IEC 62714-5

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Engineering data exchange format for use in industrial automation systems engineering – Automation markup language – Part 5: Communication

Format d'échange de données techniques pour une utilisation dans l'ingénierie des systèmes d'automatisation industrielle – Automation markup language – Partie 5: Communication

IEC 62714-5:2022-03(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ENGINEERING DATA EXCHANGE FORMAT FOR USE IN INDUSTRIAL AUTOMATION SYSTEMS ENGINEERING – AUTOMATION MARKUP LANGUAGE –

Part 5: Communication

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

Draft	Report on voting
65E/844/FDIS	65E/886/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.

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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/standardsdev/publications.

A list of all parts of the IEC 62714 series, under the general title *Engineering data exchange format for use in industrial automation systems engineering – Automation markup language,* 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- withdrawn,
- replaced by a revised edition, or
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ENGINEERING DATA EXCHANGE FORMAT FOR USE IN INDUSTRIAL AUTOMATION SYSTEMS ENGINEERING – AUTOMATION MARKUP LANGUAGE –

Part 5: Communication

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1 Scope

Engineering processes of technical systems and their embedded automation systems are executed with increasing efficiency and quality. Especially since the project duration tends to increase as the complexity of the engineered system increases. To solve this problem, the engineering process is more often being executed by exploiting software based engineering tools exchanging engineering information and artefacts along the engineering process related tool chain.

Communication systems establish an important part of modern technical systems and, especially, of automation systems embedded within them. Following the increasing decentralisation of automation systems and the application of fieldbus and Ethernet technology connecting automation devices and further interacting entities need to fulfil special requirements on communication quality, safety and security. Thus, within the engineering process of modern technical systems, engineering information and artefacts relating to communication systems also need to be exchanged along the engineering process tool chain.

In each phase of the engineering process of technical systems, communication system related information can be created which can be consumed in later engineering phases. A typical application case is the creation of configuration information for communication components of automation devices including communication addresses and communication package structuring within controller programming devices during the control programming phase and its use in a device configuration tool. Another typical application case is the transmission of communication device configurations to virtual commissioning tools, to documentation tools, or to diagnosis tools.

At present, the consistent and lossless transfer of communication system engineering information along the complete engineering chain of technical systems is unsolved. While user organisations and companies have provided data exchange formats for parts of the relevant information like FDCML, EDDL, and GSD, the above named application cases cannot be covered by a data exchange format. Notably the networking related information describing communication relations and their properties and qualities cannot be modelled by a data exchange format.

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 61131-3, *Programmable controllers − Part 3: Programming languages*

IEC 61131-10:2019, *Programmable controllers – Part 10: PLC open XML exchange format*

IEC 62424:2016, *Representation of process control engineering − Requests in P&I diagrams and data exchange between P&ID tools and PCE-CAE tools*

IEC 62714-1, *Engineering data exchange format for use in industrial systems engineering – Automation Markup Language – Part 1: Architecture and general requirements*

IEC 62714-4, *Engineering data exchange format for use in industrial systems engineering – Automation markup language − Part 4: Logic*

IEC 81346 (all parts), *Industrial systems, installations and equipment and industrial products – Structuring principles and reference designations*

3 Terms, definitions, abbreviated terms and acronyms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62714-1 and the following apply.

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

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
AutomationML/AML
XML based data exchange format for plant engineering data

3.1.2
Automation object
entity in an automated system

Note 1 to entry: An example of an automation object is an automation component, a valve, or a signal.

3.2 Abbreviated terms and acronyms

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

AML	Automation Markup Language
CAEX	Computer Aided Engineering Exchange as defined in IEC 62424:2016
ECAD	Computer aided engineering for electrical engineering
EDDL	Electronic Device Description Language
FDCML	Field Device Configuration Markup Language
GUID	Global Unique Identifier
GSD	General Station Description
HMI	Human Machine Interface
ID	Identifier
MCAD	Computer aided engineering for mechanical engineering
OPC	Open Platform Communications
PDU	Protocol Data Unit
SCADA	Supervisory Control And Data Acquisition
UML	Unified Modelling Language
UUID	Universal Unique Identifier
XML	Extensible Markup Language

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