SLOVENSKI STANDARD
SIST-TP CLC/TR 62541-1:2010

01-december-2010

Poenotena arhitektura OPC - 1. del: Pregled in koncepti (IEC/TR 62541-1:2010)

OPC unified architecture - Part 1: Overview and concepts (IEC/TR 62541-1:2010)

OPC Unified Architecture - Teil 1: Übersicht und Konzepte (IEC/TR 62541-1:2010)

Architecture unifiée OPC - Partie 1: Vue d'ensemble et concepts (IEC/TR 62541-1:2010)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: **CLC/TR 62541-1:2010**

SIST-TP CLC/TR 62541-1:2010
https://standards.iteh.ai/catalog/standards/sist/23561e69-715b-4ebb-a3a5-f3f1daa955f9/sist-tp-clc-tr-62541-1-2010

ICS:

25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
35.100.01	Medsebojno povezovanje odprtih sistemov na splošno	Open systems interconnection in general

SIST-TP CLC/TR 62541-1:2010 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

SIST-TP CLC/TR 62541-1:2010

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST-TP CLC/TR 62541-1:2010
https://standards.iteh.ai/catalog/standards/sist/23561e69-715b-4ebb-a3a5-f3f1daa955f9/sist-tp-clc-tr-62541-1-2010

SIST-TP CLC/TR 62541-1:2010

TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CLC/TR 62541-1

August 2010

ICS 25.040.40; 35.100.01

English version

OPC unified architecture - Part 1: Overview and concepts

(IEC/TR 62541-1:2010)

Architecture unifiée OPC - Partie 1: Vue d'ensemble et concepts (CEI/TR 62541-1:2010)

OPC Unified Architecture - Teil 1: Übersicht und Konzepte (IEC/TR 62541-1:2010)

iTeh STANDARD PREVIEW

This Technical Report was approved by CENELEC on 2010-06-25.

(standards.iteh.ai)

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

SIST-TP CLC/TR 62541-1:2010
https://standards.iteh.ai/catalog/standards/sist/23561e69-715b-4ebb-a3a5-f3f1daa955f9/sist-tp-clc-tr-62541-1-2010

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

© 2010 CENELEC - All rights of exploitation in any form and by any means reserved worldwide for CENELEC members.

Ref. No. CLC/TR 62541-1:2010 E

SIST-TP CLC/TR 62541-1:2010

Foreword

The text of the Technical Report IEC/TR 62541-1:2010, prepared by SC 65E, Devices and integration in enterprise systems, of IEC TC 65, Industrial-process measurement, control and automation, was submitted to vote and was approved by CENELEC as CLC/TR 62541-1 on 2010-06-25.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the Technical Report IEC/TR 62541-1:2010 was approved by CENELEC as a Technical Report without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC/TR 62541-2	NOTE	Harmonized as CLC/TR 62541-2.
IEC 62541-3	NOTE	Harmonized as EN 62541-3.
IEC 62541-4	NOTE	Harmonized as EN 62541-4.
IEC 62541-5	NOTE	Harmonized as EN 62541-5.
IEC 62541-6	NOTE	Harmonized as EN 62541-6.
IEC 62541-8	NOTE	Harmonized as EN 62541-8.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST-TP CLC/TR 62541-1:2010
https://standards.iteh.ai/catalog/standards/sist/23561e69-715b-4ebb-a3a5-f3f1daa955f9/sist-tp-clc-tr-62541-1-2010

SIST-TP CLC/TR 62541-1:2010

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 62541	Series	OPC unified architecture	EN 62541	Series

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST-TP CLC/TR 62541-1:2010
https://standards.iteh.ai/catalog/standards/sist/23561e69-715b-4ebb-a3a5-f3f1daa955f9/sist-tp-clc-tr-62541-1-2010

SIST-TP CLC/TR 62541-1:2010

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST-TP CLC/TR 62541-1:2010
https://standards.iteh.ai/catalog/standards/sist/23561e69-715b-4ebb-a3a5-f3f1daa955f9/sist-tp-clc-tr-62541-1-2010

SIST-TP CLC/TR 62541-1:2010

IEC/TR 62541-1

Edition 1.0 2010-02

TECHNICAL REPORT

colour inside

OPC Unified Architecture –
Part 1: Overview and Concepts

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST-TP CLC/TR 62541-1:2010
https://standards.iteh.ai/catalog/standards/sist/23561e69-715b-4ebb-a3a5-f3f1daa955f9/sist-tp-clc-tr-62541-1-2010

INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRICE CODE U

ICS 25.040.40; 35.100.01

ISBN 2-8318-1080-2

® Registered trademark of the International Electrotechnical Commission

SIST-TP CLC/TR 62541-1:2010

CONTENTS

FOREWORD 4
INTRODUCTION 6
1 Scope 7
2 Normative references 7
3 Terms, definitions, abbreviations and conventions 7
3.1 Document conventions 7
3.2 Terms and definitions 7
3.3 Abbreviations 11
4 Structure of the OPC UA series 11
4.1 Structure of the IEC 62541 series of standards 11
4.2 Core specifications 12
4.3 Access type specification parts 12
4.4 Utility specification parts 13
5 IEC 62541 standards – Overview 13
5.1 UA scope 13
5.2 Introduction 13
5.3 Design goals 13
5.4 Integrated models and services 15
5.4.1 Security model 15
5.4.2 Integrated *AddressSpace* model 16
5.4.3 Integrated object model 17
5.4.4 Integrated services 17
5.5 *Sessions* 17
5.6 Redundancy 17
6 Systems concepts 17
6.1 Overview 17
6.2 OPC UA *Clients* 18
6.3 OPC UA *Servers* 19
6.3.1 General 19
6.3.2 Real objects 19
6.3.3 OPC UA *Server* application 19
6.3.4 OPC UA *AddressSpace* 20
6.3.5 Publisher/subscriber entities 20
6.3.6 OPC UA *Service* interface 20
6.3.7 *Server* to *Server* interactions 21
7 Service sets 22
7.1 General 22
7.2 Discovery service set 22
7.3 *SecureChannel* service set 22
7.4 *Session service set* 23
7.5 *NodeManagement Service Set* 23
7.6 *View Service Set* 24
7.7 *Query Service Set* 24
7.8 *Attribute Service Set* 24
7.9 *Method Service Set* 24
7.10 *MonitoredItem Service Set* 24

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST-TP CLC/TR 62541-1:2010
https://standards.iteh.ai/catalog/standards/sist/23561e69-715b-4ebb-a3a5-f3f1daa9559f/sist-tp-clc-tr-62541-1-2010

SIST-TP CLC/TR 62541-1:2010

7.11 *Subscription Service Set* 25
Bibliography 26

Figure 1 – Organization of the OPC UA series of standards 11
Figure 2 – OPC UA target applications 14
Figure 3 – OPC UA system architecture 18
Figure 4 – OPC UA *Client* architecture 18
Figure 5 – OPC UA server architecture 19
Figure 6 – Peer-to-peer interactions between *Servers* 21
Figure 7 – Chained *Server* example 22
Figure 8 – *SecureChannel* and *Session Services* 23

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST-TP CLC/TR 62541-1:2010
https://standards.iteh.ai/catalog/standards/sist/23561e69-715b-4ebb-a3a5-f3f1daa955f9/sist-tp-clc-tr-62541-1-2010

SIST-TP CLC/TR 62541-1:2010

INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPC UNIFIED ARCHITECTURE –

Part 1: Overview and Concepts

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 itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST-TP CLC/TR 62541-1:2010
https://standards.iteh.ai/catalog/standards/sist/23561e69-715b-4ebb-a3a5-f91d0a9558/sist-tp-clc-tr-62541-1-2010

The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

IEC 62541-1, 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.

SIST-TP CLC/TR 62541-1:2010

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

Enquiry draft	Report on voting
65E/92/DTR	65E/154/RVC

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, 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

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

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

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.

SIST-TP CLC/TR 62541-1:2010
https://standards.iteh.ai/catalog/standards/sist/2356f1e6-715b-4ebb-a3a5-8f1daa955f9/sist-tp-clc-tr-62541-1-2010

SIST-TP CLC/TR 62541-1:2010

INTRODUCTION

This technical report introduces the specification for developers of OPC Unified Architecture applications. This technical report and specification are 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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST-TP CLC/TR 62541-1:2010
https://standards.iteh.ai/catalog/standards/sist/23561e69-715b-4ebb-a3a5-f3f1daa955f9/sist-tp-clc-tr-62541-1-2010