

# SLOVENSKI STANDARD

## SIST EN 62541-10:2012

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### Enotna arhitektura OPC - 10. del: Programi (IEC 62541-10:2012)

OPC Unified Architecture - Part 10: Programs (IEC 62541-10:2012)

OPC Unified Architecture - Teil 10: Programme (IEC 62541-10:2012)

Architecture unifiée OPC - Partie 10: Programme (CEI 62541-10:2012)

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EUROPEAN STANDARD  
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**OPC unified architecture -  
Part 10: Programs  
(IEC 62541-10:2012)**

Architecture unifiée OPC -  
Partie 10: Programmes  
(CEI 62541-10:2012)

OPC Unified Architecture -  
Teil 10: Programme  
(IEC 62541-10:2012)

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## Foreword

The text of document 65E/244/FDIS, future edition 1 of IEC 62541-10, 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 62541-10:2012.

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## Annex ZA (normative)

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NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC/TR 62541-1	-	OPC unified architecture - Part 1: Overview and concepts	CLC/TR 62541-1	-
IEC 62541-3	2010	OPC unified architecture - Part 3: Address space model	EN 62541-3	2010
IEC 62541-4	2011	OPC unified architecture - Part 4: Services	EN 62541-4	2011
IEC 62541-5	-	OPC unified architecture - Part 5: Information model	EN 62541-5	-
IEC 62541-7	-	OPC unified architecture - Part 7: Profiles	EN 62541-7	-

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# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**OPC unified architecture –  
Part 10: Programs**

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Partie 10: Programmes**

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## OPC UNIFIED ARCHITECTURE –

## Part 10: Programs

## FOREWORD

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International Standard IEC 62541-10 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 standard is based on the following documents:

FDIS	Report on voting
65E/244/FDIS	65E/269/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.

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

A list of all parts of the IEC 62541 series, published under the general title *OPC unified architecture*, 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

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- withdrawn,
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## INTRODUCTION

This International Standard is a specification intended for developers of OPC UA applications. The specification is a result of an analysis and design process to develop a standard interface to facilitate the development of applications by multiple vendors that inter-operate seamlessly together.

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## OPC UNIFIED ARCHITECTURE –

### Part 10: Programs

#### 1 Scope

This part of the IEC 62541 series specifies the standard representation of *Programs* as part of the OPC Unified Architecture and its defined information model. This includes the description of the *NodeClasses*, standard *Properties*, *Methods* and *Events* and associated behaviour and information for *Programs*.

The complete address space model including all *NodeClasses* and *Attributes* is specified in IEC 62541-3. The services such as those used to invoke the *Methods* used to manage *Programs* are specified in IEC 62541-4.

#### 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/TR 62541-1, *OPC Unified Architecture – Part 1: Overview and Concepts*

IEC 62541-3:2010, *OPC unified architecture – Part 3: Address Space Model*

IEC 62541-4:2011, *OPC unified architecture – Part 4: Services*

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

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

#### 3 Terms, definitions and abbreviations

##### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC/TR 62541-1 and IEC 62541-3, as well as the following apply.

##### 3.1.1 function

programmatic task performed at a server or device, usually accomplished by computer code execution

##### 3.1.2 finite State Machine

sequence of states and valid state transitions along with the causes and effects of those state transitions that define the actions of a *Program* in terms of discrete stages

**3.1.3****ProgramType**

*ObjectType Node* that represents the type definition of a *Program* and is a subtype of the *FiniteStateMachineType*

**3.1.4****Program Control Method**

*Method* specified by this specification having specific semantics designed for the control of a *Program* by causing a state transition

**3.1.5****Program Invocation**

unique *Object* instance of a *Program* existing on a *Server*

Note 1 to entry: The Program Invocation is distinguished from other Object instances of the same ProgramType by the object node's unique browse path.

**3.2 Abbreviations**

API Application Programming Interface

DA Data Access

FSM Finite State Machine

HMI Human Machine Interfaces

PCM Program Control Method

PGM Program

PI Program Invocation

PLC Programmable Logic Controller

UA Unified Architecture

UML Unified Modelling Language

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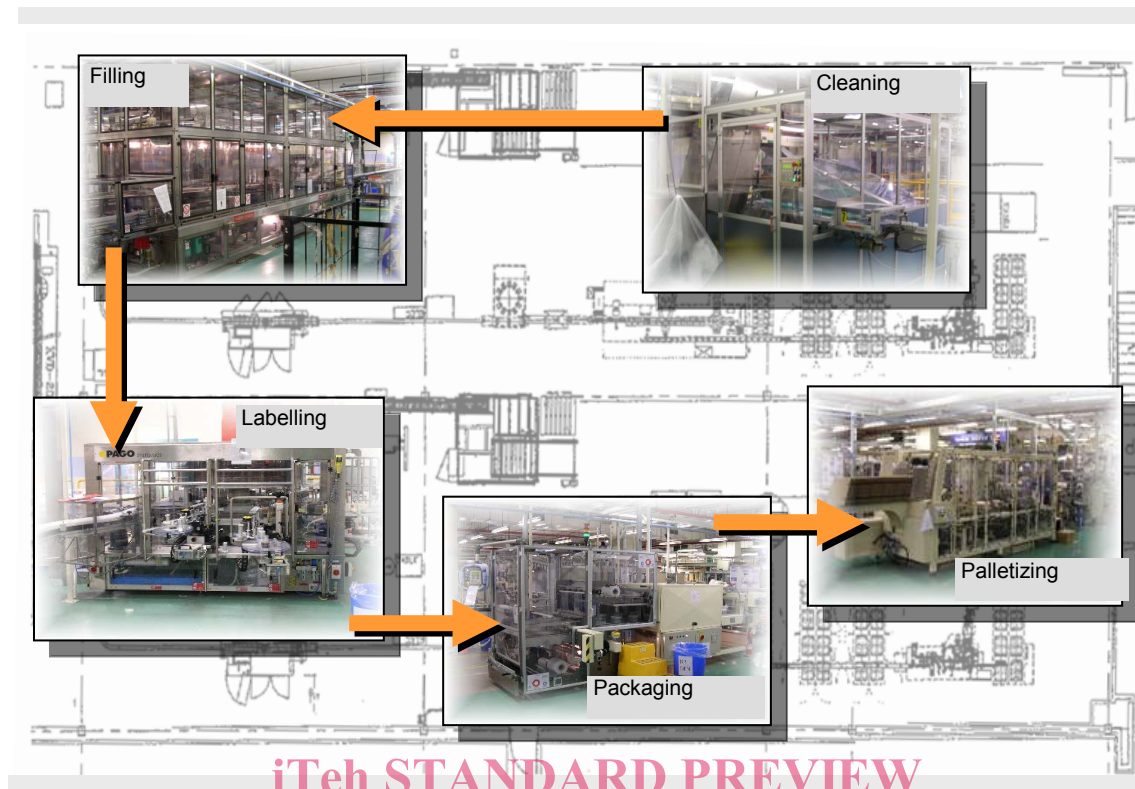
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**4 Concepts****4.1 General**

Integrated automation facilities manage their operations through the exchange of data and coordinated invocation of system functions like illustrated in Figure 1. *Services* are required to perform the data exchanges and to invoke the functions that constitute system operation. These functions may be invoked through human machine interfaces, cell controllers, or other supervisory control and data acquisition type systems. OPC UA defines *Methods* and *Programs* as an interoperable way to advertise, discover, and request these functions. They provide a normalizing mechanism for the semantic description, invocation of, and result reporting of these functions. Together *Methods* and *Programs* complement the other OPC UA *Services* and *ObjectTypes* to facilitate the operation of an automation environment using a client server hierarchy.



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Figure 1 – Automation facility control

IEC 1511/12

*Methods* and *Programs* model functions typically having different scopes, behaviours, life-times, and complexities in *OPC Servers* and the underlying systems. These functions are **not** normally characterized by the reading or writing of data which is accomplished with the OPC UA *Attribute* service set.

*Methods* represent basic functions in the server that can be invoked by a client. *Programs* by contrast, model more complex, stateful functionality in the system. For example, a method call may be used to perform a calculation or reset a counter. A *Program* is used to run and control a batch process, execute a machine tool part program, or manage a domain download. *Methods* and their invocation mechanism are described in IEC 62541-3 and IEC 62541-4.

This specification describes the extensions to, or specific use of the core capabilities defined in IEC 62541-5. Support for the feature described in this specification is described by means of *Profiles* in IEC 62541-7.

## 4.2 Programs

### 4.2.1 Overview

*Programs* are complex functions in a server or underlying system that can be invoked and managed by an *OPC UA Client*. *Programs* can represent any level of functionality within a system or process in which client control or intervention is required and progress monitoring is desired. Figure 2 illustrates the model.