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Entwurf

**Elektrische Systemtechnik für Heim und Gebäude (ESHG) –
Teil 6-1: Schnittstellen –
Webservice Schnittstelle;
Englische Fassung FprEN 50090-6-1:2017**

Home and Building Electronic Systems (HBES) –
Part 6-1: Interfaces –
Webservice interface;
English version FprEN 50090-6-1:2017

Systèmes électroniques pour les foyers domestiques et les bâtiments (HBES) –
Partie 6-1: Interfaces –
Interface de services web;
Version anglaise FprEN 50090-6-1:2017

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Gesamtumfang 39 Seiten

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Nationales Vorwort

Die Englische Fassung des europäischen Dokuments FprEN 50090-6-1:2017 „Elektrische Systemtechnik für Heim und Gebäude (ESHG) – Teil 6-1: Schnittstellen – Webservice Schnittstelle“ (Schluss-Entwurf in der Umfrage) ist unverändert in diesen Norm-Entwurf übernommen worden.

Das europäische Dokument FprEN 50090-6-1:2017 „Home and Building Electronic Systems (HBES) – Part 6-1: Interfaces – Webservice interface“ wurde vom TC 205 „Home and Building Electronic Systems (HBES)“ des Europäischen Komitees für Elektrotechnische Normung (CENELEC) erarbeitet und von CENELEC den Nationalen Komitees zur Stellungnahme vorgelegt.

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Da sich die Benutzer des vorliegenden Normentwurfs der englischen Sprache als Fachsprache bedienen, wird die englische Fassung des FprEN 50090-6-1 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 des vorliegenden Normentwurfs 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. Dieser Normentwurf 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

Die vorliegende europäische Norm legt eine auf Webdiensten basierende genormte Schnittstelle zwischen HBES-Netzwerken und anderen informationstechnischen Systemen (IT-Systemen) fest.

Die genormte Schnittstelle ist in ein Gateway-Gerät, das HBES-Gateway, integriert, das sowohl zum HBES-Netzwerk als auch zu den angeschlossenen IT-Systemen Daten übertragen können muss. Das HBES-Gateway muss eine Gruppe von Codierungsnormen (siehe 10.2) sowie verschiedene Nachrichtenaustauschprotokolle (siehe 10.3) realisieren, um den Fernzugriff auf das HBES-Netzwerk über das Internet oder ein anderes Weitverkehrsnetzwerk (en: Wide Area Network (WAN)) zu ermöglichen. Zu diesem Zweck definieren Gateway-Profile unterschiedliche Realisierungsebenen (siehe 10.4).

3 Begriffe und Abkürzungen

3.1 Begriffe

Für die Anwendung dieses Dokuments gelten die Begriffe nach EN 50090-1:2011.

3.2 Abkürzungen

Für die Anwendung dieses Dokuments gelten die folgenden Abkürzungen:

BAS	Gebäudeautomatisierungssystem (en: Building Automation System)
BMS	Gebäudemanagementsystem (en: Building Management System)
IoT	Internet der Dinge (en: Internet of Things)
OASIS	Organisation für die Förderung strukturierter Informationsstandards (en: Organization for the Advancement of Structured Information Standards)
WS	Webdienste (en: Web Services)

^{N1)} Nationale Fußnote: Die Nummerierung aus FprEN 50090-6-1:2017-01 wurde beibehalten.

– Leerseite –

January 2017

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English Version

Home and Building Electronic Systems (HBES) - Part 6-1: Interfaces - Webservice interface

This draft European Standard is submitted to CENELEC members for unique acceptance procedure.
Deadline for CENELEC: 2017-04-07.

It has been drawn up by CLC/TC 205.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CENELEC 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

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43 European foreword

44 This document (FprEN 50090-6-1:2017) has been prepared by CLC/TC 205 "Home and Building
45 Electronic Systems (HBES)".

46 This document is currently submitted to the Unique Acceptance Procedure.

47 The following dates are proposed:

- latest date by which the existence of (doa) dor + 6 months
this document has to be announced
at national level
- latest date by which this document has to be (dop) dor + 12 months
implemented at national level by publication of
an identical national standard or by
endorsement
- latest date by which the national standards (dow) dor + 36 months
conflicting with this document have to (to be confirmed or
be withdrawn modified when voting)

48 CENELEC takes no position concerning the evidence, validity and scope of patent rights.

49 HBES Association as Cooperating Partner to CENELEC confirms that to the extent that the standard
50 contains patents and like rights, the HBES Association's members are willing to negotiate licenses
51 thereof with applicants throughout the world on fair, reasonable and non-discriminatory terms and
52 conditions.

1 Scope

This European Standard defines a standardized web service based interface between HBES networks and other information technology (IT) systems.

The standardized interface is encapsulated in a gateway device, the *HBES Gateway*, which shall be able to communicate with both the HBES network and the connected IT systems. The HBES Gateway shall implement a set of encoding standards (see 10.2) as well as various message exchange protocols (see 10.3) to enable remote access to the HBES network via the Internet or another wide area network (WAN). For this purpose, gateway profiles define different implementation levels (see 10.4).

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.

EN 50090-1:2011, *Home and Building Electronic Systems (HBES) - Part 1: Standardization structure*

EN 50090-3-3, *Home and Building Electronic Systems (HBES) - Part 3-3: Aspects of application - HBES Interworking model and common HBES data types*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 50090-1:2011 apply.

3.2 Abbreviations

For the purposes of this document, the following abbreviations apply.

BAS	Building Automation System
BMS	Building Management System
IoT	Internet of Things
OASIS	Open Building Information Exchange
WS	Web Services

4 Overall introduction

HBES networks are dedicated to the control and monitoring of networked building automation systems (BASs). Currently, HBES networks have limited capability to communicate with other systems, as a result of the use of different protocols, incompatibility or various other restrictions. For the integration of HBES networks and for solving specific problem scenarios, customized solutions are currently on offer. A standard interface between the HBES world and the remaining systems would however constitute a common link to bridge the gap and integrate HBES networks into systems like the traditional Internet or the emerging Internet of Things (IoT).

A standard bridge between HBES networks and IT systems based on Web services (WSs) is currently missing to support upcoming use case scenarios. This standard specifies such a standard interface.

5 General technical introduction to HBES Web Services

The HBES Gateway is an abstract concept, and thus not restricted to any hardware requirements or limitations. Constrained devices can be used as well as enterprise systems as HBES Gateway device. It shall be kept in mind that some configurations may overload the used hardware regarding

the mentioned limitations. For example, a computationally intensive message exchange protocol cannot be used in resource-constrained HBES Gateways. However, the HBES Web services specification defines the HBES Gateway in an abstract and platform-independent way irrespective of any particular hardware.

Figure 1 sketches the intended setting containing the HBES network, the IT systems and the HBES Gateway between these two components.

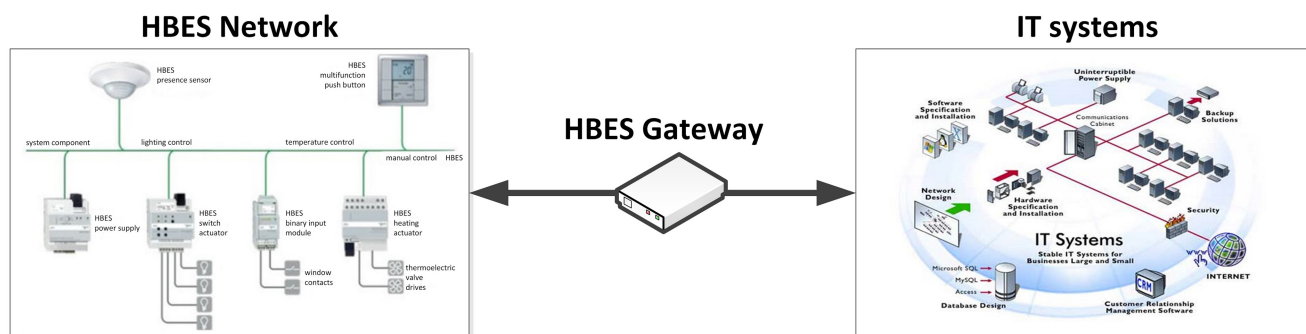


Figure 1 — General intention of the HBES WS interface

In a first version, the HBES Gateway and its WS interface is based on OASIS Open Building Information Exchange (OBIX). The OBIX integration is specified in Clauses 8 and 9.

The HBES Gateway shall allow browsing of information on the HBES network and reading or modifying runtime data of devices, Data points, Functional Blocks, Interface Objects or channels. Thus, any high level management use case to manipulate or monitor the underlying HBES network is covered by this standard and can be implemented using the presented interfaces.

By default, the HBES Gateway is intended for two target groups:

• Web Client developers use the defined interface to implement Web Clients, which are remote applications for accessing HBES networks. These applications are not limited to Web technologies (e.g. HTML5), but also other applications can use the introduced WSs. Thanks to the standard interface, Web Client developers require no HBES expert knowledge. Interactions with the HBES Gateway are handled via common WS calls. However, the Web Client developers need to understand the structure of a BAS and the possible ways of interacting with its elements to implement management applications.

• Gateway manufacturers have to provide the Web Client developers with the common and standardized interface. In addition, they are faced with the integration of information from HBES networks into the HBES Gateway. Gateway manufacturers need knowledge on the HBES Specification as given in the EN 50090 series as well as on implementing and providing WSs. The HBES knowledge is needed for the realization of a communication interface between the HBES Gateway and the HBES network.

There are three interfaces on the boundaries of the specified HBES Gateway that shall be implemented.

• First, the HBES Information model interface defines the structure of the input model to integrate a representation of the HBES network into the HBES Gateway. All available elements and their representation are specified by this interface. Depending on the used technology in the HBES Gateway, mappings of the information to the technology-specific representation is required.

• Secondly, the HBES Web interface between the HBES Gateway and the remote IT systems describes the available access points and the structure of the data both provided and expected by the services of the HBES Gateway.

• Thirdly, the HBES network access interface is required to connect the HBES Gateway with the HBES network to enable message exchange and routing requests from and to the remote IT systems.

This HBES Web services specification covers the first and the second interface while the third one is left to the gateway manufacturer responsible for establishing an adequate link to the HBES network.

6 Overview

6.1 General architecture

The overall architecture of the HBES Web services consists of nine main components, which are illustrated in Figure 2. This overview is used throughout this standard to specify in detail the different components and interfaces. Moreover, a workflow from the HBES network to the final integration into the HBES Gateway is illustrated in this figure. The following list describes the components in general terms.

1. **HBES network** covers all kinds of HBES installations. Twisted Pair (TP) as well as the Internet Protocol (IP) or USB connections can be used to establish a link to the HBES Gateway component.

2. All settings and configuration actions in HBES networks are done by means of appropriate tools. Afterwards export functionality can be used to provide the available data of the HBES network for further processing. However, this component is not mandatory. If the data can be obtained from another information source, the tool export does not need to be used (cf. the following component).

3. **Additional information** illustrates an extra information source besides the configuration tool. Similarly, information is modelled by means of the HBES Information model. This modelling step can be done either automatically by any tool support or manually by editing the model prior to its integration into the HBES Gateway device.

- 149 4. **Remote access** covers all access activities from Web Clients, which use various message
150 exchange protocols (e.g. HTTP, CoAP, or WebSocket). Data for requests and responses can be
151 encoded in different formats (e.g. XML, EXI, JSON, or CBOR).
- 152 5. **HBES Gateway** specifies the component that shall enable the link between the HBES network
153 and the Web Clients. Its interfaces shall be the *HBES Information model* for the import of network
154 configuration information as well as the *HBES network access* and the *HBES Web interface* as
155 service interfaces for Web Client access to the HBES network.
- 156 6. **HBES Information model** specifies the interface that consolidates the configuration data and the
157 information of additional data sources. This model is based on a common vocabulary (*tag*
158 *vocabulary*) defining a list of tags and relations between these tags. The HBES Information model
159 is independent of both the data source of the HBES network (i.e. input sources to the model) and
160 the technology used to implement the HBES Gateway (i.e. OBIX). The generated model is the
161 source for integration of HBES network information into the HBES Gateway. This interface is
162 used for configuration purposes while the subsequently described HBES network access and
163 HBES Web interface provide their services at runtime of the HBES Gateway.
- 164 7. **HBES network access** is consigned to handle the message exchange between the HBES
165 Gateway and the connected HBES network.
- 166 8. **HBES Web interface**, on the other hand, provides services for Web Clients via common Web
167 protocols. The messages can be encoded by using different formats. The HBES Web interfaces
168 according to the various HBES Gateway technologies are described throughout this standard.
- 169 9. **Tag vocabulary** defines a list of available tags to specify entities in the HBES Information model.
170 Additionally, relationships between tags are defined in the vocabulary in order to structure the
171 tags. First, the tag vocabulary is used during the creation of the HBES Information model.
172 Second, the HBES Web interface uses this vocabulary to transform the internal data
173 representation into the format expected by Web Clients.

174 6.2 General HBES network structure

175 This schematic representation should facilitate the understanding of modelling a HBES network at the
176 HBES Gateway interfaces. An overview of this model is depicted in Figure 3. This abstract model is
177 independent from the used HBES Gateway technology (OBIX). Moreover, it is intentionally kept
178 abstract using an intuitive notation in order to give a first overview of the various elements.

179 The top element of the model is an *installation*, which contains a set of views. Each *view* is linked to
180 other view elements and to devices, functionalities, or data points.

181 A topology view will represent the topological structure of the network with its hierarchy of subnets
182 and devices. A building view will create a structure of building parts and corresponding devices, and
183 trades categorize the devices of a network in different application domains (e.g. lighting). A *device* is
184 linked with functionality elements or is directly connected with its data points. A *functionality* element
185 is a container for various data points combined in order to reach a common goal or to describe a
186 common task. Examples for functionality elements are Functional Blocks or channels. Finally, a *data*
187 *point* has one or multiple *access methods* to interact with the underlying HBES network.

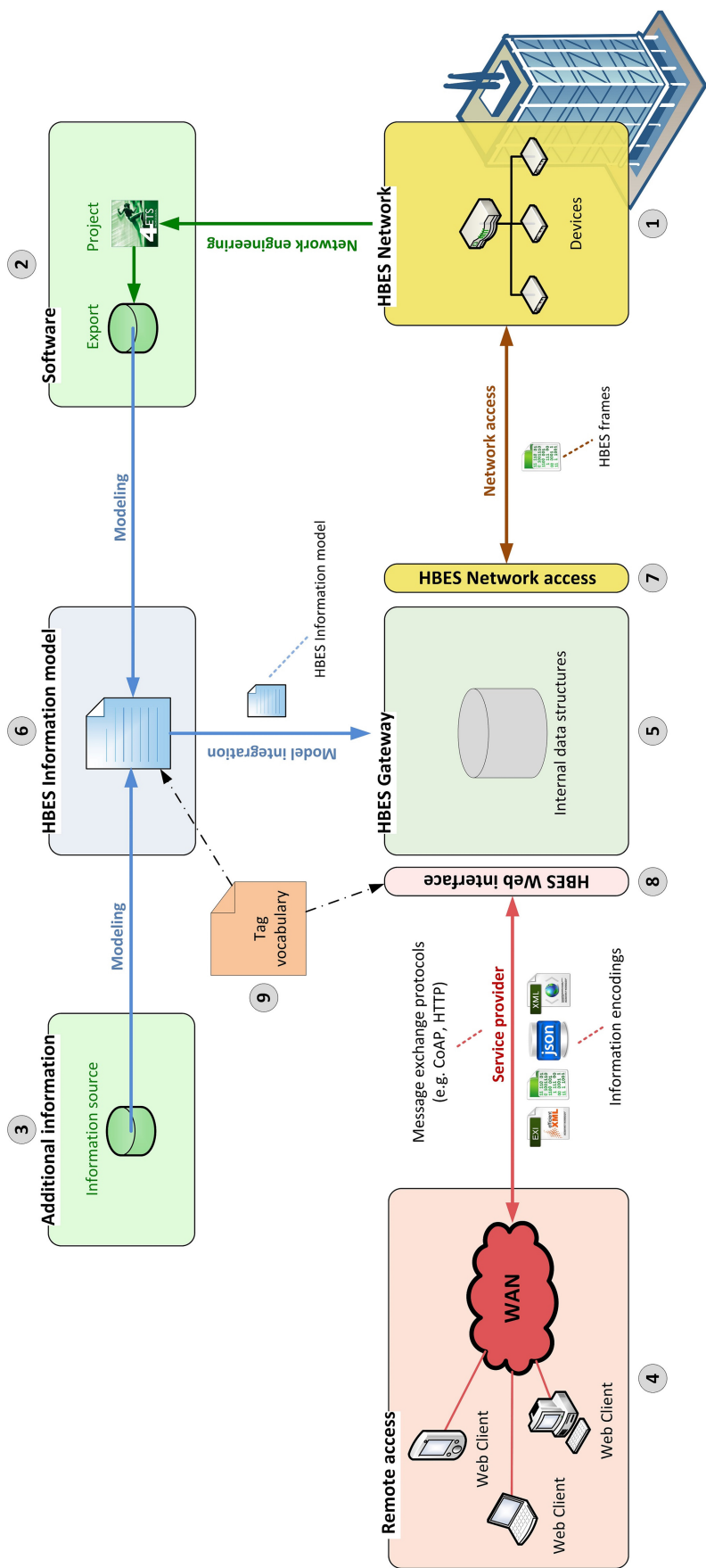


Figure 2 — General architecture