



**SLOVENSKI STANDARD**  
**oSIST prEN IEC 62769-5:2022**  
**01-maj-2022**

---

**Integracija procesne naprave (FDI) - 5. del: Informacijski model**

Field Device Integration (FDI) - Part 5: Information Model

Feldgeräteintegration (FDI) - Teil 5: FDI-Informationsmodell

Intégration des appareils de terrain (FDI) - Partie 5: Modèle d'Information

**Ta slovenski standard je istoveten z: prEN IEC 62769-5:2022**

**ITeH STANDARD  
PREVIEW  
(standards.iteh.ai)**

---

[oSIST prEN IEC 62769-5:2022](https://standards.iteh.ai/catalog/standards/sist/fa84a9e8-afc5-4c4e-af3f-a4a9985c2602/osist-pr-en-iec-62769-5-2022)

**ICS:**

25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
35.240.50	Uporabniške rešitve IT v industriji	IT applications in industry

**oSIST prEN IEC 62769-5:2022**

**en,fr,de**

**iTeh STANDARD  
PREVIEW  
(standards.iteh.ai)**

oSIST prEN IEC 62769-5:2022

<https://standards.iteh.ai/catalog/standards/sist/fa84a9e8-afc5-4c4e-af3f-a4a9985c2602/osist-pren-iec-62769-5-2022>



# 65E/858/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: <b>IEC 62769-5 ED3</b>	
DATE OF CIRCULATION: <b>2022-03-04</b>	CLOSING DATE FOR VOTING: <b>2022-05-27</b>
SUPERSEDES DOCUMENTS: <b>65E/825/RR</b>	

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: SC 65B, SC 65C	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 <b>Attention IEC-CENELEC parallel voting</b> 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:

**Field Device Integration (FDI) - Part 5: Information Model**

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

**iTeh STANDARD  
PREVIEW  
(standards.iteh.ai)**

[oSIST prEN IEC 62769-5:2022](https://standards.iteh.ai/catalog/standards/sist/fa84a9e8-afc5-4c4e-af3f-a4a9985c2602/osist-pren-iec-62769-5-2022)  
<https://standards.iteh.ai/catalog/standards/sist/fa84a9e8-afc5-4c4e-af3f-a4a9985c2602/osist-pren-iec-62769-5-2022>

## CONTENTS

1		
2		
3	FOREWORD .....	7
4	1 Scope .....	9
5	2 Normative references .....	10
6	3 Terms, definitions, abbreviated terms, acronyms and conventions .....	11
7	3.1 Terms and definitions .....	11
8	3.2 Abbreviated terms and acronyms .....	11
9	3.3 Conventions for graphical notation .....	11
10	4 Overview of OPC Unified Architecture .....	13
11	4.1 General .....	13
12	4.2 Overview of OPC UA Devices .....	14
13	5 Concepts .....	15
14	5.1 General .....	15
15	5.2 Device topology .....	15
16	5.3 Online/offline .....	17
17	5.4 Catalogue (Type Definitions) .....	18
18	5.5 Communication .....	18
19	5.6 Semantic Information .....	18
20	6 AddressSpace organization .....	21
21	7 Device Model for FDI .....	22
22	7.1 General .....	22
23	7.2 Online/offline .....	22
24	7.3 Device health .....	22
25	7.4 DeviceHealth Mapping .....	22
26	7.5 DeviceHealth Diagnostics .....	23
27	7.6 User interface elements .....	24
28	7.6.1 General .....	24
29	7.6.2 UI Description Type .....	25
30	7.6.3 UI Plug-in Type .....	25
31	7.7 Type-specific support information .....	27
32	7.8 Actions .....	27
33	7.8.1 Overview .....	27
34	7.8.2 Action Type .....	28
35	7.8.3 ActionService Type .....	29
36	7.8.4 ActionService Object .....	29
37	7.8.5 InvokeAction Method .....	30
38	7.8.6 RespondAction Method .....	31
39	7.8.7 AbortAction Method .....	32
40	7.8.8 Interactive Transfer to device .....	33
41	8 Network and connectivity .....	33
42	9 Utility functions .....	33

iTech STANDARD  
PREVIEW  
(standards.iteh.ai)

oSIST prEN IEC 62769-5:2022

<https://standards.iteh.ai/catalog/standards/sist/fa84a9e8-afc5-4c4e-af3f-a4a9985c2602/osist-pren-iec-62769-5-2022>

43	9.1	Overview .....	33
44	9.2	Locking .....	33
45	9.3	EditContext .....	34
46	9.3.1	Overview .....	34
47	9.3.2	EditContext Type .....	34
48	9.3.3	EditContext Object .....	35
49	9.3.4	GetEditContext Method .....	35
50	9.3.5	RegisterNodes Method .....	36
51	9.3.6	Apply Method .....	38
52	9.3.7	Reset Method .....	39
53	9.3.8	Discard Method .....	39
54	9.4	Direct Device Access .....	40
55	9.4.1	General .....	40
56	9.4.2	DirectDeviceAccess Type .....	40
57	9.4.3	DirectDeviceAccess Object .....	41
58	9.4.4	InitDirectAccess Method .....	42
59	9.4.5	EndDirectAccess Method .....	43
60	9.4.6	Transfer Method .....	44
61	10	Parameter Types .....	44
62	10.1	General .....	44
63	10.2	ScalingFactor Property .....	45
64	10.3	Min_Max_Values Property .....	46
65	11	FDI StatusCodes .....	46
66	11.1	Structure of the StatusCode .....	46
67	11.2	FDI specific operation level result codes .....	47
68	12	Specialized topology elements .....	50
69	13	Auditing .....	50
70	13.1	General .....	50
71	13.2	FDI Client-provided context information .....	50
72	13.3	LogAuditTrailMessage Method .....	51
73	14	FDI Server Version .....	51
74	15	Mapping FDI Package information to the FDI Information Model .....	52
75	15.1	General .....	52
76	15.2	Localization .....	52
77	15.2.1	Localized text .....	52
78	15.2.2	Engineering units .....	52
79	15.3	Device .....	52
80	15.3.1	General .....	52
81	15.3.2	Mapping to Attributes to a specific DeviceType Node .....	52
82	15.3.3	Mapping to Properties .....	53
83	15.3.4	Mapping to ParameterSet .....	53
84	15.3.5	Mapping to Functional Groups .....	53
85	15.3.6	Mapping to DeviceTypeImage .....	53
86	15.3.7	Mapping to Documentation .....	54

iTeh STANDARD  
PREVIEW  
(standards.iteh.ai)

oSIST prEN IEC 62769-5:2022  
<https://standards.iteh.ai/catalog/standards/sist/fa84a9e8-afc5-4c4e-af3f-a4a9985c2602/osist-pren-iec-62769-5-2022>

87	15.3.8	Mapping to ProtocolSupport .....	54
88	15.3.9	Mapping to ImageSet .....	54
89	15.3.10	Mapping to ActionSet .....	54
90	15.3.11	Mapping to MethodSet .....	54
91	15.4	Modular Device .....	54
92	15.5	Block .....	54
93	15.5.1	General .....	54
94	15.5.2	Mapping to Attributes .....	55
95	15.5.3	Mapping to ParameterSet .....	55
96	15.5.4	Mapping to Functional Groups .....	55
97	15.5.5	Mapping to ActionSet .....	55
98	15.5.6	Mapping to MethodSet .....	55
99	15.5.7	Instantiation rules .....	55
100	15.6	Parameter .....	55
101	15.6.1	General .....	55
102	15.6.2	Private Parameters .....	60
103	15.6.3	MIN_Value and MAX_Value .....	60
104	15.6.4	Engineering units .....	61
105	15.6.5	Enumerated Parameters .....	61
106	15.6.6	Bit-enumerated Parameters .....	61
107	15.6.7	Representation of records .....	61
108	15.6.8	Representation of arrays, and lists of Parameters with simple data types .....	62
109	15.6.9	Representation of values arrays, and lists of RECORD Parameters .....	63
110	15.6.10	Representation of COLLECTION and REFERENCE ARRAY .....	63
111	15.6.11	SCALING_FACTOR .....	63
112	15.6.12	EDDL CLASS Attributes on Parameters .....	64
113	15.7	Functional Groups .....	66
114	15.8	AXIS elements in UIDs .....	67
115	15.9	Actions .....	67
116	15.10	UIPs .....	67
117	15.11	Protocols, Networks and Connection Points .....	68
118	15.12	Semantic Identifies .....	68
119	15.13	DictionaryIds Property .....	68
120	15.14	MultiStateDictionaryEntryDiscreteType .....	68
121	15.15	GetNodeIdsByDictionaryEntryId .....	69
122	16	Profiles .....	70
123	Annex A (normative)	Namespace and Mappings .....	72
124	Bibliography .....		73
125			
126	Figure 1 – FDI architecture diagram .....		10
127	Figure 2 – OPC UA Graphical Notation for NodeClasses .....		11
128	Figure 3 – OPC UA Graphical Notation for References .....		12
129	Figure 4 – OPC UA Graphical Notation Example .....		12

130	Figure 5 – Optimized Type Reference .....	13
131	Figure 6 – OPC UA Devices Example: Functional Groups .....	14
132	Figure 7 – OPC UA Devices example: Configurable components .....	15
133	Figure 8 – Example of an automation system .....	16
134	Figure 9 – Example of a Device topology .....	17
135	Figure 10 – Example Device Types representing a catalogue .....	18
136	Figure 13 – Online component for access to device data .....	22
137	Figure 14 – Hierarchy of user interface Types .....	25
138	Figure 15 – Integration of Actions within a TopologyElement .....	28
139	Figure 16 – Action Service .....	30
140	Figure 17 – EditContext type and instance .....	35
141	Figure 18 – DirectDeviceAccessType .....	41
142	Figure 19 – DirectDeviceAccess instance .....	42
143	Figure 20 – OPC UA VariableTypes including OPC UA DataAccess .....	45
144	Figure 21 – Example: Complex variable representing a RECORD .....	62
145	Figure 22 – Complex variable representing a VALUE_ARRAY of RECORDs .....	63
146		
147	Table 1 – DeviceHealth Mapping .....	23
148	Table 2 – <i>DeviceType</i> definition (excerpt applicable for this clause) .....	23
149	Table 3 – DeviceType definition with DeviceHealth and DeviceHealthDiagnostics .....	24
150	Table 4 – UIDescriptionType Definition .....	25
151	Table 5 – UIPlugInType Definition .....	26
152	Table 6 – ActionType Definition .....	29
153	Table 7 – ActionServiceType Definition .....	29
154	Table 8 – InvokeAction Method Arguments .....	31
155	Table 9 – InvokeAction Method AddressSpace Definition .....	31
156	Table 10 – RespondAction Method Arguments .....	32
157	Table 11 – RespondAction Method AddressSpace Definition .....	32
158	Table 12 – AbortAction Method Arguments .....	32
159	Table 13 – AbortAction Method AddressSpace Definition .....	33
160	Table 14 – EditContextType Definition .....	34
161	Table 15 – GetEditContext Method Arguments .....	36
162	Table 16 – GetEditContext Method AddressSpace Definition .....	36
163	Table 17 – RegisterNodes Method Arguments .....	36
164	Table 18 – RegisterNodes Method AddressSpace Definition .....	37
165	Table 19 – RegistrationParameters DataType Structure .....	37
166	Table 20 – RegisterNodesResult DataType Structure .....	38
167	Table 21 – Apply Method Arguments .....	38
168	Table 22 – Apply Method AddressSpace Definition .....	38

ITeH STANDARD  
 PREVIEW  
 (standards.iteh.ai)  
<https://standards.iteh.ai/catalog/standards/sist/fa84a9e8-afc5-4c4e-af3f-a4a9985c2602/osist-pren-iec-62769-5-2022>



169	Table 23 – ApplyResult DataType Structure .....	39
170	Table 24 – Reset Method Arguments .....	39
171	Table 25 – Reset Method AddressSpace Definition .....	39
172	Table 26 – Discard Method Arguments .....	40
173	Table 27 – Discard Method AddressSpace Definition .....	40
174	Table 28 – DirectDeviceAccessType Definition .....	41
175	Table 29 – DirectDeviceAccess Instance Definition .....	42
176	Table 30 – InitDirectAccess Method Arguments .....	43
177	Table 31 – InitDirectAccess Method AddressSpace Definition .....	43
178	Table 32 – EndDirectAccess Method Arguments .....	43
179	Table 33 – EndDirectAccess Method AddressSpace Definition .....	44
180	Table 34 – Transfer Method Arguments .....	44
181	Table 35 – Transfer Method AddressSpace Definition .....	44
182	Table 36 – ScalingFactor Property Definition .....	46
183	Table 37 – Min_Max_Values Property Definition .....	46
184	Table 38 – Variant_Range DataType Structure .....	46
185	Table 39 – Variant_Range Definition .....	46
186	Table 40 – StatusCode Bit Assignments .....	47
187	Table 41 – DataValue InfoBits .....	47
188	Table 42 – Good operation level result codes .....	48
189	Table 43 – Uncertain operation level result codes .....	48
190	Table 44 – Bad operation level result codes .....	49
191	Table 45 – LogAuditTrailMessage Method Arguments .....	51
192	Table 46 – LogAuditTrailMessage Method AddressSpace Definition .....	51
193	Table 47 – FDI ServerVersion Property Definition .....	52
194	Table 48 – DeviceType Property Mapping .....	53
195	Table 49 – Setting OPC UA Variable Attributes from EDDL variable attributes .....	57
196	Table 50 – Correspondence between EDDL and OPC UA standard data types .....	57
197	Table 51 – Definition of EddlDictionaryType .....	64
198	Table 52 – Definition of EddlDictionary Object .....	64
199	Table 53 – Definition of Parameter Class Attributes .....	64
200	Table 55 - MultiStateDictionaryEntryDiscreteType definition .....	69
201	Table 57 – <i>FDI Server Facet</i> Definition .....	70
202	Table 58 – <i>FDI Client Facet</i> Definition .....	71
203		
204		

ITeH STANDARD  
 PREVIEW  
 (standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/fa84a9e8-afc5-4c4e-af3f-a4a9985c2602/osist-pr-en-iec-62769-5-2022>

205  
206  
207  
208  
209  
210  
211  
212

# INTERNATIONAL ELECTROTECHNICAL COMMISSION

## FIELD DEVICE INTEGRATION (FDI) –

### Part 5: FDI Information Model

#### FOREWORD

213  
214  
215  
216  
217  
218  
219  
220  
221  
222  
223  
224  
225  
226  
227  
228  
229  
230  
231  
232  
233  
234  
235  
236  
237  
238  
239  
240  
241  
242  
243  
244  
245

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

IEC 62769-5 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.

246  
247

This third edition cancels and replaces the second edition published in 2021. This edition constitutes a technical revision.

248

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

249

- a) added INTERACTIVE\_TRANSFER\_TO\_DEVICE ACTION;

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

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

251  
252 Full information on the voting for its approval can be found in the report on voting indicated in the above  
253 table.

254 The language used for the development of this International Standard is English.

255 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance  
256 with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at  
257 [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in  
258 greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

259 The committee has decided that the contents of this document will remain unchanged until the stability  
260 date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific  
261 document. At this date, the document will be

- 262 • reconfirmed,  
263 • withdrawn,  
264 • replaced by a revised edition, or  
265 • amended.

266

**iTeh STANDARD  
PREVIEW  
(standards.iteh.ai)**

[oSIST prEN IEC 62769-5:2022](https://standards.iteh.ai/catalog/standards/sist/fa84a9e8-afc5-4c4e-af3f-a4a9985c2602/osist-pren-iec-62769-5-2022)  
[https://standards.iteh.ai/catalog/standards/sist/fa84a9e8-  
afc5-4c4e-af3f-a4a9985c2602/osist-pren-iec-62769-5-  
2022](https://standards.iteh.ai/catalog/standards/sist/fa84a9e8-afc5-4c4e-af3f-a4a9985c2602/osist-pren-iec-62769-5-2022)

267  
268  
269  
270  
271  
272  
273

## FIELD DEVICE INTEGRATION (FDI) –

### Part 5: FDI Information Model

#### 274 **1 Scope**

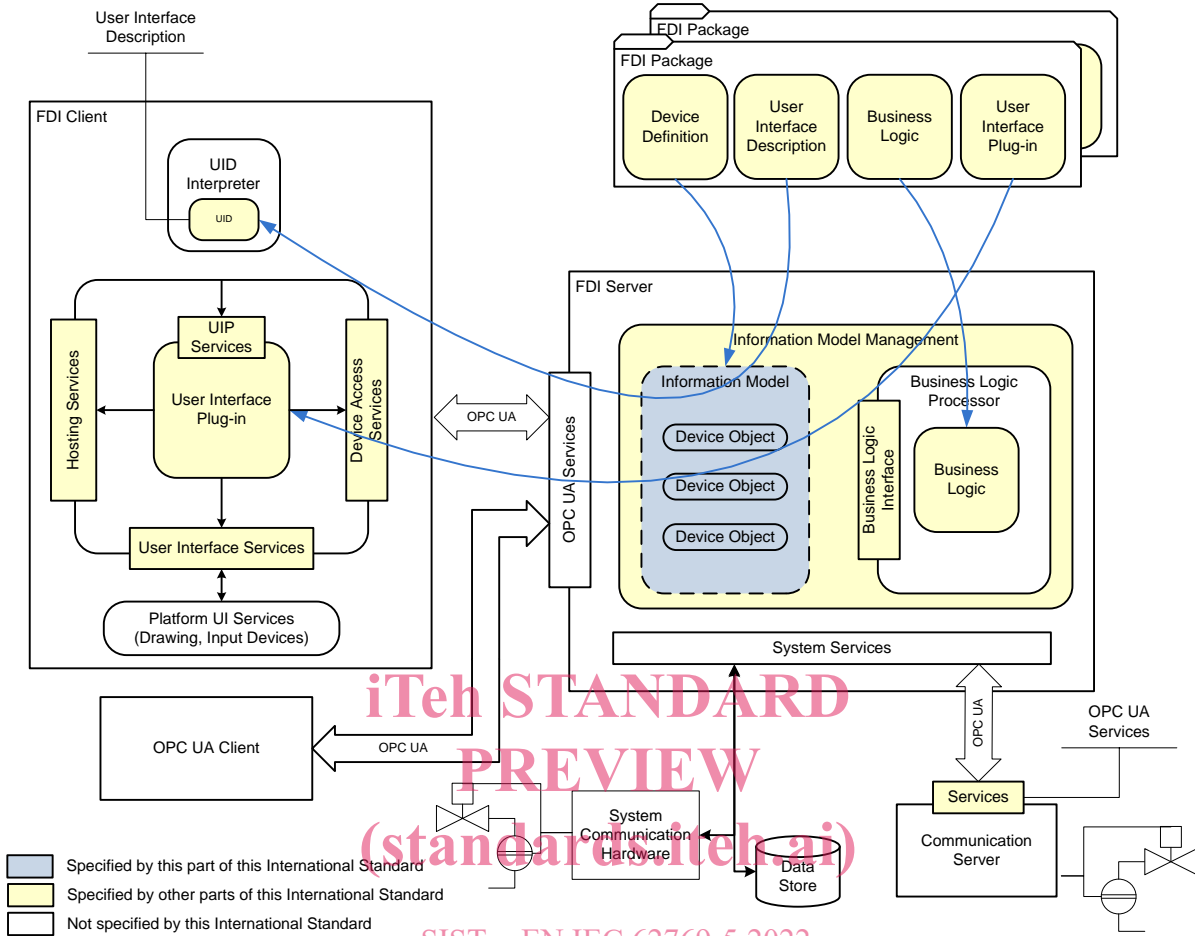
275 This part of IEC 62769 defines the FDI Information Model. One of the main tasks of the Information Model  
276 is to reflect the topology of the automation system. Therefore, it represents the devices of the automation  
277 system as well as the connecting communication networks including their properties, relationships, and  
278 the operations that can be performed on them. The types in the AddressSpace of the FDI Server constitute  
279 some kind of catalogue, which is built from *FDI Packages*.

280 The fundamental types for the FDI Information Model are well defined in OPC UA for Devices  
281 (IEC 62541-100). The FDI Information Model specifies extensions for a few special cases and otherwise  
282 explains how these types are used and how the contents are built from elements of DevicePackages.

283 The overall FDI architecture is illustrated in Figure 1. The architectural components that are within the  
284 scope of this document have been highlighted in this illustration.

ITEH STANDARD  
PREVIEW  
(standards.iteh.ai)

[osIST prEN IEC 62769-5:2022](https://standards.iteh.ai/catalog/standards/sist/fa84a9e8-afc5-4c4e-af3f-a4a9985c2602/osist-pren-iec-62769-5-2022)  
[https://standards.iteh.ai/catalog/standards/sist/fa84a9e8-  
afc5-4c4e-af3f-a4a9985c2602/osist-pren-iec-62769-5-  
2022](https://standards.iteh.ai/catalog/standards/sist/fa84a9e8-afc5-4c4e-af3f-a4a9985c2602/osist-pren-iec-62769-5-2022)



285

286

287

**2 Normative references**

288 The following documents, in whole or in part, are normatively referenced in this document and are  
 289 indispensable for its application. For dated references, only the edition cited applies. For undated  
 290 references, the latest edition of the referenced document (including any amendments) applies.

- 291 IEC 61784-1, *Industrial communication networks – Profiles – Part 1: Fieldbus profiles*
- 292 IEC 61804-3, *Function blocks (FB) for process control and Electronic Device Description Language*  
 293 *(EDDL) – Part 3: EDDL syntax and semantics*
- 294 IEC 61804-4, *Function blocks (FB) for process control and Electronic Device Description Language*  
 295 *(EDDL) – Part 4: EDD interpretation*
- 296 IEC 62541-3, *OPC unified architecture – Part 3: Address Space Model*
- 297 IEC 62541-4, *OPC unified architecture – Part 4: Services*
- 298 IEC 62541-5, *OPC unified architecture – Part 5: Information Model*
- 299 IEC 62541-6, *OPC unified architecture – Part 6: Mappings*
- 300 IEC 62541-8, *OPC unified architecture – Part 8: Data Access*

- 301 IEC 62541-100, *OPC unified architecture – Part 100: OPC UA for Devices*
- 302 IEC 62769-1, *Field Device Integration (FDI) – Part 1: Overview*
- 303 IEC 62769-2, *Field Device Integration (FDI) – Part 2: FDI Client*
- 304 IEC 62769-4, *Field Device Integration (FDI) – Part 4: FDI Packages*
- 305 IEC 62769-6, *Field Device Integration (FDI) – Part 4: FDI Technology Mapping*
- 306 IEC 62769-7, *Field Device Integration (FDI) – Part 7: FDI Communication Devices*
- 307 IEC 62769-1xx-y, *Field Device Integration (FDI) – Part 1xx-y: Profiles*

### 308 **3 Terms, definitions, abbreviated terms, acronyms and conventions**

#### 309 **3.1 Terms and definitions**

310 For the purposes of this document, the terms and definitions given in IEC 62769-1 apply.

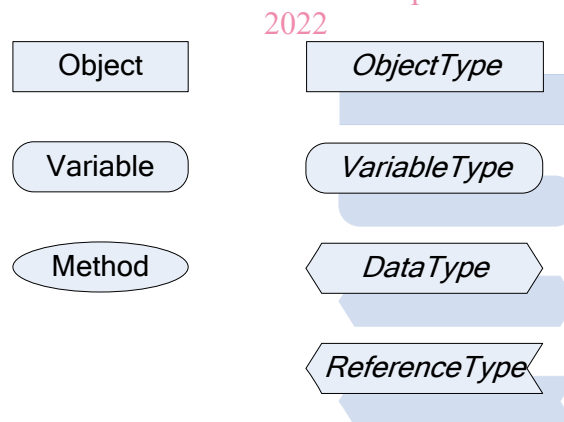
#### 311 **3.2 Abbreviated terms and acronyms**

312 For the purposes of this document, the abbreviated terms and acronyms given in IEC 62769-1 as well as  
313 the following apply.

HMI	Human Machine Interface
SCADA	Supervisory Control and Data Acquisition
TCP	Transmission Control Protocol

#### 314 **3.3 Conventions for graphical notation**

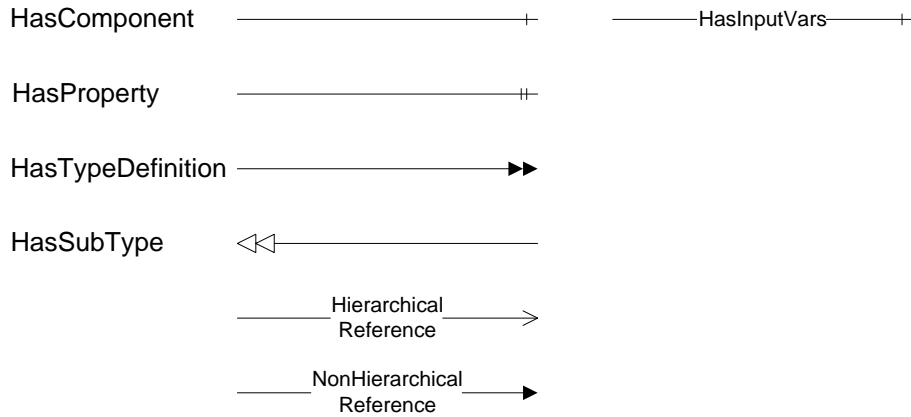
315 OPC UA defines a graphical notation for an OPC UA AddressSpace. It defines graphical symbols for all  
316 NodeClasses and how different types of References between Nodes can be visualized. Figure 2 shows  
317 the symbols for the NodeClasses used in this standard. NodeClasses representing types always have a  
318 shadow.



319

320 **Figure 2 – OPC UA Graphical Notation for NodeClasses**

321 Figure 3 shows the symbols for the ReferenceTypes used in this standard. The Reference symbol is  
322 normally pointing from the source Node to the target Node. The only exception is the HasSubType  
323 Reference. The most important References such as HasComponent, HasProperty, HasTypeDefinition and  
324 HasSubType have special symbols avoiding the name of the Reference. For other ReferenceTypes or  
325 derived ReferenceTypes the name of the ReferenceType is used together with the symbol.



326

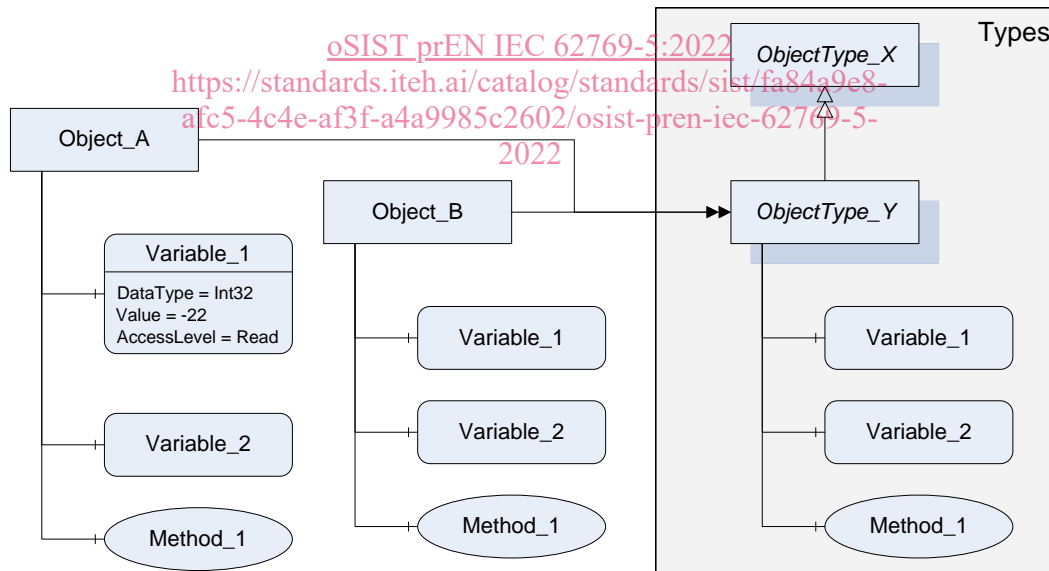
327

**Figure 3 – OPC UA Graphical Notation for References**

328 Figure 4 shows a typical example for the use of the graphical notation. Object\_A and Object\_B are  
 329 instances of the ObjectType\_Y indicated by the HasTypeDefinition References. The ObjectType\_Y is  
 330 derived from ObjectType\_X indicated by the HasSubType Reference. The Object\_A has the components  
 331 Variable\_1, Variable\_2 and Method\_1.

332 To describe the components of an Object on the ObjectType the same NodeClasses and References are  
 333 used on the Object and on the ObjectType such as for ObjectType\_Y in the example. The Nodes used to  
 334 describe an ObjectType are instance declaration Nodes.

335 To provide more detailed information for a Node, a subset or all Attributes and their values can be added  
 336 to a graphical symbol (see for example Variable\_1, the component of Object\_A in Figure 4).



337

338

**Figure 4 – OPC UA Graphical Notation Example**

339 To improve readability, this document frequently includes the type name inside the instance box rather  
 340 than displaying both boxes and a reference between them. This optimization is shown in Figure 5.