



SLOVENSKI STANDARD
oSIST prEN IEC 62769-6-100:2022
01-maj-2022

Integracija procesne naprave (FDI) - 6-100. del: Načrtovanje tehnologije - Mreža

Field Device Integration (FDI) - Part 6-100: Technology Mapping - Net

Intégration des appareils de terrain (FDI) - Partie 6-100: Mapping de technologies - Reseau

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ICS:

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35.240.50	Uporabniške rešitve IT v industriji	IT applications in industry

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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.
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TITLE:

Field Device Integration (FDI) - Part 6-100: Technology Mapping - Net

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

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FIELD DEVICE INTEGRATION (FDI) –

Part 6-100: Technology Mapping - .NET

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IEC 62769-6-100 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.

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

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

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.

111 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance
112 with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at
113 www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in
114 greater detail at www.iec.ch/standardsdev/publications.

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

- 118 • reconfirmed,
- 119 • withdrawn,
- 120 • replaced by a revised edition, or
- 121 • amended.

122

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FIELD DEVICE INTEGRATION (FDI) –

Part 6-100: Technology Mapping - .NET

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130 **1 Scope**

131 This part of IEC 62769 specifies the technology mapping for the concepts described in the Field Device
132 Integration (FDI) standard. The technology mapping focuses on implementation regarding the components
133 FDI Client and User Interface Plug-in (UIP) using the Runtime .NET. This runtime is specific only to the
134 WORKSTATION platform as defined in IEC 62769-4.

135 **2 Normative references**

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

139 IEC 61804 (all parts), *Function blocks (FB) for process control and Electronic Device Description*
140 *Language (EDDL)*

141 FCG TS10099, *Field Device Integration (FDI) – Technology Management*

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

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

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

145 IEC 62769-6, *Field Device Integration (FDI) – Part 6: Technology Mappings*

146 ISO/IEC 19505-1, *Information technology – Object Management Group Unified Modeling Language (OMG*
147 *UML) – Part 1: Infrastructure*

148 **3 Terms, definitions, abbreviated terms, acronyms and conventions**

149 **3.1 Terms and definitions**

150 For the purposes of this document, the terms and definitions given in IEC 62769-1, IEC 62769-6, as well
151 as the following apply.

152 **1.1.1**

153 **Application Domain**

154 isolated environment where applications execute

155 **1.1.2**

156 **Assembly**

157 reusable, version information providing, and self-describing building block of a CLR application

- 158 **1.1.3**
 159 **Global Assembly Cache**
 160 machine-wide code cache that stores Assemblies specifically designated to be shared by several
 161 applications
- 162 **1.1.4**
 163 **Windows Registry**
 164 system-defined database in which applications and system components store and retrieve configuration
 165 data

166 **3.2 Abbreviated terms and acronyms**

167 For the purposes of this document, the abbreviated terms and acronyms given in IEC 62769-1,
 168 IEC 62769-6, as well as the following apply.

MSI	Microsoft Installer
WPF	Windows Presentation Foundation
UML	Unified Modeling Language

169 170 **3.3 Symbols**

171 Figures in this document use the graphical symbols according to ISO/IEC 19505-1, (UML 2.0).

172 **4 Technical concepts**

173 **4.1 General**

174 **4.1.1 Overview**

175 In 4.1.2, 4.2, 4.3, 4.4, and 4.5, this document describes the technology base for UIP implementation based
 176 on the runtime .NET Framework CLR4, the hardware and software environment including the related
 177 implementation rules. Clause 4 follows a lifecycle (use case) oriented approach.

178 Subclause 4.6 describes the copy deployment procedures and related implementation rules for the UIP
 179 and the FDI Client. UIP executable instantiation and termination is described in 4.7. Subclause 4.8 defines
 180 the rules about interaction between the FDI Client and the UIP. Security related definitions are written in
 181 4.9. The service interface definitions for the FDI Client and the UIP are found in Clause 5.

182 **4.1.2 FDI Type Library**

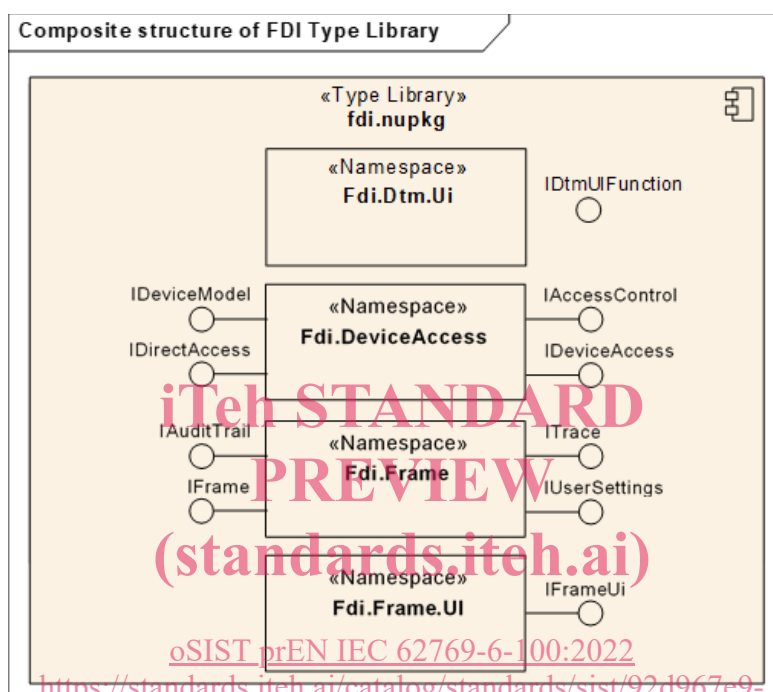
183 The Device Access Services and the UIP Services can be modelled as .NET interfaces passing .NET data
 184 type arguments. These interfaces and data types are used for the data exchange and interaction between
 185 the UIP and the FDI Client. For runtime error handling purposes during interface method calls .NET
 186 exceptions classes are defined.

187 The FDI .NET interfaces, data types, and exception classes are defined in a single FDI Type Library. The
 188 FDI Type Library is provided within a Nuget Package, which contains one or more strong named
 189 assemblies. The file name of this Nuget Package shall be Fdi.<version>.nupkg. The FDI Type Library shall
 190 be versioned as per IEC 62769-1 – section 8.1. The FDI Type Library is part of the FDI Core Technology
 191 as per IEC 62769-1 – section 8.3.2.1. Therefore, it directly influences the FDI Technology Version. All
 192 compatible changes of the FDI Type Library lead to an increase of the minor portion of the FDI Technology
 193 Version. Incompatible changes lead to an increase of the major portion of the FDI Technology Version
 194 (see IEC 62769-1 – section 8.3.2.2). The version information of the FDI Type Library can be found in
 195 FCG TS10099.

196 The FDI Type Library is signed with a single unique key by the issuer of the file. The FDI Type Library
 197 shall be installed separately as part of every FDI Client installation. User Interface Plug-Ins (UIP) and the
 198 FDI Client Application shall use this instance of the FDI Type Library. UIPs shall not carry or deploy the
 199 FDI Type Library. The FDI Client is responsible to provide means to allow updates of this type library over
 200 time.

201

202 Figure 1 shows the FDI Type Library structure.



203

204

Figure 1 – FDI Type Library structure

205 NOTE The composite structure diagram shows only the core interfaces that implement the interfaces defined in .

206 4.2 UIP representation

207 The UIP Variant can contain either a single or multiple runtime modules (.NET Assembly) and their related
 208 supplementary files (for example: resource files). The runtime module of the UIP Variant is called UIP
 209 executable. The supplementary file(s) of the UIP Variant is/are called UIP supplement(s).

210 UIP supplement(s) is/are stored under (a) subfolder(s) of the UIP executable installation directory

211 EXAMPLE Examples of UIP supplementary data files include resource files and application configuration data.

212 The supported RuntimeIds and .NET Framework versions for a specific FDI Technology Version are
 213 specified in FCG TS10099 FDI Technology Management.

214 The UIP Variant shall be self-contained. All UIP required libraries (.NET Assemblies) required by a UIP
 215 Variant are stored within the same Folder.

216 4.3 UIP executable representation

217 The implementation of the UIP depends on the type of user interface elements that can be embedded into
 218 the user interface hosting environment of the FDI Client. UIP shall be implemented as a .NET
 219 System.Windows.Forms class UserControl or a WPF System.Windows.Controls class UserControl.