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**Systems interface between customer energy management system and the power management system –
Part 10-3: Open automated demand response – Adapting smart grid user interfaces to the IEC common information model**

**Interface entre le système de gestion de l'énergie côté client et le système de gestion de puissance –
Partie 10-3: Réponse à la demande automatisée ouverte – Adaptation des interfaces utilisateur de réseau intelligent au modèle d'information commun de l'IEC**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SYSTEMS INTERFACE BETWEEN CUSTOMER ENERGY MANAGEMENT SYSTEM AND THE POWER MANAGEMENT SYSTEM –

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FOREWORD

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International Standard IEC 62746-10-3 has been prepared by IEC project committee 118: Smart grid user interface.

This publication contains attached files in the form of XML artefacts. These files are intended to be used as a complement and do not form an integral part of the publication.

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

FDIS	Report on voting
118/94/FDIS	118/98/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.

A list of all parts in the IEC 62746 series, published under the general title *Systems interface between customer energy management system and the power management system*, can be found on the IEC website.

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

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INTRODUCTION

The IEC common information model (CIM), comprised of IEC 61968-11, IEC 61970-301, and IEC 62325-301, contains the core IEC standards used by applications that govern the electric grid systems. On the other hand, customer facility management and control is enabled by over twenty non-CIM-based interoperation protocols.

One challenge facing IEC is to flexibly bridge the CIM-based portions of the electric grid domain to the non-CIM customer facility domain. IEC TR 62939-1 presents interface principles, requirements and use case analysis to help bridge the domains, and identifies existing standards that serve use case requirements for the customer facility domain.

This part of IEC 62746 defines a methodology for defining adapters to carry out core transformations to enable interoperation between

- CIM-based utility systems using CIM profiles supporting CIM demand response and distributed energy resources (that is, CIM DR profiles), and
- smart grid user interface (SGUI) bridge standards that bridge to the customer facility domain.

This document provides a standard method to achieve interoperability for the semantics and mapping of message payloads, and does not address broader system issues including but not limited to transport protocols, message envelopes, cybersecurity and business model differences.

Business and market presentation requirements are out of scope as they are syntactic rather than the semantic information exchange described in this document. In the enterprise software world, specific presentation requirements are typically implemented with XSLT transforms.

Adapters may not be required when the relevant business models as well as the CIM versions and profiles used by the respective actors in the grid and the facility domain are the same.

An informative example is included showing how this document can be applied to define interoperation between a specific CIM DR profile and the SGUI bridge standard IEC 62746-10-1. Such interoperation is two-way: the example shows a DR event produced by a CIM-based system communicated by means of an adapter to the virtual end node.

Applying a conformant adapter, a facility system may present itself to grid systems as if it implemented CIM demand response; likewise, a CIM system may present itself to facility systems as if it implemented an SGUI bridge standard.

This work is aligned with a gap identified in IEC TR 63097:2017.

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1 Scope

This part of IEC 62746 defines and describes methods and example XML artefacts that can be used to build a conformant adapter to enable interoperation between a utility distributed automation or demand response (DR) system based on the IEC common information model (CIM) and a utility smart grid user interface (SGUI) bridge standard (e.g., IEC 62746-10-1) to a customer facility. A conformant adapter

- 1) defines mappings for the payloads of request and response messages to pass between the SGUI bridge standard and grid operation systems,
- 2) requires minimal information sharing between grid operation systems and customer facility management and control systems, and
- 3) permits independent evolution of necessary standards and technologies used in grid systems and customer facility systems.

The scope is restricted to a method to define payload mappings between any specific CIM profile that contains DR/DER information models and the SGUI bridge standards including IEC 62746-10-1.

NOTE This document addresses a standard method to achieve interoperability for the semantics of message payloads, and does not address broader system issues including but not limited to transport protocols, message envelopes, cybersecurity, presentation, and business model differences. A complete software implementation addresses those broader system issues and, for the grid management side, IEC 62561 and other relevant standards apply.

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 62325-301:2018, *Framework for energy market communications – Part 301: Common information model (CIM) extensions for markets*

IEC 62325-450:2013, *Framework for energy market communications – Part 450: Profile and context modelling rules*

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 62746-10-1, *Systems interface between customer energy management system and the power management system – Part 10-1: Open automated demand response – OpenADR 2.0 profile specification*¹

¹ Under preparation. Stage at the time of publication: IEC/DECFDIS 62746-10-1:2018.