



# INTERNATIONAL STANDARD



Field device integration (FDI) –  
Part 5: **FDI** Information Model

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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Withdrawn

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

### FIELD DEVICE INTEGRATION (FDI) –

#### Part 5: ~~FDI~~ Information Model

#### FOREWORD

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**This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 62769-5:2015. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.**

International Standard 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.

This second edition cancels and replaces the first edition published in 2015. This edition constitutes a technical revision.

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

- a) support for generic protocol extension for faster adoption of other technologies;
- b) support of new protocols;
- c) generic protocol extension to allow adoption of other communication protocols;
- d) based on generic protocol extension: Modbus RTU.

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

FDIS	Report on voting
65E/762/FDIS	65E/772/RVD

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

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

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.

This standard contains attached files in the form of XML schema. These files are intended to be used as a complement and do not form an integral part of the standard.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://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- withdrawn,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 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

~~The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of patents concerning~~

- ~~a) Method for the Supplying and Installation of Device-Specific Functionalities, see Patent Family DE10357276;~~
- ~~b) Method and device for accessing a functional module of automation system, see Patent Family EP2182418;~~
- ~~c) Methods and apparatus to reduce memory requirements for process control system software applications, see Patent Family US2013232186;~~
- ~~d) Extensible Device Object Model, see Patent Family US12/893,680.~~

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The IEC 62769 series has the general title *Field Device Integration (FDI)* and the following parts:

- Part 1: Overview
- Part 2: FDI Client
- Part 3: FDI Server
- Part 4: FDI Packages
- Part 5: FDI Information Model
- Part 6: FDI Technology Mapping
- Part 7: FDI Communication Devices

- Part 100: Profiles – Generic Protocol Extensions
- Part 101-1: Profiles – Foundation Fieldbus H1
- Part 101-2: Profiles – Foundation Fieldbus HSE
- Part 103-1: Profiles – PROFIBUS
- Part 103-4: Profiles – PROFINET
- Part 109-1: Profiles – HART and WirelessHART
- Part 115-2: Profiles – Protocol-specific Definitions for Modbus RTU
- Part 150-1: Profiles – ISA 100.11a

Withdrawn

## FIELD DEVICE INTEGRATION (FDI) –

### Part 5: **FDI** Information Model

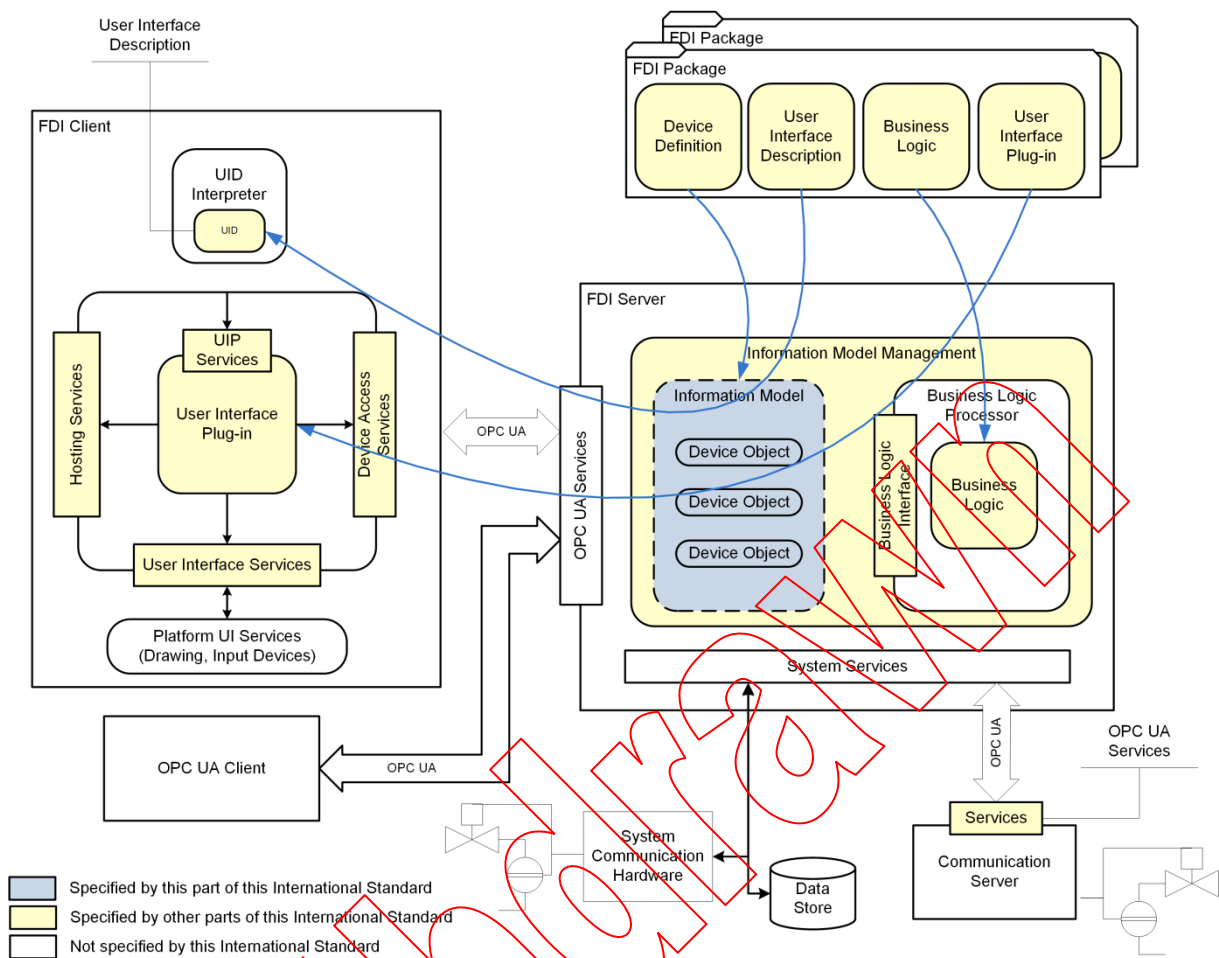
#### 1 Scope

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

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

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

Withhold



IEC

Figure 1 – FDI architecture diagram

## 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 61784-1, *Industrial communication networks – Profiles – Part 1: Fieldbus profiles*

IEC 61804-3<sup>4</sup>, *Function blocks (FB) for process control and Electronic Device Description Language (EDDL) – Part 3: EDDL syntax and semantics*

IEC 61804-4, *Function blocks (FB) for process control and electronic device description language (EDDL) – Part 4: EDD interpretation*

IEC 62541-3, *OPC unified architecture – Part 3: Address Space Model*

IEC 62541-4, *OPC unified architecture – Part 4: Services*

<sup>4</sup> ~~To be published.~~

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IEC 62541-5, *OPC unified architecture – Part 5: Information Model*

IEC 62541-6, *OPC unified architecture – Part 6: Mappings*

IEC 62541-8, *OPC unified architecture – Part 8: Data Access*

IEC 62541-100<sup>2</sup>, *OPC unified architecture – Part 100: OPC UA for Devices*

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

~~NOTE—IEC 62769-1 is technically identical to FDI-2021~~

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

~~NOTE—IEC 62769-2 is technically identical to FDI-2022~~

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

~~NOTE—IEC 62769-4 is technically identical to FDI-2024~~

IEC 62769-7, *Field Device Integration (FDI) – Part 7: FDI Communication Devices*

~~NOTE—IEC 62769-7 is technically identical to FDI-2027~~

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<sup>2</sup> ~~Under consideration.~~

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Field device integration (FDI) –  
Part 5: Information Model**

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

Withdrawing

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

### FIELD DEVICE INTEGRATION (FDI) –

#### Part 5: Information Model

#### FOREWORD

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International Standard 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.

This second edition cancels and replaces the first edition published in 2015. This edition constitutes a technical revision.

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

- a) support for generic protocol extension for faster adoption of other technologies;
- b) support of new protocols;
- c) generic protocol extension to allow adoption of other communication protocols;
- d) based on generic protocol extension: Modbus RTU.

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

FDIS	Report on voting
65E/762/FDIS	65E/772/RVD

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

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

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.

This standard contains attached files in the form of XML schema. These files are intended to be used as a complement and do not form an integral part of the standard.

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

- reconfirmed,
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## INTRODUCTION

The IEC 62769 series has the general title *Field Device Integration (FDI)* and the following parts:

- Part 1: Overview
- Part 2: FDI Client
- Part 3: FDI Server
- Part 4: FDI Packages
- Part 5: FDI Information Model
- Part 6: FDI Technology Mapping
- Part 7: FDI Communication Devices
- Part 100: Profiles – Generic Protocol Extensions
- Part 101-1: Profiles – Foundation Fieldbus H1
- Part 101-2: Profiles – Foundation Fieldbus HSE
- Part 103-1: Profiles – PROFIBUS
- Part 103-4: Profiles – PROFINET
- Part 109-1: Profiles – HART and WirelessHART
- Part 115-2: Profiles – Protocol-specific Definitions for Modbus RTU
- Part 150-1: Profiles – ISA 100.11a

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# FIELD DEVICE INTEGRATION (FDI) – Part 5: Information Model

## 1 Scope

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

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

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

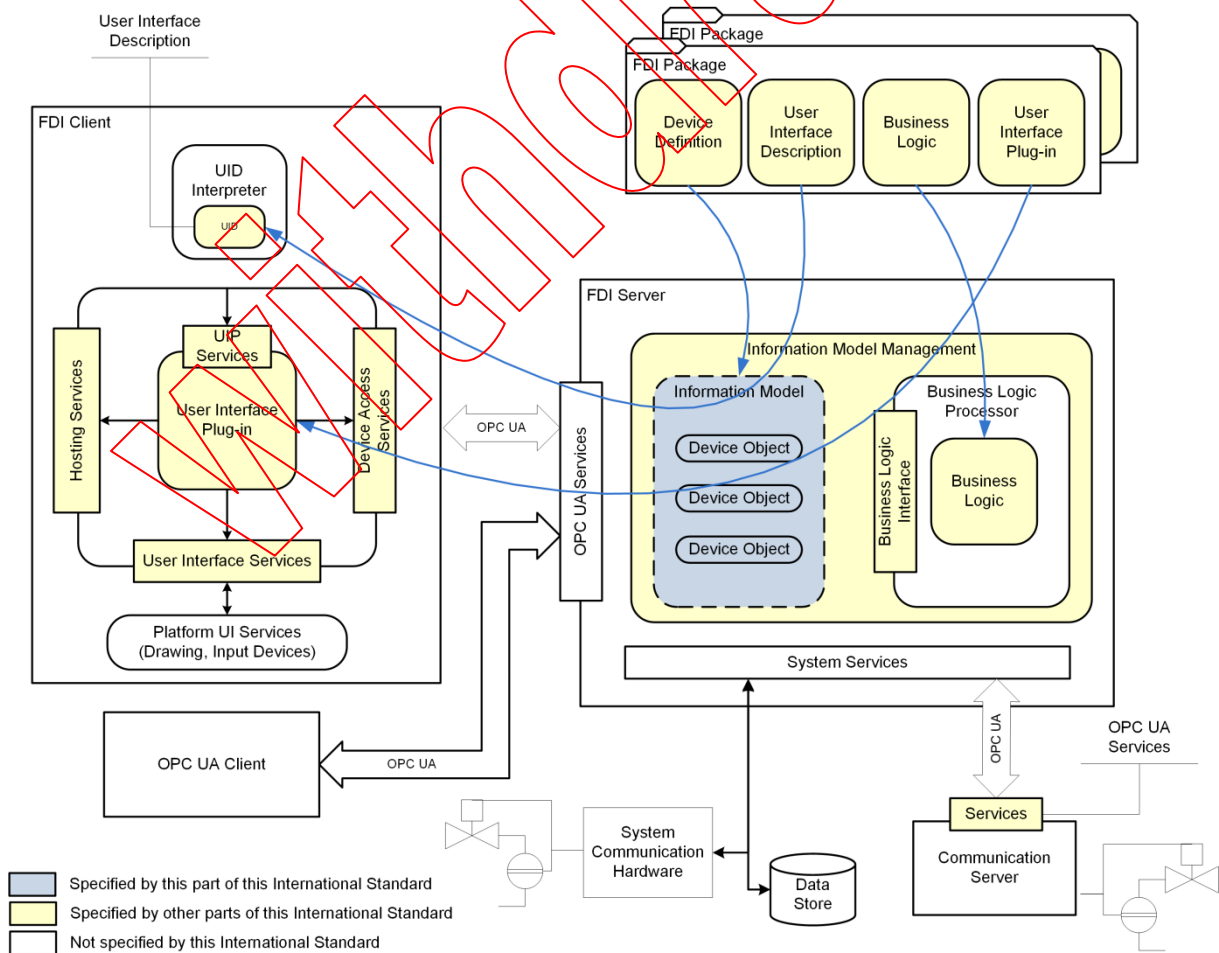


Figure 1 – FDI architecture diagram

## 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 61784-1, *Industrial communication networks – Profiles – Part 1: Fieldbus profiles*

IEC 61804-3, *Function blocks (FB) for process control and Electronic Device Description Language (EDDL) – Part 3: EDDL syntax and semantics*

IEC 61804-4, *Function blocks (FB) for process control and electronic device description language (EDDL) – Part 4: EDD interpretation*

IEC 62541-3, *OPC unified architecture – Part 3: Address Space Model*

IEC 62541-4, *OPC unified architecture – Part 4: Services*

IEC 62541-5, *OPC unified architecture – Part 5: Information Model*

IEC 62541-6, *OPC unified architecture – Part 6: Mappings*

IEC 62541-8, *OPC unified architecture – Part 8: Data Access*

IEC 62541-100, *OPC unified architecture – Part 100: OPC UA for Devices*

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

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

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

IEC 62769-7, *Field Device Integration (FDI) – Part 7: FDI Communication Devices*



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Withdrawn

## COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

### INTÉGRATION DES APPAREILS DE TERRAIN (FDI) –

#### Partie 5: Modèle d'Information

#### AVANT-PROPOS

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La Norme internationale IEC 62769-5 a été établie par le sous-comité 65E: Les dispositifs et leur intégration dans les systèmes de l'entreprise, du comité d'études 65 de l'IEC: Mesure, commande et automation dans les processus industriels.

Cette deuxième édition annule et remplace la première édition parue en 2015. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

- a) prise en charge de l'extension de protocoles génériques qui vise à accélérer l'adoption d'autres technologies;
- b) prise en charge de nouveaux protocoles;
- c) extension de protocoles génériques qui permet l'adoption d'autres protocoles de communication;
- d) d'après l'extension de protocoles génériques: Modbus RTU.

Le texte de cette Norme internationale est issu des documents suivants:

FDIS	Rapport de vote
65E/762/FDIS	65E/772/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cette Norme internationale.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2.

Une liste de toutes les parties de la série IEC 62769, publiées sous le titre général *Intégration des appareils de terrain (FDI)*, peut être consultée sur le site web de l'IEC.

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## INTRODUCTION

La série IEC 62769 est publiée sous le titre général "*Intégration des appareils de terrain (FDI)*" et comporte les parties suivantes:

- Partie 1: Vue d'ensemble
- Partie 2: Client FDI
- Partie 3: Serveur FDI
- Partie 4: Paquetages FDI
- Partie 5: Modèle d'Information
- Partie 6: Mapping de technologies FDI
- Partie 7: Appareils de Communication FDI
- Partie 100: Profils – Extensions de protocoles génériques
- Partie 101-1: Profils – Foundation Fieldbus H1
- Partie 101-2: Profils – Foundation Fieldbus HSE
- Partie 103-1: Profils – PROFIBUS
- Partie 103-4: Profils – PROFINET
- Partie 109-1: Profils – HART et WirelessHART
- Partie 115-2: Profils – Définitions spécifiques au protocole pour Modbus-RTU
- Partie 150-1: Profils – ISA 100.11a



# INTÉGRATION DES APPAREILS DE TERRAIN (FDI) – Partie 5: Modèle d'Information

## 1 Domaine d'application

La présente partie de l'IEC 62769 définit le Modèle d'Information FDI. L'un des principaux objectifs du Modèle d'Information est de refléter la topologie du système d'automatisation. Par conséquent, il représente les appareils du système d'automatisation ainsi que les réseaux de communication connectés, y compris leurs propriétés, leurs relations et les opérations dont ils peuvent faire l'objet. Les types présents dans l'AddressSpace (Espace d'adressage) du Serveur FDI constituent un catalogue, construit à partir des *FDI Packages* (Paquetages FDI).

Les types fondamentaux pour le Modèle d'Information FDI sont définis dans l'OPC UA pour les Appareils (IEC 62541-100). Le Modèle d'Information FDI spécifie des extensions pour quelques cas spéciaux et explique la façon dont ces types sont utilisés et dont les contenus sont construits à partir des éléments de DevicePackages.

L'architecture FDI complète est représentée à la Figure 1. Les composants architecturaux qui relèvent du domaine d'application du présent document ont été mis en évidence dans cette représentation.

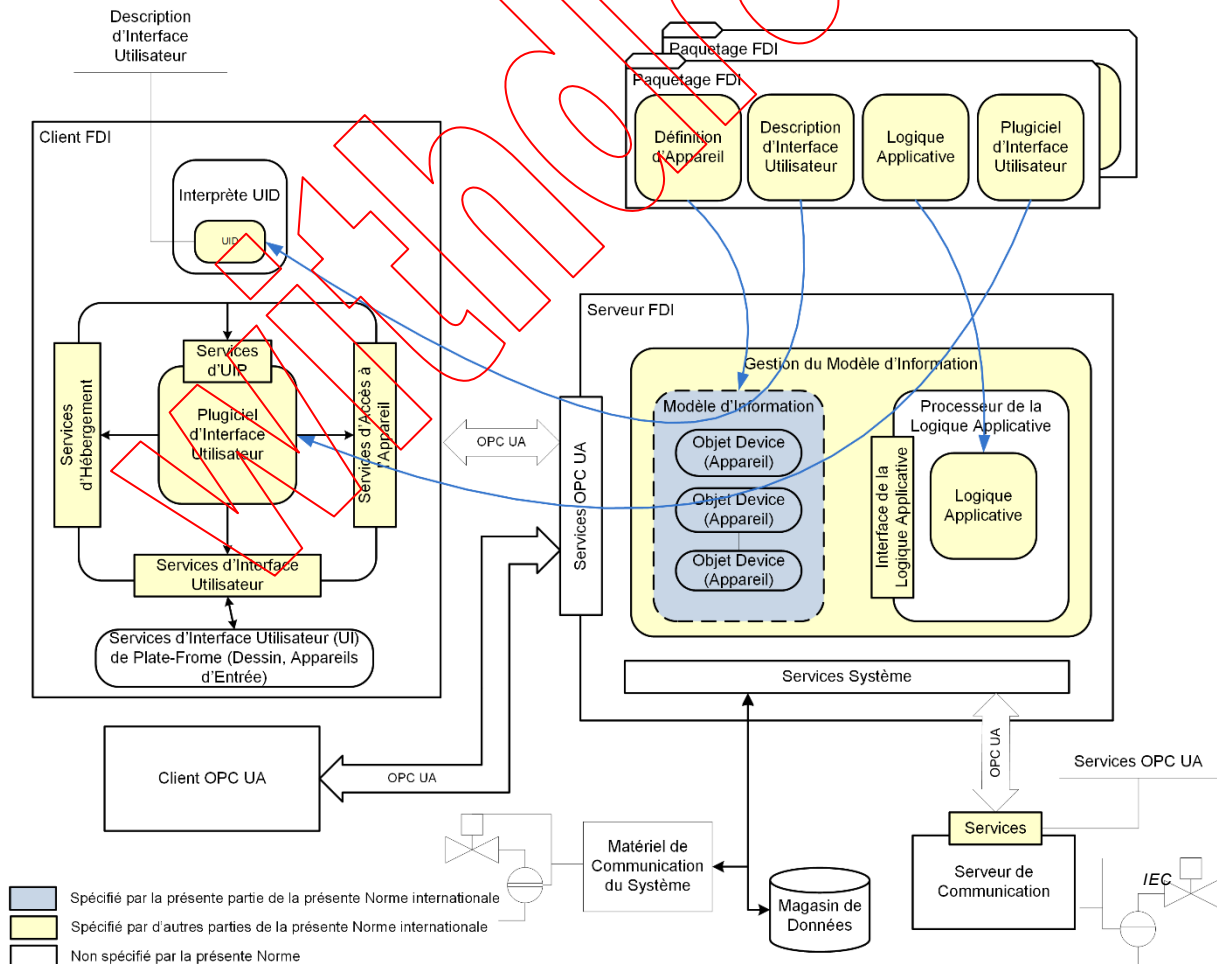


Figure 1 – Diagramme de l'architecture FDI

## 2 Références normatives

Les documents suivants sont cités dans le texte de sorte qu'ils constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 61784-1, *Réseaux de communication industriels – Profils – Partie 1: Profils de bus de terrain*

IEC 61804-3, *Blocs Fonctionnels (FB) pour les procédés industriels et le Langage de Description Electronique de Produit (EDDL) – Partie 3: Sémantique et syntaxe EDDL*

IEC 61804-4, *Blocs fonctionnels (FB) pour les procédés industriels et le langage de description électronique de produit (EDDL) – Partie 4: Interprétation EDD*

IEC 62541-3, *Architecture unifiée OPC – Partie 3: Modèle d'Espace d'Adressage*

IEC 62541-4, *Architecture Unifiée OPC – Partie 4: Services*

IEC 62541-5, *Architecture unifiée OPC – Partie 5: Modèle d'informations*

IEC 62541-6, *Architecture unifiée OPC – Partie 6: Correspondances*

IEC 62541-8, *Architecture unifiée OPC – Partie 8: Accès aux données*

IEC 62541-100, *Architecture unifiée OPC – Partie 100: Interface d'appareils*

IEC 62769-1, *Intégration des appareils de terrain (FDI) – Partie 1: Vue d'ensemble*

IEC 62769-2, *Intégration des appareils de terrain (FDI) – Partie 2: Client FDI*

IEC 62769-4, *Intégration des appareils de terrain (FDI) – Partie 4: Paquetages FDI*

IEC 62769-7, *Intégration des appareils de terrain (FDI) – Partie 7: Appareils de Communication FDI*