of the maintenance order depending on the utility.

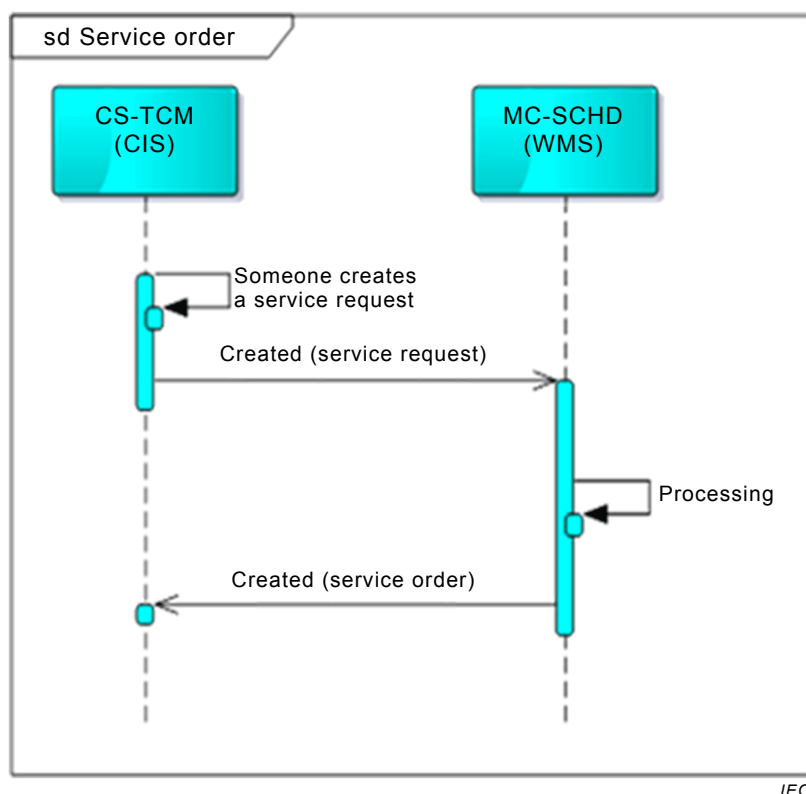


Figure 8 – Example of a service order exchange between CIS and WMS

The service order message is defined fully in IEC 61968-6.

5.6 Work request

5.6.1 General

A work request is an IEC 61968-6 message and informs work management that some work may be required on company assets. While there are numerous work management-initiated use cases for creating a work request, such as inspections and maintenance, this subclause describes work requests that are created by the customer support organization.