ICS 25.040.40, 35.100.05 SLOVENSKÁ TECHNICKÁ NORMA August 2023

STN	**Integrácia softvérového nástroja (FDI®) Časť 7: Komunikačné zariadenia**	**STN EN IEC 62769-7 18 4012**

Field Device Integration (FDI) - Part 7: Communication Devices

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 07/23

Obsahuje: EN IEC 62769-7:2023, IEC 62769-7:2023

Oznámením tejto normy sa od 11.05.2026 ruší
STN EN IEC 62769-7 (18 4012) z júla 2021

obsahuje farebné strany

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2023
Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN IEC 62769-7

May 2023

ICS 25.040.40; 35.100.05

Supersedes EN IEC 62769-7:2021

English Version

Field Device Integration (FDI®) - Part 7: Communication Devices (IEC 62769-7:2023)

Intégration des appareils de terrain (FDI®) - Partie 7: Appareils de Communication (IEC 62769-7:2023)

Feldgeräteintegration (FDI®) - Teil 7: FDI-Kommunikationsgeräte (IEC 62769-7:2023)

This European Standard was approved by CENELEC on 2023-05-11. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2023 CENELEC All rights of exploitation in any form and by any means reserved worldwide for CENELEC Members.

Ref. No. EN IEC 62769-7:2023 E

European foreword

The text of document 65E/859/CDV, future edition 3 of IEC 62769-7, prepared by SC 65E "Devices and integration in enterprise systems" of IEC/TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62769-7:2023.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2024-02-11
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2026-05-11

This document supersedes EN IEC 62769-7:2021 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62769-7:2023 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cencenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 61804-3	-	Devices and integration in enterprise systems - Function blocks (FB) for process control and electronic device description language (EDDL) - Part 3: EDDL syntax and semantics	EN IEC 61804-3	-
IEC 61804-4	-	Devices and integration in enterprise systems - Function blocks (FB) for process control and electronic device description language (EDDL) - Part 4: EDD interpretation	EN IEC 61804-4	-
IEC/TR 62541-1	-	OPC unified architecture - Part 1: Overview and concepts	-	-
IEC 62541-4	-	OPC Unified Architecture - Part 4: Services	EN IEC 62541-4	-
IEC 62541-6	-	OPC Unified Architecture - Part 6: Mappings	EN IEC 62541-6	-
IEC 62541-7	-	OPC unified architecture - Part 7: Profiles	EN IEC 62541-7	-
IEC 62541-100	-	OPC Unified Architecture - Part 100: Device Interface	EN 62541-100	-
IEC 62769-1	-	Field Device Integration (FDI®) - Part 1: Overview	EN IEC 62769-1	-
IEC 62769-2	-	Field Device Integration (FDI®) - Part 2: Client	EN IEC 62769-2	-
IEC 62769-3	-	Field Device Integration (FDI®) - Part 3: Server	EN IEC 62769-3	-
IEC 62769-4	2023	Field Device Integration (FDI®) - Part 4: FDI Packages	EN IEC 62769-4	2023
IEC 62769-5	-	Field Device Integration (FDI®) - Part 5: FDI Information Model	EN IEC 62769-5	-

IEC 62769-7

Edition 3.0 2023-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Field Device Integration (FDI®) – Part 7: Communication Devices

Intégration des appareils de terrain (FDI®) – Partie 7: Appareils de Communication

IEC 62769-7:2023-04(en-fr)

THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2023 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, …). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Discover our powerful search engine and read freely all the publications previews. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 300 terminological entries in English and French, with equivalent terms in 19 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

A propos de l'IEC
La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC
Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Recherche de publications IEC - webstore.iec.ch/advsearchform
La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études, …). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished
Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

Service Clients - webstore.iec.ch/csc
Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

Electropedia - www.electropedia.org
Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 300 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 19 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

IEC 62769-7

Edition 3.0 2023-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Field Device Integration (FDI®) – Part 7: Communication Devices

Intégration des appareils de terrain (FDI®) – Partie 7: Appareils de Communication

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 25.040.40; 35.100.05

ISBN 978-2-8322-6748-6

Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

® Registered trademark of the International Electrotechnical Commission
Marque déposée de la Commission Electrotechnique Internationale

CONTENTS

FOREWORD 6
1 Scope 8
2 Normative references 9
3 Terms, definitions, abbreviated terms, acronyms and conventions 9
3.1 Terms and definitions 9
3.2 Abbreviated terms and acronyms 9
3.3 Conventions 10
3.3.1 EDDL syntax 10
3.3.2 Capitalizations 10
3.3.3 Graphical notation 10
4 Overview 10
5 FDI® Communication Package 12
5.1 General 12
5.2 EDD 12
5.2.1 General rules 12
5.2.2 Device component 13
5.2.3 CommunicationDevice component 14
5.2.4 Communication service provider component 15
5.2.5 Connection Point component 17
5.2.6 Connection Point collection 17
5.2.7 Network component 18
5.2.8 ValidateNetwork 19
5.2.9 ValidateModules 20
5.2.10 UIP specifics 20
5.2.11 Deployment 21
6 Communication relations 21
7 FDI® Communication Server definition 22
7.1 General 22
7.2 General characteristics 22
7.3 Information Model 22
7.3.1 General 22
7.3.2 CommunicationServerType 25
7.3.3 ServerCommunicationDeviceType 29
7.3.4 ServerCommunicationServiceType 33
7.4 OPC UA Server Profile for FDI® Communication Server 37
7.5 Mapping the FDI® Server Information Model to the FDI® Communication Server IM 38
7.5.1 General 38
7.5.2 Information Model differences 38
7.6 Installer 39
7.7 FDI® Communication Package 39
7.7.1 General 39
7.7.2 EDD for lightweight Communication Server 40
7.7.3 EDD for multi-channel Communication Server 40
7.7.4 COMMANDs in EDDs for FDI® Communication Servers 40
7.7.5 Documentation 41

7.8 Handling and behaviour 41
7.8.1 General 41
7.8.2 Deployment 42
7.8.3 Server configuration 42
7.8.4 Start up 43
7.8.5 Shutdown 43
7.8.6 Watchdog 43
7.8.7 Establish the OPC UA connection 43
7.8.8 Instantiate the Communication Server 44
7.8.9 Configure the communication hardware 44
7.8.10 Configure the Network 44
7.8.11 Parameterize 44
7.8.12 Initialize 44
7.8.13 Create the communication service object 44
7.8.14 Communication relation 45
7.8.15 Connect 45
7.8.16 Disconnect 45
7.8.17 Abort indication 46
7.8.18 Scan 46
7.8.19 SetAddress 46
8 FDI® Communication Gateway definition 46
8.1 General 46
8.2 Information Model 46
8.2.1 General 46
8.2.2 CommunicationGatewayType 47
8.2.3 GatewayCommunicationDeviceType 48
8.2.4 GatewayCommunicationServiceType 51
8.3 FDI® Communication Package 55
8.3.1 General 55
8.3.2 EDD 56
8.4 Handling and behaviour 57
8.4.1 General 57
8.4.2 Deployment 58
8.4.3 Start up 58
8.4.4 Configure the communication hardware 58
8.4.5 Configure the Network 58
8.4.6 Parameterize 58
8.4.7 Communication relation 59
8.4.8 Connect 59
8.4.9 Disconnect 59
8.4.10 Abort indication 59
8.4.11 Scan 59
8.4.12 Communication Error Handling 60
Annex A (informative) Layered protocols 61
A.1 General 61
A.2 Convention for protocol specific annex creation 61
A.2.1 General 61
A.2.2 Connection Point 61
A.3 FDI® Communication Package definition 63

A.3.1 Communication services 63
A.3.2 Connection Point 63
A.3.3 Network 63
A.4 Representation in the Information Model 63
Annex B (normative) Namespace and Mappings 64

Figure 1 – FDI® architecture diagram 8
Figure 2 – FDI® communication infrastructure architecture 11
Figure 3 – Communication relation 21
Figure 4 – Communication relation state chart 22
Figure 5 – FDI® Communication Server AddressSpace 24
Figure 6 – CommunicationServerType 25
Figure 7 – ServerCommunicationDeviceType 29
Figure 8 – ServerCommunicationServiceType 34
Figure 9 – Information Model differences (example) 38
Figure 10 – FDI® Communication Server state machine 42
Figure 11 – Communication relation state chart 45
Figure 12 – Gateway information model 47
Figure 13 – CommunicationGatewayType 48
Figure 14 – GatewayCommunicationDeviceType 49
Figure 15 – GatewayCommunicationServiceType 52
Figure 16 – Nested Communication 58

Table 1 – ValidateNetwork Action arguments 20
Table 2 – ValidateModules Action arguments 20
Table 3 – CommunicationServerType definition 25
Table 4 – MethodSet of CommunicationServerType 25
Table 5 – Reset Method arguments 26
Table 6 – Reset Method AddressSpace definition 26
Table 7 – Initialize Method arguments 27
Table 8 – Initialize Method AddressSpace definition 27
Table 9 – AddComponent Method arguments 28
Table 10 – AddComponent Method AddressSpace definition 28
Table 11 – RemoveComponent Method arguments 29
Table 12 – RemoveComponent Method AddressSpace definition 29
Table 13 – ServerCommunicationDeviceType definition 30
Table 14 – MethodSet of ServerCommunicationDeviceType 30
Table 15 – Scan Method arguments 31
Table 16 – Scan Method AddressSpace definition 31
Table 17 – Scan Method arguments 32
Table 18 – Scan Method AddressSpace definition 32
Table 19 – ResetScan Method arguments 32
Table 20 – ResetScan Method AddressSpace definition 33
Table 21 – SetAddress Method arguments 33

Table 22 – ServerCommunicationServiceType definition 34
Table 23 – MethodSet of ServerCommunicationServiceType 34
Table 24 – Connect Method arguments 35
Table 25 – Disconnect Method arguments 36
Table 26 – Transfer Method arguments 36
Table 27 – GetPublishedData Method arguments 37
Table 28 – FDI®CommunicationServer_Facet definition 37
Table 29 – CommunicationGatewayType definition 48
Table 30 – GatewayCommunicationDeviceType definition 49
Table 31 – MethodSet of GatewayCommunicationDeviceType 49
Table 32 – Scan Method arguments 50
Table 33 – Scan Method AddressSpace definition 50
Table 34 – ScanNext Method arguments 51
Table 35 – ScanNext Method AddressSpace definition 51
Table 36 – GatewayCommunicationServiceType definition 52
Table 37 – MethodSet of GatewayCommunicationServiceType 53
Table 38 – Connect Method arguments 54
Table 39 – Transfer Method arguments 55

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

FIELD DEVICE INTEGRATION (FDI®) –

Part 7: Communication Devices

FOREWORD

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 62769-7 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 third edition cancels and replaces the second edition published in 2021. This edition constitutes a technical revision.

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

a) added ScanExtended Method.

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

Draft	Report on voting
65E/859/CDV	65E/916/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.

A list of all parts in the IEC 62769 series, published under the general title *Field device integration (FDI®)*, 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
- amended.

IMPORTANT – The "colour inside" logo on the cover page of this document 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.

FIELD DEVICE INTEGRATION (FDI®) –

Part 7: Communication Devices

1 Scope

This part of IEC 62769 specifies the elements implementing communication capabilities called Communication Devices.

The overall FDI®[1] architecture is illustrated in Figure 1. The architectural components that are within the scope of this document have been highlighted in this illustration. The document scope with respect to FDI® Packages is limited to Communication Devices. The Communication Server shown in Figure 1 is an example of a specific Communication Device.

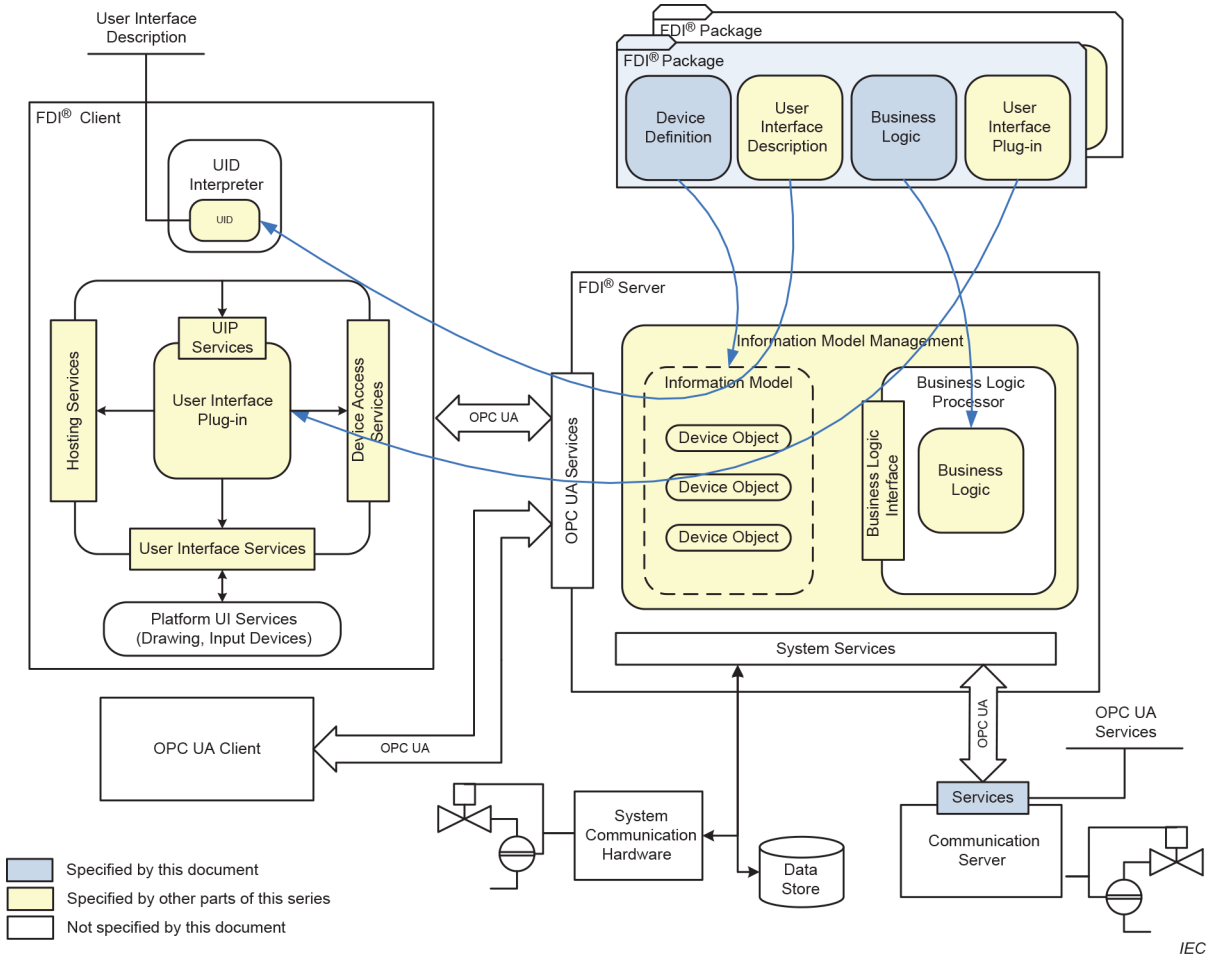

Figure 1 – FDI® architecture diagram

[1] FDI® is a registered trademark of the non-profit organization Fieldbus Foundation, Inc. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the trademark holder or any of its products. Compliance does not require use of the trade name. Use of the trade name requires permission of the trade name holder.

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 61804-3, *Devices and integration in enterprise systems − Function blocks (FB) for process control and electronic device description language (EDDL) − Part 3: EDDL syntax and semantics*

IEC 61804-4, *Devices and integration in enterprise systems − Function blocks (FB) for process control and electronic device description language (EDDL) − Part 4: EDD interpretation*

IEC TR 62541-1, *OPC Unified Architecture – Part 1: Overview and concepts*

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

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

IEC 62541-7, *OPC unified architecture – Part 7: Profiles*

IEC 62541-100, *OPC Unified Architecture – Part 100: Device Interface*

IEC 62769-1, *Field Device Integration (FDI®) – Part 1: Overview*

IEC 62769-2, *Field Device Integration (FDI®) – Part 2: Client*

IEC 62769-3, *Field Device Integration (FDI®) – Part 3: Server*

IEC 62769-4:2023, *Field Device Integration (FDI®) – Part 4: FDI® Packages*

IEC 62769-5, *Field Device Integration (FDI®) – Part 5: FDI® Information Model*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN