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OPC unified architecture - Part 100: Devices

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IEC 62541-100 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation. It is an International Standard.

This second edition cancels and replaces the first edition published in 2015. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) a ComponentType that can be used to model any HW or SW element of a device has been defined and a SoftwareType has been added as subtype of ComponentType;
b) the new OPC UA interface concept and defined interfaces for Nameplate, DeviceHealth, and SupportInfo has been added.
c) a new model for Software Update (Firmware Update) has been added;

d) a new entry point for documents where each document is represented by a FileType instance has been specified;

e) a model that provides information about the lifetime, related limits and semantic of the lifetime of things like tools, material or machines has been added.

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

Draft	Report on voting
65E/1050/CDV	65E/1095/RVC

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 ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

Throughout this document and the other parts of the IEC 62541 series, certain document conventions are used:

Italics are used to denote a defined term or definition that appears in the "Terms and definitions" clause in one of the parts of the IEC 62541 series.

Italics are also used to denote the name of a service input or output parameter or the name of a structure or element of a structure that are usually defined in tables.

The *italicized terms and names* are, with a few exceptions, written in camel-case (the practice of writing compound words or phrases in which the elements are joined without spaces, with each element's initial letter capitalized within the compound). For example, the defined term is *AddressSpace* instead of Address Space. This makes it easier to understand that there is a single definition for *AddressSpace*, not separate definitions for Address and Space.

A list of all parts in the IEC 62541 series, published under the general title *OPC Unified Architecture*, 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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,

– withdrawn, or

– revised.

1 Scope

This part of IEC 62541 defines the information model associated with *Devices*. This document describes three models which build upon each other as follows:

- The (base) Device Model is intended to provide a unified view of devices and their hardware and software parts irrespective of the underlying device protocols.
- The Device Communication Model adds Network and Connection information elements so that communication topologies can be created.
- The Device Integration Host Model finally adds additional elements and rules required for host systems to manage integration for a complete system. It enables reflecting the topology of the automation system with the devices as well as the connecting communication networks.

This document also defines AddIns that can be used for the models in this document but also for models in other information models. They are:

- Locking model – a generic AddIn to control concurrent access,
- Software update model – an AddIn to manage software in a *Device*.

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 62541-1, *OPC Unified Architecture - Part 1: Overview and Concepts*

IEC 62541-3, *OPC Unified Architecture - Part 3: Address Space Model*

IEC 62541-4, *OPC Unified Architecture - Part 4: Services*

IEC 62541-5, *OPC Unified Architecture - Part 5: Information Model*

IEC 62541-6, *OPC Unified Architecture - Part 6: Mappings*

IEC 62541-7, *OPC Unified Architecture - Part 7: Profiles*

IEC 62541-8, *OPC Unified Architecture - Part 8: Data Access*

IEC 62541-9, *OPC Unified Architecture - Part 9: Alarms and Conditions*

NAMUR Recommendation NE107: *Self-monitoring and diagnosis of field devices*

Bibliography

IEC 61131-3, *IEC standard for Programmable Logic Controllers (PLCs)*

IEC 61499-1:2012, *Function Blocks - Part 1: Architecture*

IEC 61784, *Industrial networks - Profiles*

IEC 62541-19, *OPC Unified Architecture - Part 19: Dictionary References*

IEC 62591, *Industrial networks - Wireless communication network and communication profiles - WirelessHART™*

IEC 62769 (all parts), *Field device integration (FDI®)*

ISO/IEC 11179-6, *Information technology - Metadata registries (MDR) - Part 6: Registration*

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