

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Field device tool (FDT) interface specification –
Part 2: Concepts and detailed description**

**Spécification des interfaces des outils des dispositifs de terrain (FDT) –
Partie 2: Concepts et description détaillée**

<https://standards.iteh.ai/catalog/standards/sist/588a9c1c-9ace-4af3-9524-5a074bb98cfb/iec-62453-2-2009>



THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2009 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 Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
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 corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

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 also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 14 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

More than 55 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

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: csc@iec.ch.

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.

Catalogue IEC - webstore.iec.ch/catalogue

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - www.iec.ch/searchpub

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 aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 14 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary

Plus de 55 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

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

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Field device tool (FDT) interface specification –
Part 2: Concepts and detailed description**

**Spécification des interfaces des outils des dispositifs de terrain (FDT) –
Partie 2: Concepts et description détaillée**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE **XG**
CODE PRIX

ICS. 25.040.40; 35.100.05; 35.110

ISBN 978-2-8322-1331-5

**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.**

CONTENTS

FOREWORD.....	10
INTRODUCTION.....	12
1 Scope.....	13
2 Normative references	13
3 Terms, definitions, symbols, abbreviated terms and conventions	13
3.1 Terms and definitions	13
3.2 Symbols and abbreviated terms.....	14
3.3 Conventions	14
3.3.1 State availability statement.....	14
3.3.2 Data type names and references to data types	14
4 Fundamentals.....	14
4.1 General.....	14
4.2 Abstract FDT model.....	14
4.2.1 FDT model overview.....	14
4.2.2 Frame Application (FA).....	18
4.2.3 Device Type Manager (DTM).....	18
4.2.4 Presentation object.....	22
4.2.5 Channel object.....	23
4.3 Modularity	24
4.4 Bus categories	25
4.5 System and FDT topology	25
4.6 Peer to peer and nested communication.....	27
4.7 DTM, DTM Device Type and Hardware Identification Information	28
4.7.1 DTM and DTM Device Type.....	28
4.7.2 Supported hardware identification.....	29
4.7.3 Connected Hardware Identification	30
4.8 DTM data persistence and synchronization	30
4.9 DTM device parameter access	31
4.10 DTM state machine	32
4.10.1 DTM states.....	32
4.10.2 'Communication allowed' sub-states	33
4.11 Basic operation phases	34
4.11.1 Roles and access rights.....	34
4.11.2 Operation phases	34
4.12 FDT version interoperability.....	35
4.12.1 Version interoperability overview	35
4.12.2 DTM and device versions	36
4.12.3 Persistence	36
4.12.4 Nested communication	36
5 FDT session model and use cases	37
5.1 Session model overview	37
5.2 Actors	38
5.3 Use cases	40
5.3.1 Use case overview	40
5.3.2 Observation.....	40
5.3.3 Operation	40

5.3.4	Maintenance.....	44
5.3.5	Planning.....	48
5.3.6	OEM service.....	51
5.3.7	Administration.....	52
6	General concepts.....	53
6.1	Address management.....	53
6.2	Scanning and DTM assignment.....	53
6.2.1	Scanning introduction.....	53
6.2.2	Scanning.....	54
6.2.3	DTM assignment.....	54
6.2.4	Manufacturer specific device identification.....	54
6.2.5	Scan for communication hardware.....	55
6.3	Configuration of fieldbus master or communication scheduler.....	55
6.4	Slave redundancy.....	56
6.4.1	Redundancy overview.....	56
6.4.2	Redundancy support in Frame Application.....	57
6.4.3	Parent component for redundant fieldbus.....	58
6.4.4	Redundancy support in Device DTM.....	58
6.4.5	Scan and redundant slaves.....	59
7	FDT service specification.....	59
7.1	Service specification overview.....	59
7.2	DTM services.....	60
7.2.1	General services.....	60
7.2.2	DTM services related to installation.....	62
7.2.3	DTM services related to DTM/device information.....	62
7.2.4	DTM services related to the DTM state machine.....	64
7.2.5	DTM services related to functions.....	67
7.2.6	DTM services related to channel objects.....	69
7.2.7	DTM services related to documentation.....	70
7.2.8	DTM services to access the instance data.....	70
7.2.9	DTM services to evaluate the instance data.....	71
7.2.10	DTM services to access the device data.....	72
7.2.11	DTM services related to network management information.....	74
7.2.12	DTM services related to online operation.....	74
7.2.13	DTM services related to data synchronization.....	76
7.2.14	DTM services related to import and export.....	78
7.3	Presentation object services.....	78
7.4	Channel object service.....	78
7.4.1	Channel object service introduction.....	78
7.4.2	Service ReadChannelInformation.....	78
7.4.3	Service WriteChannelInformation.....	79
7.5	Process Channel object services.....	79
7.5.1	Services for IO related information.....	79
7.6	Communication Channel object services.....	80
7.6.1	Services related to communication.....	80
7.6.2	Services related to sub-topology management.....	84
7.6.3	Services related to GUI and functions.....	86
7.6.4	Services related to scan.....	87
7.7	Frame Application services.....	87

7.7.1	General state availability	87
7.7.2	FA services related to general events	87
7.7.3	FA services related to topology management.....	89
7.7.4	FA services related to redundancy.....	91
7.7.5	FA services related to storage of DTM data	92
7.7.6	FA services related to DTM data synchronization	93
7.7.7	FA services related to presentation	94
7.7.8	FA Services related to audit trail.....	96
8	FDT dynamic behavior.....	96
8.1	Generate FDT topology	96
8.1.1	FDT topology generation triggered by the Frame Application	96
8.1.2	FDT topology generation triggered by the DTM.....	97
8.2	Address setting	98
8.2.1	Address setting introduction	98
8.2.2	Set or modify device address – with user interface	98
8.2.3	Set or modify device address – without user interface	98
8.2.4	Display or modify all child device addresses with user interface	99
8.3	Communication	100
8.3.1	Communication overview.....	100
8.3.2	Peer to peer communication.....	100
8.3.3	Nested communication	100
8.3.4	Device initiated data transfer.....	101
8.4	Scanning and DTM assignment	102
8.5	Multi-user scenarios	103
8.5.1	General	103
8.5.2	Synchronized and non-synchronized locking mechanism for DTMs.....	105
8.5.3	Additional rules.....	107
8.6	Notification of changes	107
8.7	DTM instance data state machines.....	107
8.7.1	Instance data set introduction.....	107
8.7.2	Modifications state machine.....	108
8.7.3	Persistence state machine.....	109
8.7.4	Modification in device	109
8.7.5	Storage life cycle.....	110
8.8	Parent component handling redundant slave	111
8.9	DTM upgrade	112
8.9.1	General rules.....	112
8.9.2	Saving data from a DTM to be upgraded.....	113
8.9.3	Loading data in the replacement DTM	113
Annex A	(normative) FDT data types definition	115
Figure 1	– Part 2 of the IEC 62453 series	12
Figure 2	– Abstract FDT model	15
Figure 3	– Frame Application with integrated Communication Channel	18
Figure 4	– Device Type Manager (DTM).....	19
Figure 5	– Communication DTM.....	19
Figure 6	– Device DTM	20
Figure 7	– Gateway DTM	20

Figure 8 – Module DTM	21
Figure 9 – Block Type Manager (BTM).....	22
Figure 10 – Presentation object	22
Figure 11 – Channel object.....	23
Figure 12 – Combined Process / Communication Channel	24
Figure 13 – FDT topology for a simple system topology	25
Figure 14 – FDT topology for a complex system topology	26
Figure 15 – Peer to peer communication.....	27
Figure 16 – Nested communication	28
Figure 17 – DTM, DTM Device Type and Device Identification Information	29
Figure 18 – Connected Hardware Identification.....	30
Figure 19 – FDT storage and synchronization mechanisms.....	31
Figure 20 – DTM state machine	32
Figure 21 – Substates of communication allowed.....	33
Figure 22 – Main Use Case Diagram.....	38
Figure 23 – Observation Use Cases.....	40
Figure 24 – Operation Use Cases	41
Figure 25 – Maintenance use cases	44
Figure 26 – Planning use cases	49
Figure 27 – OEM service	51
Figure 28 – Administrator use cases	52
Figure 29 – Address setting via DTM presentation object.....	53
Figure 30 – Fieldbus scanning.....	54
Figure 31 – Fieldbus master configuration tool as part of a DTM.....	56
Figure 32 – Redundancy scenarios.....	57
Figure 33 – FDT topology generation triggered by the Frame Applications.....	97
Figure 34 – FDT topology generation triggered by a DTM	97
Figure 35 – Set or modify device address – with user interface.....	98
Figure 36 – Set or modify device address – with user interface.....	99
Figure 37 – Set or modify all device addresses – with user interface.....	99
Figure 38 – Peer to peer communication.....	100
Figure 39 – Nested communication	101
Figure 40 – Device initiated data transfer.....	102
Figure 41 – Scanning and DTM assignment.....	103
Figure 42 – Multi-user system.....	104
Figure 43 – General synchronized locking mechanism.....	105
Figure 44 – General non-synchronized locking mechanism.....	106
Figure 45 – Parameterization in case of synchronized locking mechanism	106
Figure 46 – Modifications state machine of instance data	108
Figure 47 – Persistence state machine of instance data.....	109
Figure 48 – Management of redundant topology	112
Figure 49 – Associating data to a dataSetId.....	113
Figure 50 – Loading data for a supported dataSetId.....	114

Table 1 – Description of FDT objects	15
Table 2 – Description of associations between FDT objects	16
Table 3 – Transitions of DTM states	33
Table 4 – Transitions of DTM 'communication allowed' sub states	33
Table 5 – Operation phases	35
Table 6 – Actors	39
Table 7 – Operation Use Cases	41
Table 8 – Maintenance use cases	45
Table 9 – Planning use cases	49
Table 10 – Administrator use cases	52
Table 11 – Arguments for service PrivateDialogEnabled	60
Table 12 – Arguments for service SetLanguage	61
Table 13 – Arguments for service SetSystemGuiLabel	61
Table 14 – Arguments for service GetTypeInformation (for DTM)	62
Table 15 – Arguments for service GetTypeInformation (for BTM)	62
Table 16 – Arguments for service GetIdentificationInformation (for DTM)	63
Table 17 – Arguments for service GetIdentificationInformation (for BTM)	63
Table 18 – Arguments for service Hardware information (for DTM)	63
Table 19 – Arguments for service GetActiveTypeInfo	64
Table 20 – Arguments for service GetActiveTypeInfo (for BTM)	64
Table 21 – Arguments for service Initialize (for DTM)	64
Table 22 – Arguments for service Initialize (for BTM)	65
Table 23 – Arguments for service SetLinkedCommunicationChannel	65
Table 24 – Arguments for service EnableCommunication	65
Table 25 – Arguments for service ReleaseLinkedCommunicationChannel	66
Table 26 – Arguments for service ClearInstanceData	66
Table 27 – Arguments for service Terminate	66
Table 28 – Arguments for service GetFunctions	67
Table 29 – Arguments for service InvokeFunctions	68
Table 30 – Arguments for service GetGuiInformation	68
Table 31 – Arguments for service OpenPresentation	68
Table 32 – Arguments for service ClosePresentation	69
Table 33 – Arguments for service GetChannels	69
Table 34 – Arguments for service GetDocumentation	70
Table 35 – Arguments for service InstanceDataInformation	70
Table 36 – Arguments for service InstanceDataRead	71
Table 37 – Arguments for service InstanceDataWrite	71
Table 38 – Arguments for service Verify	71
Table 39 – Arguments for service CompareDataValueSets	72
Table 40 – Arguments for service DeviceDataInformation	72
Table 41 – Arguments for service DeviceDataRead	73
Table 42 – Arguments for service DeviceDataWrite	73

Table 43 – Arguments for service NetworkManagementInfoRead	74
Table 44 – Arguments for service NetworkManagementInfoWrite	74
Table 45 – Arguments for service DeviceStatus (for DTM)	74
Table 46 – Arguments for service CompareInstanceDataWithDeviceData (for DTM)	75
Table 47 – Arguments for service WriteDataToDevice (for DTM).....	75
Table 48 – Arguments for service ReadDataFromDevice(for DTM).....	76
Table 49 – Arguments for service OnLockInstanceData	76
Table 50 – Arguments for service OnUnlockInstanceData	76
Table 51 – Arguments for service OnInstanceDataChanged.....	77
Table 52 – Arguments for service OnInstanceChildDataChanged.....	77
Table 53 – Arguments for service Export	78
Table 54 – Arguments for service Import.....	78
Table 55 – Arguments for service ReadChannelInformation	79
Table 56 – Arguments for service WriteChannelInformation	79
Table 57 – Arguments for service ReadChannelData	79
Table 58 – Arguments for service WriteChannelData	80
Table 59 – Arguments for service GetSupportedProtocols	80
Table 60 – Arguments for service Connect.....	81
Table 61 – Arguments for service Disconnect.....	81
Table 62 – Arguments for service AbortRequest	82
Table 63 – Arguments for service AbortIndication	82
Table 64 – Arguments for service Transaction	82
Table 65 – Arguments for service SequenceDefine	83
Table 66 – Arguments for service SequenceStart.....	83
Table 67 – Arguments for service ValidateAddChild	84
Table 68 – Arguments for service ChildAdded.....	84
Table 69 – Arguments for service ValidateRemoveChild	85
Table 70 – Arguments for service ChildRemoved	85
Table 71 – Arguments for service SetChildrenAddresses	85
Table 72 – Arguments for service GetChannelFunctions	86
Table 73 – Arguments for service GetGuiInformation	86
Table 74 – Arguments for service Scan.....	87
Table 75 – Arguments for service OnErrorMessage	87
Table 76 – Arguments for service OnProgress	88
Table 77 – Arguments for service OnOnlineStatusChanged	88
Table 78 – Arguments for service OnFunctionsChanged	88
Table 79 – Arguments for service GetDtmInfoList	89
Table 80 – Arguments for service CreateChild (DTM)	89
Table 81 – Arguments for service CreateChild (BTM).....	89
Table 82 – Arguments for service DeleteChild	90
Table 83 – Arguments for service MoveChild	90
Table 84 – Arguments for service GetParentNodes	90
Table 85 – Arguments for service GetChildNodes	91

Table 86 – Arguments for service GetDtm.....	91
Table 87 – Arguments for service ReleaseDtm.....	91
Table 88 – Arguments for service OnAddedRedundantChild	92
Table 89 – Arguments for service OnRemovedRedundantChild.....	92
Table 90 – Arguments for service SaveInstanceData	92
Table 91 – Arguments for service LoadInstanceData	93
Table 92 – Arguments for service GetPrivateDtmStorageInformation	93
Table 93 – Arguments for service LockInstanceData.....	93
Table 94 – Arguments for service UnlockInstanceData	94
Table 95 – Arguments for service OnInstanceDataChanged.....	94
Table 96 – Arguments for service OpenPresentationRequest.....	94
Table 97 – Arguments for service ClosePresentationRequest	95
Table 98 – Arguments for service UserDialog	95
Table 99 – Arguments for service RecordAuditTrailEvent.....	96
Table 100 – Modifications state machine of instance data.....	108
Table 101 – Persistence state machine of instance data.....	109
Table 102 – Example life cycle of a DTM	110
Table A.1 – Basic data types	116
Table A.2 – Simple general data types.....	116
Table A.3 – Definition of classificationId enumeration values	123
Table A.4 – General structured data types.....	124
Table A.5 – Simple user information data types	133
Table A.6 – Structured user information data type.....	133
Table A.7 – Structured DTM information data type.....	133
Table A.8 – Simple BTM data types	134
Table A.9 – Structured BTM data types.....	134
Table A.10 – Simple device identification data types.....	136
Table A.11 – Structured device identification data types	137
Table A.12 – Simple function data types	139
Table A.13 – Structured function data types.....	140
Table A.14 – Simple auditTrail data types	142
Table A.15 – Structured auditTrail data types	142
Table A.16 – Simple documentation data types.....	143
Table A.17 – Structured documentation data types	143
Table A.18 – Simple deviceList data type.....	145
Table A.19 – Structured deviceList data type	145
Table A.20 – Simple network management data types	146
Table A.21 – Structured network management data types.....	146
Table A.22 – Simple instance data types	147
Table A.23 – Structured instance data types	149
Table A.24 – Simple device status data types	151
Table A.25 – Structured device status data types.....	152
Table A.26 – Simple online compare data types.....	152

Table A.27 – Structured online compare data types	152
Table A.28 – Simple user interface data types	153
Table A.29 – Structured user interface data types	153
Table A.30 – Fieldbus data types	154

Witholdrawn

iTeh STANDARD PREVIEW
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/588a9c1c-9ace-4af3-9524-5a074bb98cfb/iec-62453-2-2009>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIELD DEVICE TOOL (FDT) INTERFACE SPECIFICATION –

Part 2: Concepts and detailed description

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 provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 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.

International Standard IEC 62453-2 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation.

This part, in conjunction with the other parts of the first edition of the IEC 62453 series cancels and replaces IEC/PAS 62453-1, IEC/PAS 62453-2, IEC/PAS 62453-3, IEC/PAS 62453-4 and IEC/PAS 62453-5 published in 2006, and constitutes a technical revision.

This bilingual version (2014-04) corresponds to the monolingual English version, published in 2009-06.

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

FDIS	Report on voting
65E/124/FDIS	65E/137/RVD

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

The French version of this standard has not been voted upon.

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

A list of all parts of the IEC 62453 series, under the general title *Field Device Tool (FDT) interface specification*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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.

[IEC 62453-2:2009](https://standards.iteh.ai/catalog/standards/sist/588a9c1c-9ace-4af3-9524-5a074bb98cfb/iec-62453-2-2009)

<https://standards.iteh.ai/catalog/standards/sist/588a9c1c-9ace-4af3-9524-5a074bb98cfb/iec-62453-2-2009>

INTRODUCTION

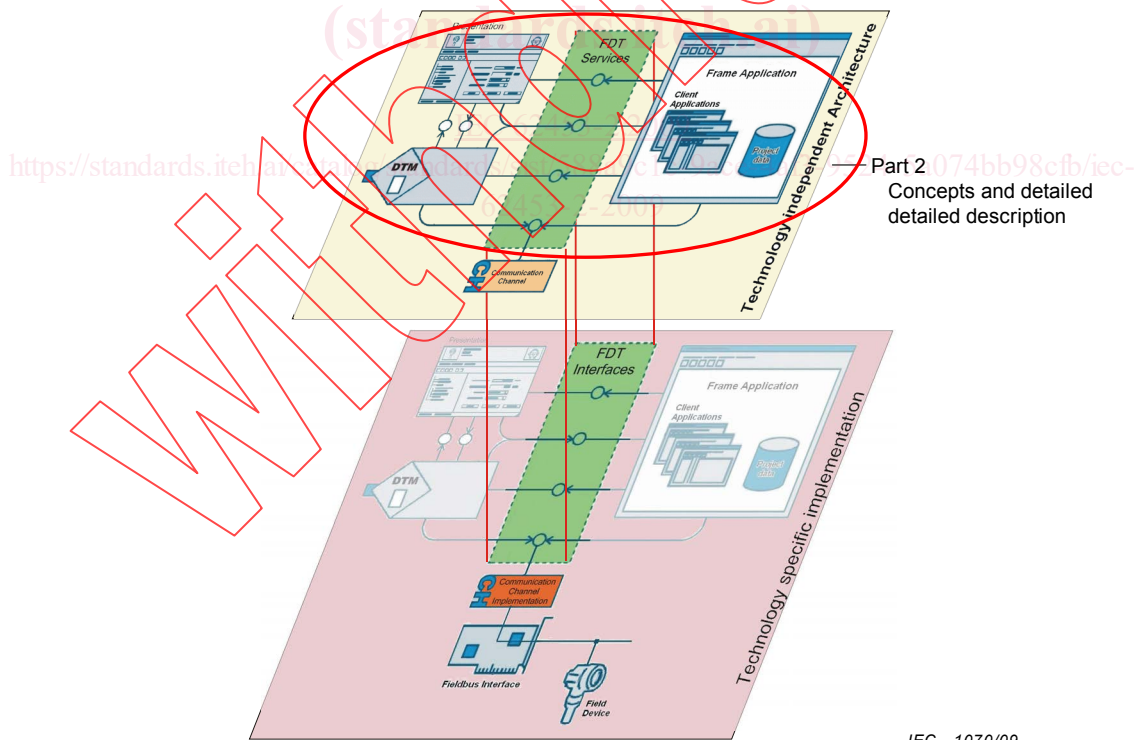
This part of IEC 62453 is an interface specification for developers of FDT (Field Device Tool) components for function control and data access within a client/server architecture. The specification is a result of an analysis and design process to develop standard interfaces to facilitate the development of servers and clients by multiple vendors that need to interoperate seamlessly.

With the integration of fieldbuses into control systems, there are a few other tasks which need to be performed. In addition to fieldbus- and device-specific tools, there is a need to integrate these tools into higher-level system-wide planning- or engineering tools. In particular, for use in extensive and heterogeneous control systems, typically in the area of the process industry, the unambiguous definition of engineering interfaces that are easy to use for all those involved is of great importance.

A device-specific software component created according to this standard is called Device Type Manager (DTM). It integrates all device-specific data, functions and business rules into the system via the FDT services defined herein.

The FDT/DTM approach is open for all kind of fieldbuses and enables integration variety of devices into heterogeneous systems.

Figure 1 shows how IEC 62453-2 is aligned in the structure of the IEC 62453 series.



IEC 1070/09

Figure 1 – Part 2 of the IEC 62453 series

FIELD DEVICE TOOL (FDT) INTERFACE SPECIFICATION –

Part 2: Concepts and detailed description

1 Scope

This part of IEC 62453 explains the common principles of the field device tool concept. These principles can be used in various industrial applications such as engineering systems, configuration programs and monitoring and diagnostic applications.

This standard specifies the general objects, general object behavior and general object interactions that provide the base of FDT.

2 Normative references

The following referenced documents are indispensable for the application of this specification. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61131 (all parts), *Programmable controllers*

IEC/TR 62390, *Common automation device – Profile guideline*

IEC 62453-1:2009, *Field Device Tool (FDT) interface specification – Part 1: Overview and guidance*

IEC 62453-3xy (all parts):2009, *Field Device Tool (FDT) interface specification – Part 3xy: Communication profile integration*

IEC/TR 62453-41:2009, *Field Device Tool (FDT) interface specification – Part 41: Object model integration profile – Common object model*

ISO/IEC 19501:2005, *Information technology – Open Distributed Processing – Unified Modeling Language (UML) Version 1.4.2*

3 Terms, definitions, symbols, abbreviated terms and conventions

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62453-1 and the following apply.

3.1.1

FDT version

implementation version defined by the related technology specific organization

NOTE The FDT version is specified in IEC/TR 62453-41.

3.1.2

monolithic DTM

is one single DTM that represents the complete device with all its modules