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INTERNATIONAL STANDARD

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Information technology - Home Electronic System (HES) application model - Part 3-30: Energy management agent functional requirements and interfaces



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CONTENTS

FOREWORD 3
INTRODUCTION 5
1 Scope 6
2 Normative references 6
3 Terms, definitions and abbreviated terms 6
3.1 Terms and definitions 6
3.2 Abbreviated terms 7
4 Conformance 7
5 Configuration of multiple energy management agents in a residential community 8
5.1 Overview 8
5.2 Hierarchical EMA configuration for home or residential community 9
5.3 Distributed EMA configuration for home or residential community 10
6 EMA functional requirements and reference interfaces 11
6.1 Overview 11
6.2 Functional requirements 12
6.3 EMA interfaces 13
6.3.1 The four EMA interfaces 13
6.3.2 The southbound interface 13
6.3.3 The northbound interface 14
6.3.4 The eastbound interface 14
6.3.5 The westbound interface 14
Annex A (informative) Emerging challenges in EMAs 15
A.1 General 15
A.2 Integration with smart appliances 15
A.3 Integration with artificial intelligence 15
A.4 Integration with big data 15
A.5 Integration with energy prosumers 16
A.6 Integration with microgrids 16
A.7 Integration with smart home 16
A.8 Integration with smart cities 16
Bibliography 18

Figure 1 – Example of interconnected EMAs in a residential area 9
Figure 2 – A hierarchical configuration in a residential area 10
Figure 3 – A distributed EMF configuration in a residential area 11
Figure 4 – An EMA reference model with four functional requirements and four reference interfaces 12
Figure A.1 – Emerging challenges associated with EMAs 17

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INFORMATION TECHNOLOGY – HOME ELECTRONIC SYSTEM (HES) APPLICATION MODEL –

Part 3-30: Energy management agent functional requirements and interfaces

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

Draft	Report on voting
JTC1-SC25/3203/FDIS	JTC1-SC25/3218/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 International Standard 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 the ISO/IEC Directives, JTC 1 Supplement available at www.iec.ch/members_experts/refdocs and www.iso.org/directives.

A list of all parts of the ISO/IEC 15067 series, published under the general title *Information technology – Home Electronic System (HES) application model*, can be found on the IEC and ISO websites.

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.

INTRODUCTION

This document specifies energy management agent (EMA) functional requirements and interfaces for interconnected energy management agents in a house, an apartment complex, or a residential community with multiple EMAs. It supports energy management by facilitating interactions among EMAs, appliances, consumer electronics, distributed energy resources (DER) and electric vehicle (EV) chargers. These EMA functional requirements and interfaces complement the reference model for interconnected EMAs specified in ISO/IEC 15067-3-3. The EMA interfaces identify interactions and information exchanges for energy management applications. The goal of this document is to specify a framework for multiple EMAs to provide energy management co-operatively by using communication protocols that link devices participating in energy optimization, transactive energy (TE), and demand response (DR) programmes, subject to constraints such as a consumer's budget for energy or goals for reducing greenhouse gas emissions.

This document explains a high-level view of the EMA functional requirements and reference interfaces in energy environments beyond the traditional public utility. Such energy environments include energy supplies from DER and TE sources. DER encompasses supplies from wind turbines, solar panels, and other local power generators, plus storage equipment (stationary and mobile batteries). Also, the EMA can assist the prosumer (a consumer who also produces power) in buying or selling TE.

As specified in ISO/IEC 15067-3-3, the EMA can interact with other EMAs, smart appliances, DERs or other consumer products. Interacting EMA are anticipated to be important for apartment complexes with multiple apartments and possibly multiple houses or buildings on a campus. ISO/IEC 15067-3-3 accommodates an EMA per apartment, per building, per campus, and possibly a cloud-based EMA. Options for interconnecting EMAs to create an EMA framework (EMF) are specified.

This document and related standards accommodate flexible and efficient energy management by co-ordinating and optimizing energy consumption and generation within a residential community consisting of houses and apartments. The ISO/IEC 15067-3 series enables automated energy management including optimal load control for allocating energy consumption and generation among multiple products in a house or a small building. The co-ordination among products offers improved energy management applications and overall efficiency according to goals set by the occupants. Multiple EMAs organized according to this document will be especially useful as DER proliferates with fluctuating energy generation and storage.

INFORMATION TECHNOLOGY – HOME ELECTRONIC SYSTEM (HES) APPLICATION MODEL –

Part 3-30: Energy management agent functional requirements and interfaces

1 Scope

This document specifies functional requirements and reference interfaces for interconnected energy management agents (EMAs) based on the model for an EMA specified in ISO/IEC 15067-3 and the model for multiple interacting EMAs specified in ISO/IEC 15067-3-3. This specification supports energy management by facilitating interactions and information exchange among EMAs and appliances, consumer electronics, heating, ventilation, and air conditioning (HVAC) equipment, water heaters, distributed energy resources (DERs), electric vehicle (EV) chargers, and other loads supplied by public and local power sources in a house or an apartment complex. Local power sources can use DER, which can include, but are not limited to, wind turbines, solar panels, and storage (stationary and mobile). EMAs specified with these functions and interfaces can assist the consumer in responding to price-varying public power and buying or selling transactive energy (TE).

This document specifies framework methods for EMAs to co-ordinate the delivery of energy management applications, and the reference interfaces facilitate a communications protocol among interacting EMAs. These linked and interacting EMAs provide energy optimization and conservation within constraints such as a consumer's financial budget and goals for greenhouse gas reduction, while supporting programmes as diverse as TE and demand response (DR).

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.

ISO/IEC 15067-3:2012, *Information technology – Home Electronic System (HES) application model – Part 3: Model of a demand-response energy management system for HES*

ISO/IEC 15067-3-3:2019, *Information technology – Home Electronic System (HES) application model – Part 3-3: Model of a system of interacting energy management agents (EMAs) for demand-response energy management*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 15067-3:2012, ISO/IEC 15067-3-3:2019 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

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