



SLOVENSKI STANDARD

oSIST prEN IEC 62714-2:2021

01-februar-2021

Oblika izmenjave tehničnih podatkov za uporabo v industrijskem inženiringu avtomatizacije sistemov - Označevalni jezik za avtomatizacijo - 2. del: Semantične knjižnice

Engineering data exchange format for use in industrial automation systems engineering - Automation markup language - Part 2: Semantics libraries

iTeh STANDARD PREVIEW

(standards.iteh.ai)

Format d'échange de données techniques pour une utilisation dans l'ingénierie des systèmes d'automatisation industrielle - Automation markup language - Partie 2: Bibliothèques sémantiques

<https://standards.iteh.ai/catalog/standards/sist/2449f09a-8c71-425a-9a21-12cf440a2b11/osist-pren-iec-62714-2-2021>

Ta slovenski standard je istoveten z: prEN IEC 62714-2:2020

ICS:

25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
35.060	Jeziki, ki se uporabljajo v informacijski tehniki in tehnologiji	Languages used in information technology
35.240.50	Uporabniške rešitve IT v industriji	IT applications in industry

oSIST prEN IEC 62714-2:2021

en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN IEC 62714-2:2021](https://standards.iteh.ai/catalog/standards/sist/2449f09a-8c71-425a-9a21-12cfa40a2b11/osist-pren-iec-62714-2-2021)

<https://standards.iteh.ai/catalog/standards/sist/2449f09a-8c71-425a-9a21-12cfa40a2b11/osist-pren-iec-62714-2-2021>



65E/756/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: IEC 62714-2 ED2	
DATE OF CIRCULATION: 2020-12-04	CLOSING DATE FOR VOTING: 2021-02-26
SUPERSEDES DOCUMENTS: 65E/699/CD, 65E/737A/CC	

IEC SC 65E : DEVICES AND INTEGRATION IN ENTERPRISE SYSTEMS	
SECRETARIAT: United States of America	SECRETARY: Mr Donald (Bob) Lattimer
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input type="checkbox"/> SAFETY	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING <input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING Attention IEC-CENELEC parallel voting The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	

This document is still under study and subject to change. It should not be used for reference purposes.

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

TITLE:

Engineering data exchange format for use in industrial automation systems engineering - Automation markup language - Part 2: Semantics libraries

PROPOSED STABILITY DATE: 2024

NOTE FROM TC/SC OFFICERS:

Copyright © 2020 International Electrotechnical Commission, IEC. All rights reserved. It is permitted to download this electronic file, to make a copy and to print out the content for the sole purpose of preparing National Committee positions. You may not copy or "mirror" the file or printed version of the document, or any part of it, for any other purpose without permission in writing from IEC.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN IEC 62714-2:2021](https://standards.iteh.ai/catalog/standards/sist/2449f09a-8c71-425a-9a21-12cf40a2b11/osist-pren-iec-62714-2-2021)

<https://standards.iteh.ai/catalog/standards/sist/2449f09a-8c71-425a-9a21-12cf40a2b11/osist-pren-iec-62714-2-2021>

1

CONTENTS

2	CONTENTS	2
3	FOREWORD	7
4	INTRODUCTION	9
5	1 Scope	11
6	2 Normative references	11
7	3 Terms, definitions and abbreviations	11
8	3.1 Terms and definitions	11
9	3.2 Abbreviations	12
10	4 Conformity	12
11	5 AML role classes	12
12	5.1 Location and inheritance relationship of role classes in role class libraries	12
13	5.2 AML role class libraries	13
14	5.3 AML role class library for discrete manufacturing industry –	
15	AutomationMLDMIRoleClassLib	15
16	5.3.1 General	15
17	5.3.2 RoleClass DiscManufacturingEquipment	16
18	5.3.3 RoleClass Transport	16
19	5.3.4 RoleClass Storage	16
20	5.3.5 RoleClass Fixture	17
21	5.3.6 RoleClass Gate	17
22	5.3.7 RoleClass Robot	17
23	5.3.8 RoleClass Tool	17
24	5.3.9 RoleClass Carrier	18
25	5.3.10 RoleClass Machine	18
26	5.3.11 RoleClass StaticObject	18
27	5.4 AML role class library for continuous manufacturing industry –	
28	AutomationMLCMIRoleClassLib	19
29	5.4.1 General	19
30	5.4.2 RoleClass ContManufacturingEquipment	19
31	5.5 AML role class library for batch manufacturing industry –	
32	AutomationMLBMIRoleClassLib	19
33	5.5.1 General	19
34	5.5.2 RoleClass BatchManufacturingEquipment	20
35	5.6 AML role class library for control systems – AutomationMLCSRoleClassLib	20
36	5.6.1 General	20
37	5.6.2 RoleClass ControlEquipment	22
38	5.6.3 RoleClass Communication	22
39	5.6.4 RoleClass ControlHardware	22
40	5.6.5 RoleClass PC	23
41	5.6.6 RoleClass IPC	23
42	5.6.7 RoleClass Handheld	23
43	5.6.8 RoleClass EmbeddedDevice	23
44	5.6.9 RoleClass Sensor	24
45	5.6.10 RoleClass Actuator	24
46	5.6.11 RoleClass Controller	24
47	5.6.12 RoleClass PLC	24
48	5.6.13 RoleClass NC	25
49	5.6.14 RoleClass RC	25

50	5.6.15	RoleClass PAC	25
51	Annex A (informative)	AML extended role class library	27
52	A.1	General	27
53	A.2	RoleClass PLCFacet	28
54	A.3	RoleClass HMIFacet	29
55	A.4	RoleClass Enterprise	29
56	A.5	RoleClass Site	30
57	A.6	RoleClass Area	31
58	A.7	RoleClass ProductionLine	31
59	A.8	RoleClass WorkCell	31
60	A.9	RoleClass ProcessCell	32
61	A.10	RoleClass Unit	32
62	A.11	RoleClass WorkCenter	32
63	A.12	RoleClass WorkUnit	33
64	A.13	RoleClass ProductionUnit	33
65	A.14	RoleClass StorageZone	33
66	A.15	RoleClass StorageUnit	34
67	A.16	RoleClass ConnectedWorld	34
68	A.17	RoleClass Equipment	35
69	A.18	RoleClass Station	35
70	A.19	RoleClass EquipmentModule	35
71	A.20	RoleClass ControlModule	36
72	A.21	RoleClass ControlDevice	36
73	A.22	RoleClass FieldDevice	37
74	A.23	RoleClass Turntable	37
75	A.24	RoleClass Conveyor	37
76	A.25	RoleClass BeltConveyor	37
77	A.26	RoleClass RollConveyor	38
78	A.27	RoleClass ChainConveyor	38
79	A.28	RoleClass PalletConveyor	38
80	A.29	RoleClass OverheadConveyor	39
81	A.30	RoleClass LiftingTable	39
82	A.31	RoleClass AGV	39
83	A.32	RoleClass Transposer	40
84	A.33	RoleClass CarrierHandlingSystem	40
85	A.34	RoleClass BodyStore	40
86	A.35	RoleClass Lift	41
87	A.36	RoleClass Rollerbed	41
88	A.37	RoleClass StationaryTool	41
89	A.38	RoleClass MovableTool	42
90	A.39	RoleClass ControlCabinet	42
91	A.40	RoleClass IODevice	42
92	A.41	RoleClass HMI	43
93	A.42	RoleClass WarningEquipment	43
94	A.43	RoleClass ActuatingDrive	43
95	A.44	RoleClass MotionController	43
96	A.45	RoleClass Panel	44
97	A.46	RoleClass MeasuringEquipment	44
98	A.47	RoleClass Clamp	44
99	A.48	RoleClass ProcessController	45
100	A.49	RoleClass Loader	45

101	A.50	RoleClass Unloader	45
102	Annex B (informative)	Examples of usage of RoleClasses	47
103	B.1	General.....	47
104	B.2	Example plant unit	47
105	Annex C (informative)	User-defined RoleClass libraries	52
106	C.1	General.....	52
107	C.2	External semantics of attributes	53
108	Annex D (informative)	XML representation of AML libraries	54
109	D.1	AutomationMLDMIRoleClassLib	54
110	D.2	AutomationMLCMIRoleClassLib	54
111	D.3	AutomationMLBMRoleClassLib	55
112	D.4	AutomationMLCSRRoleClassLib.....	55
113	D.5	AutomationMLExtendedRoleClassLib.....	56
114	Bibliography.....		59
115			
116	Figure 1 – Overview of the engineering data exchange format (AML).....		9
117	Figure 2 – Example addressing of role class “Robot” in AML object “RB1”		13
118	Figure 3 – Example inheritance relationship.....		13
119	Figure 4 – AutomationMLBaseRoleClassLib defined in IEC 62714-1:2018		14
120	Figure 5 – AutomationMLDMIRoleClassLib		15
121	Figure 6 – XML grid of the AutomationMLDMIRoleClassLib.....		15
122	Figure 7 – XML text of the AutomationMLDMIRoleClassLib.....		16
123	Figure 8 – AutomationMLCMIRoleClassLib.....		19
124	Figure 9 – XML grid of the AutomationMLCMIRoleClassLib.....		19
125	Figure 10 – XML text of the AutomationMLCMIRoleClassLib.....		19
126	Figure 11 – AutomationMLBMRoleClassLib.....		20
127	Figure 12 – XML grid of the AutomationMLBMRoleClassLib.....		20
128	Figure 13 – XML text of the AutomationMLBMRoleClassLib.....		20
129	Figure 14 – AutomationMLCSRRoleClassLib.....		21
130	Figure 15 – XML grid of the AutomationMLCSRRoleClassLib		21
131	Figure 16 – XML text of the AutomationMLCSRRoleClassLib		22
132	Figure A.1 – AutomationMLExtendedRoleClassLib.....		28
133	Figure A.2 – Resource structure [SOURCE: IEC PAS 63088:2017, adapted].....		30
134	Figure B.1 – Usage of roles in the mapping process		47
135	Figure B.2 – Example for usage of roles		48
136	Figure B.3 – Example AML model		48
137	Figure B.4 – Example InstanceHierarchy for usage of roles		49
138	Figure B.5 – XML grid of the example InstanceHierarchy for usage of roles		49
139	Figure B.6 – XML text of the example InstanceHierarchy for usage of roles		49
140	Figure B.7 – External RoleClassLib reference.....		50
141	Figure B.8 – Usage of external role class in example		50
142	Figure B.9 – Example SystemUnitClass library for usage of roles		51
143	Figure B.10 – XML grid of the example SystemUnitClass library for usage of roles		51
144	Figure B.11 – XML text of the example SystemUnitClass library for usage of roles		51
145	Figure C.1 – AML user-defined RoleClassLib ISA 106.....		52
146	Figure C.2–ISA 106 mapping to ISA88.....		52

147	Figure C.3– Example for external attribute semantics	53
148		
149	Table 1 – Abbreviations	12
150	Table 2 – Structure of AML role class libraries	13
151	Table 3 – RoleClass DiscManufacturingEquipment	16
152	Table 4 – RoleClass Transport.....	16
153	Table 5 – RoleClass Storage	16
154	Table 6 – RoleClass Fixture.....	17
155	Table 7 – RoleClass Gate	17
156	Table 8 – RoleClass Robot	17
157	Table 9 – RoleClass Tool.....	18
158	Table 10 – RoleClass Carrier.....	18
159	Table 11 – RoleClass Machine.....	18
160	Table 12 – RoleClass StaticObject.....	18
161	Table 13 – RoleClass ContManufacturingEquipment.....	19
162	Table 14 – RoleClass BatchManufacturingEquipment	20
163	Table 15 – RoleClass ControlEquipment.....	22
164	Table 16 – RoleClass Communication.....	22
165	Table 17 – RoleClass ControlHardware	22
166	Table 18 – RoleClass PC.....	23
167	Table 19 – RoleClass IPC.....	23
168	Table 20 – RoleClass Handheld.....	23
169	Table 21 – RoleClass EmbeddedDevice	24
170	Table 22 – RoleClass Sensor.....	24
171	Table 23 – RoleClass Actuator.....	24
172	Table 24 – RoleClass Controller	24
173	Table 25 – RoleClass PLC	25
174	Table 26 – RoleClass NC.....	25
175	Table 27 – RoleClass RC.....	25
176	Table 28 – RoleClass PAC.....	25
177	Table A.1 – RoleClass PLCFacet	29
178	Table A.2 – RoleClass HMIFacet	29
179	Table A.3 – RoleClass Enterprise	29
180	Table A.4 – RoleClass Site	30
181	Table A.5 – RoleClass Area	31
182	Table A.6 – RoleClass ProductionLine	31
183	Table A.7 – RoleClass WorkCell	32
184	Table A.8 – RoleClass ProcessCell.....	32
185	Table A.9 – RoleClass Unit.....	32
186	Table A.10 – RoleClass WorkCenter	33
187	Table A.11 – RoleClass WorkUnit	33
188	Table A.12 – RoleClass ProductionUnit.....	33
189	Table A.13 – RoleClass StorageZone	34
190	Table A.14 – RoleClass StorageUnit.....	34
191	Table A.15 – RoleClass ConnectedWorld.....	35

ITeH STANDARD PREVIEW

(standards.iteh.ai)

oSIST prEN IEC 62714-2:2021

<https://standards.iteh.ai/catalog/standards/sist/2449f09a-8c71-425a-9a21-12cfa40a2b11/osist-pr-en-iec-62714-2-2021>

192	Table A.16 – RoleClass Equipment.....	35
193	Table A.17 – RoleClass Station	35
194	Table A.18 – RoleClass EquipmentModule.....	36
195	Table A.19 – RoleClass ControlModule.....	36
196	Table A.20 – RoleClass ControlDevice.....	36
197	Table A.21 – RoleClass FieldDevice	37
198	Table A.22 – RoleClass Turntable.....	37
199	Table A.23 – RoleClass Conveyor.....	37
200	Table A.24 – RoleClass BeltConveyor.....	38
201	Table A.25 – RoleClass RollConveyor.....	38
202	Table A.26 – RoleClass ChainConveyor.....	38
203	Table A.27 – RoleClass PalletConveyor.....	39
204	Table A.28 – RoleClass OverheadConveyor	39
205	Table A.29 – RoleClass LiftingTable	39
206	Table A.30 – RoleClass AGV	40
207	Table A.31 – RoleClass Transposer	40
208	Table A.32 – RoleClass CarrierHandlingSystem.....	40
209	Table A.33 – RoleClass BodyStore	41
210	Table A.34 – RoleClass Lift.....	41
211	Table A.35 – RoleClass Rollerbed.....	41
212	Table A.36 – RoleClass StationaryTool.....	42
213	Table A.37 – RoleClass MovableTool.....	42
214	Table A.38 – RoleClass ControlCabinet.....	42
215	Table A.39 – RoleClass IODevice.....	42
216	Table A.40 – RoleClass HMI.....	43
217	Table A.41 – RoleClass WarningEquipment.....	43
218	Table A.42 – RoleClass ActuatingDrive.....	43
219	Table A.43 – RoleClass MotionController.....	44
220	Table A.44 – RoleClass Panel	44
221	Table A.45 – RoleClass MeasuringEquipment.....	44
222	Table A.46 – RoleClass Clamp	45
223	Table A.47 – RoleClass ProcessController.....	45
224	Table A.48 – RoleClass Loader.....	45
225	Table A.49 – RoleClass Unloader	46
226		
227		

ITEH STANDARD PREVIEW

(standards.iteh.ai)

oSIST prEN IEC 62714-2:2021

<https://standards.iteh.ai/catalog/standards/sist/2449f09a-8c71-425a-9a21-12cfa40a2b11/osist-pr-en-iec-62714-2-2021>

<https://standards.iteh.ai/catalog/standards/sist/2449f09a-8c71-425a-9a21-12cfa40a2b11/osist-pr-en-iec-62714-2-2021>

228 INTERNATIONAL ELECTROTECHNICAL COMMISSION

229

230

231

232

233

234

235

236

237

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

Part 2: Role class libraries

FOREWORD

- 238 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising
239 all national electrotechnical committees (IEC National Committees). The object of IEC is to promote
240 international co-operation on all questions concerning standardization in the electrical and electronic fields. To
241 this end and in addition to other activities, IEC publishes International Standards, Technical Specifications,
242 Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC
243 Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested
244 in the subject dealt with may participate in this preparatory work. International, governmental and non-
245 governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely
246 with the International Organization for Standardization (ISO) in accordance with conditions determined by
247 agreement between the two organizations.
- 248 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international
249 consensus of opinion on the relevant subjects since each technical committee has representation from all
250 interested IEC National Committees.
- 251 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National
252 Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC
253 Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any
254 misinterpretation by any end user.
- 255 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications
256 transparently to the maximum extent possible in their national and regional publications. Any divergence
257 between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in
258 the latter.
- 259 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity
260 assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any
261 services carried out by independent certification bodies.
- 262 6) All users should ensure that they have the latest edition of this publication.
- 263 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and
264 members of its technical committees and IEC National Committees for any personal injury, property damage or
265 other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and
266 expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC
267 Publications.
- 268 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is
269 indispensable for the correct application of this publication.
- 270 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of
271 patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

272 International Standard IEC 62714-2 has been prepared by subcommittee 65E: Devices and
273 integration in enterprise systems, of IEC technical committee 65: Industrial-process
274 measurement, control and automation.

275 The text of this standard is based on the following documents:

CDV	Report on voting
65E/300/CDV	65E/390/RVC

276

277 Full information on the voting for the approval of this standard can be found in the report on
278 voting indicated in the above table.

279 This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

280 A list of all parts in the IEC 62714 series, published under the general title *Engineering data*
281 *exchange format for use in industrial automation systems engineering – Automation Markup*
282 *Language*, can be found on the IEC website.

283 The committee has decided that the contents of this publication will remain unchanged until
284 the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data
285 related to the specific publication. At this date, the publication will be

- 286 • reconfirmed,
- 287 • withdrawn,
- 288 • replaced by a revised edition, or
- 289 • amended.

290

IMPORTANT – The 'colour inside' logo on the cover page of this publication 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.

291

292

iTeh STANDARD PREVIEW (standards.iteh.ai)

[oSIST prEN IEC 62714-2:2021](https://standards.iteh.ai/catalog/standards/sist/2449f09a-8c71-425a-9a21-12cfa40a2b11/osist-pren-iec-62714-2-2021)

<https://standards.iteh.ai/catalog/standards/sist/2449f09a-8c71-425a-9a21-12cfa40a2b11/osist-pren-iec-62714-2-2021>

293

INTRODUCTION

294 The data exchange format defined in IEC 62714 (Automation Markup Language, AML) is an
 295 XML schema based data format and has been developed in order to support the data
 296 exchange between engineering tools in a heterogeneous engineering tool landscape.
 297 IEC 62714-1 gives an overview about the format.

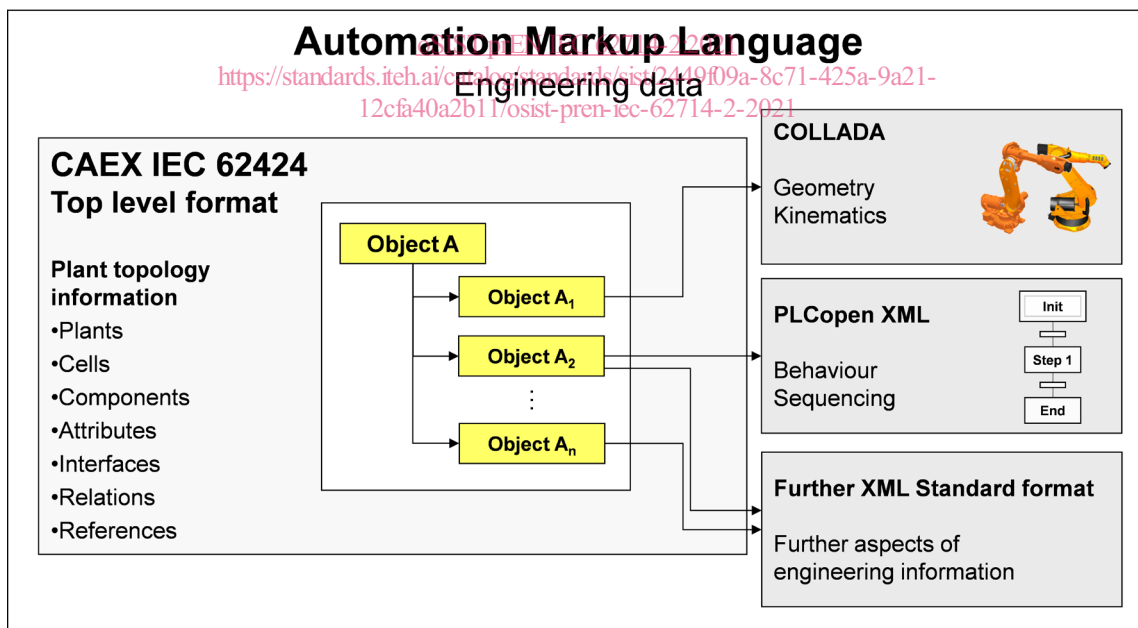
298 The goal of AML is to interconnect engineering tools from the existing heterogeneous tool
 299 landscape in their different disciplines, e.g. mechanical plant engineering, electrical design,
 300 process engineering, process control engineering, HMI development, PLC programming, robot
 301 programming, etc.

302 AML stores engineering information following the object oriented paradigm and allows
 303 modelling of physical and logical plant components as data objects encapsulating different
 304 aspects. An object may consist of other sub-objects and may itself be part of a larger
 305 composition or aggregation. Typical objects in plant automation comprise information on
 306 topology, geometry, kinematics and logic, whereas logic comprises sequencing, behaviour
 307 and control.

308 AML combines existing industry data formats that are designed for the storage and exchange
 309 of different aspects of engineering information. These data formats are used on “as-is” basis
 310 within their own specifications and are not branched for AML needs.

311 The core of AML is the top-level data format CAEX that connects the different data formats.
 312 Therefore, AML has an inherent distributed document architecture.

313 Figure 1 illustrates the basic AML architecture and the distribution of topology, geometry,
 314 kinematic and logic information.



315

316

Figure 1 – Overview of the engineering data exchange format (AML)

317 Due to the different aspects of AML, IEC 62714 consists of different parts focussing on
 318 different aspects.

- 319 • IEC 62714-1: Architecture and general requirements

320 This part specifies the general AML architecture, the modelling of engineering data,
 321 classes, instances, relations, references, hierarchies, basic AML libraries and extended
 322 AML concepts.

- 323 • IEC 62714-2: Role class libraries
324 This part specifies additional AML libraries.
- 325 • IEC 62714-31: Geometry and kinematics
326 This forthcoming part is intended to specify the modelling of geometry and kinematics
327 information.
- 328 In addition, another part (possibly Part 4) will specify the modelling of logics, sequencing,
329 behaviour and control related information.
- 330 Further parts may be added in the future in order to interconnect further data standards to
331 AML.
- 332 Clause 5 describes normative role class libraries within AML.
- 333 Annex A describes the informative AML extended role class library.
- 334 Annex B gives an informative example for the usage of AML role classes.
- 335 Annex C shows some user-defined role class libraries of different origins.
- 336 Annex D gives an informative XML representation of the libraries defined in this part of
337 IEC 62714.
- 338

iTeh STANDARD PREVIEW (standards.iteh.ai)

[oSIST prEN IEC 62714-2:2021](https://standards.iteh.ai/catalog/standards/sist/2449f09a-8c71-425a-9a21-12cf40a2b11/osist-pren-iec-62714-2-2021)

<https://standards.iteh.ai/catalog/standards/sist/2449f09a-8c71-425a-9a21-12cf40a2b11/osist-pren-iec-62714-2-2021>

¹ Under consideration.

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

Part 2: Semantics libraries

1 Scope

The IEC 62714 series specifies an engineering data exchange format for use in industrial automation systems.

This part of IEC 62714 specifies normative as well as informative AML libraries for the modelling of engineering information for the exchange between engineering tools in the plant automation area by means of AML. Moreover, it presents additional user defined libraries as an example. Its provisions apply to the export/import applications of related tools.

This part of IEC 62714 specifies AML role class libraries and AML attribute type libraries. Role classes provide semantics to AML objects, attribute types provide semantics to AML attributes. The association of role classes to AML objects or attribute types to AML attributes represent the possibility to add (also external) semantic to it. By associating a role class to an AML object or an attribute type to an AML attribute, it gets a semantic. This part of IEC 62714 does not define details of the data exchange procedure or implementation requirements for the import/export tools.

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.

IEC 62714-1:2018, *Engineering data exchange format for use in industrial automation systems engineering – Automation Markup Language – Part 1: Architecture and general requirements*

IEC 61360-4, *Standard data element types with associated classification scheme for electric components – Part 4: IEC reference collection of standard data element types and component classes* (available at <http://std.iec.ch/iec61360/>)

IEC 62424:2008, *Representation of process control engineering – Requests in P&I diagrams and data exchange between P&ID tools and PCE-CAE tools*

Extensible Markup Language (XML) 1.0:2004, *W3C Recommendation* (available at <http://www.w3.org/TR/2004/REC-xml-20040204/>)

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62714-1:2018, as well as the following apply.

380 **3.1.1**381 **robot**

382 industrial robot

383 automatically controlled, reprogrammable, multipurpose manipulator, programmable in three
384 or more axes, which can be either fixed in place or mobile for use in industrial automation
385 applications

386 [SOURCE: ISO 8373:2012, 2.9, modified – the notes have been removed]

387 **3.1.2**388 **sensor**389 unit that detects objects or obstacles in its monitoring range or that is affected by a
390 measurand and which provides an electrical signal or data representing the detection or the
391 measurement

392 EXAMPLE Limit switch, proximity sensor, pressure transmitter, vibration transducer, strain gauge, photo detector.

393 **3.1.3**394 **measurand**

395 particular quantity subject to measurement

396 [SOURCE: IEC 60050-311:2001, 311-01-03]

397 **3.1.4**398 **actuator**399 functional unit that generates the manipulated variable, required to drive the final controlling
400 element, from the output variable of the controlling element

401 EXAMPLE Contactor, variable speed drive.

402 [SOURCE: IEC 60050-351:2013, 351-49-07, modified – the notes, example, and figures have
403 been removed]

<https://standards.iteh.ai/catalog/standards/sist/2449f09a-8c71-425a-9a21-12cfa40a2b11/osist-pren-iec-62714-2-2021>
 (standards.iteh.ai)

404 **3.2 Abbreviations**405 For the purposes of this document the abbreviations given in IEC 62714-1:2018, as well as
406 those given in Table 1, apply.

407

Table 1 – Abbreviations

AGV	Automated guided vehicle
IPC	Industrial PC
NC	Numerical controller
PAC	Programmable automation controller
PLC	Programmable logic controller
PC	Personal computer
RC	Robot controller

408

409 **4 Conformity**410 To claim conformity to this part of IEC 62714 with respect to the support of AML, the
411 requirements of Clause 5 shall be fulfilled.412 **5 AML role classes**413 **5.1 Location and inheritance relationship of role classes in role class libraries**

414 The storage of role classes is organized in hierarchies within role class libraries.