TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

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English Version

Field device tool (FDT) interface specification - Part 42: Object model integration profile - Common Language Infrastructure (IEC TR 62453-42:2016)

Spécification des interfaces des outils des dispositifs de terrain (FDT) - Partie 42: Profil d'intégration des modèles d'objets - Infrastructure commune de langage (IEC TR 62453-42:2016)

Field Device Tool (FDT)-Schnittstellenspezifikation - Teil 42: Profil zur Integration des Objektmodells - Common Language Infrastructure (CLI) (IEC TR 62453-42:2016)

This Technical Report was approved by CENELEC on 2019-03-18.

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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

European foreword

This document (CLC/TR IEC 62453-42:2019*)* consists of the text of the IEC TR 62453-42:2016 prepared by 65E: "Devices and integration in enterprise systems", of IEC technical committee 65: "Industrial process measurement, control and automation".

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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 When 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.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 62453-1	2016	Field device tool (FDT) interface specification - Part 1: Overview and guidance	EN 62453-1	2017
IEC 62453-2	2016	Field device tool (FDT) interface specification - Part 2: Concepts and detailed description	EN 62453-2	2017

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FIELD DEVICE TOOL (FDT) INTERFACE SPECIFICATION –

Part 42: Object model integration profile – Common Language Infrastructure

FOREWORD

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IEC TR 62453-42, which is a technical report, has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation:

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
65E/439/DTR	65E/486/RVC

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

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 stability 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.

A bilingual version of this publication may be issued at a later date.

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.

INTRODUCTION

This Part of IEC 62543, which is a technical report, 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, the unambiguous definition of engineering interfaces that are easy to use for all those involved is of great importance.

A device-specific software component, called DTM (Device Type Manager), is supplied by the field device manufacturer with its device. The DTM is integrated into engineering tools via the FDT interfaces defined in this specification. The approach to integration, in general, is open for all kind of fieldbusses and thus meets the requirements for integrating different kinds of devices into heterogeneous control systems.

Figure 1 shows how IEC TR 62453-42 is related to the IEC 62453 series.

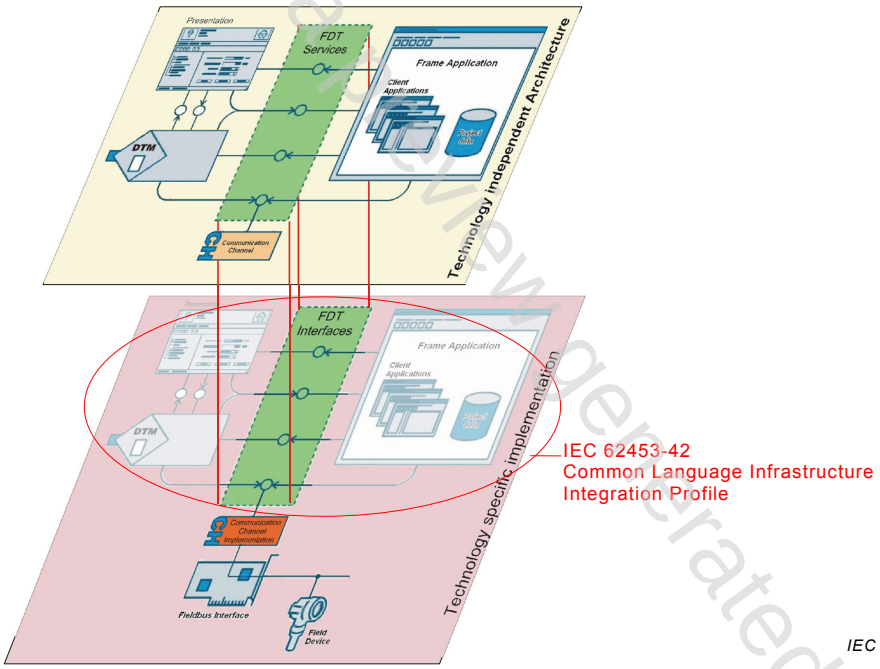

Figure 1 – Relation of IEC 62453-42 to the IEC 62453 series

The document structure is:

- Clause 3 explains the used terms, definitions and conventions
- Clause 4 introduces the general concepts of IEC 62453-42
- Clause 5 describes the technical concepts used to implement IEC 62453-42 and how FDT concepts are mapped to .NET Framework
- Clause 6 provides an overview of the FDT Objects, their interfaces and behavior
- Clause 7 presents an overview of the IEC 62453-42 datatypes
- Clause 8 shows the interaction of FDT Objects at runtime
- Clause 9 explains rules related to installation and deployment of DTMs

- Clause 10 explains how FDT life cycle concepts are implemented
- Clause 11 shows examples for Frame Application architectures

FIELD DEVICE TOOL (FDT) INTERFACE SPECIFICATION –

Part 42: Object model integration profile – Common Language Infrastructure

1 Scope

This part of IEC 62453, which is a technical report, defines how the common FDT principles are implemented based on the .NET technology, including the object behavior and object interaction via .NET interfaces.

This document specifies FDT version 2.0.

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 62453-1:—[1], *Field Device Tool (FDT) interface specification – Part 1: Overview and guidance*

IEC 62453-2:—[1], *Field Device Tool (FDT) interface specification – Part 2: Concepts and detailed description*

3 Terms, definitions, abbreviations and conventions

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62453-1, IEC 62453-2 as well as the following apply.

3.1.1
action
execution of a function which may involve several calls to interface methods of different FDT Objects

3.1.2
asynchronous methods
methods that trigger execution of asynchronous operations

Note 1 to entry: See also 5.6.7.

3.1.3
asynchronous operation
operation that is performed while the FDT object (client) that has requested the operation does not wait for the result, but the client is notified when the operation is finished

[1] To be published concurrently with this technical report.