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Information technology – Home electronic system (HES) architecture – Part 2: Device modularity

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INFORMATION TECHNOLOGY – HOME ELECTRONIC SYSTEM (HES) ARCHITECTURE –

Part 2: Device Modularity

FOREWORD

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2) In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

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- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
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Technical reports of types 1 and 2 are subject to review within three years of publication to decide whether they can be transformed into International Standards. Technical reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/IEC 14543-2, which is a technical report of type 2, was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

This publication was drafted in accordance with ISO/IEC directives, Part 3.

This document is issued in the type 2 technical report series of publications (according to 15.2.2 of the Procedures for the technical work of ISO/IEC JTC 1 (1998)) as a prospective standard for provisional application in the field of the Home Electronic System (HES), because there is an urgent requirement for guidance on how standards in this field should be used.

This document is not to be regarded as an International Standard. It is proposed for provisional application so that information and experience of its use in practice may be gathered. Comments on the content of this document should be sent to IEC Central Office.

A review of this type 2 technical report will be carried out not later than three years after its publication with the option of extension for a further three years of conversion either to an International Standard or withdrawal.

ISO/IEC TR 14543: *Information technology – Home Electronic system (HES) architecture* consists of three parts:

- *Part 1: Introduction*
- *Part 2: Device modularity*
- *Part 3: Communication layers*

Additional parts are under preparation.

INTRODUCTION

This part of ISO/IEC TR 14543, is based on the following considerations.

HES standards address both interoperability requirements, interconnectivity requirements and plug-compatibility requirements.

Devices are described as interoperable if the functionality of the higher communication layers is such that commands can be exchanged and result in meaningful action. One or more intermediate networks may be needed to provide a communication path. Direct plug-compatibility or a common interface is not required for devices to interoperate (Figure 1).

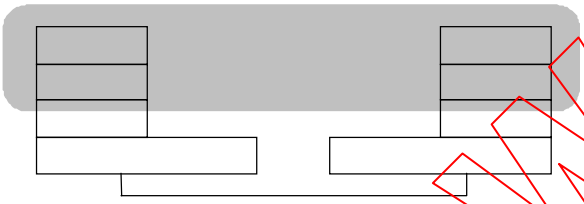

Figure 1 – Interoperability domain

For interconnectivity it is sufficient to specify mechanical, electrical, and functional (lower layer protocol) characteristics such that devices can be connected on a shared transmission medium. The functionality of the interface, or in other words the higher application layer functions to be conveyed across the interface, that is the functionality of the devices on both sides of the interface, have no direct relationship to the interface as such (Figure 2).

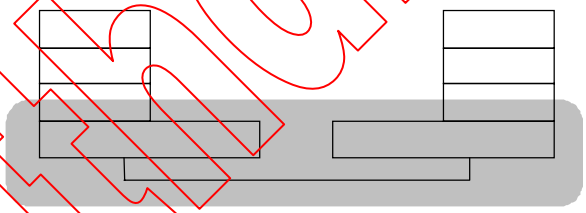

Figure 2 – Interconnectivity domain

Plug-compatibility includes both interoperability and interconnection. It usually implies that a particular interface is claimed for a particular purpose, where showing a certain interface implies interworking capabilities. This is particularly the case in the consumer environment where the availability of a particular plug on two pieces of equipment is generally understood to mean that the devices can be interconnected and will work together.

This document on Device Modularity addresses the architectural aspects of interfaces by introducing the concepts of Functional Groupings (FG) and Reference Points (RP). These concepts provide a means to describe modularity of a device, and hence serve as a basis for device interface standards (Figure 3). RPs are introduced in such a way that interfaces can be defined later on to correspond to RP. An RP provides the basic functionality of potential interfaces. The dual concept FG similarly provides the basic functionality of devices at both sides of an interface. Products may comprise concatenated FGs in which case the RPs in between vanish.

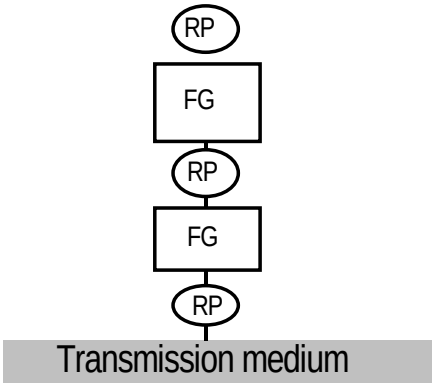

Figure 3 – Device Modularity through Functional Grouping and Reference Point

For practical reasons the FGs are defined in terms of the communication layers embodied in a certain module. Hence the RPs are mapped onto the service boundaries of the communication stack. This is the logical consequence of the combination of OSI model with the unrelated concept of FG and RP, and not an intrinsic feature of OSI itself nor of FG or RP.

The OSI based aspects of modular (layered) communication and the interworking aspects of HES Architecture are covered in the companion document on Communication Layers.

INFORMATION TECHNOLOGY – HOME ELECTRONIC SYSTEM (HES) ARCHITECTURE –

Part 2: Device Modularity

1 Scope

This part of ISO/IEC TR 14543 discusses the architecture of a standardized home control system, called the Home Electronic System, HES.

It also identifies reference points and functional groupings in a home control system. Clause 4 identifies reference points and interfaces to show possible positions of standardized interfaces. Clause 5 places the reference points and interfaces of the HES in this context.

The detailed issues of addressing and application protocols for the the Home Electronic System of different classes will be given in related standards.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC 14543-2. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO/IEC 14543-2 are encouraged to investigate the possibility of applying the most recent edition of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/IEC 7498-1:1994, *Information technology – Open Systems Interconnection – Basic Reference Model: The Basic Model*

ISO/IEC 7498-2:1989, *Information processing systems – Open Systems Interconnection – Basic Reference Model – Part 2: Security Architecture*

ISO/IEC 7498-3:1997, *Information technology – Open Systems Interconnection – Basic Reference Model – Part 3: Naming and addressing*

ISO/IEC 7498-4:1989, *Information processing systems – Open Systems Interconnection – Basic Reference Model – Part 4: Management framework*

ISO/IEC 15044:2000, *Information technology – Terminology for the Home Electronic System*