



SLOVENSKI STANDARD

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Predstavitev tehnike nadzora procesov - Zahteve pri P&I diagramih in za izmenjavo podatkov med orodji P&ID ter PCE-CAE (IEC 62424:2008)

Representation of process control engineering - Requests in P&I diagrams and data exchange between P&ID tools and PCE-CAE tools

Darstellung von Aufgaben der Prozessleittechnik - Fließbilder und Datenaustausch zwischen EDV-Werkzeugen zur Fließbilderstellung und CAE-Systemen

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Ta slovenski standard je istoveten z: **EN 62424:2009**

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EUROPEAN STANDARD
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English version

**Representation of process control engineering -
Requests in P&I diagrams and data exchange
between P&ID tools and PCE-CAE tools
(IEC 62424:2008)**

Représentation de l'ingénierie
du contrôle-commande des processus -
Requêtes dans les diagrammes P&ID
et échanges de données
entre les outils P&ID et PCE-CAE
(CEI 62424:2008)

Darstellung von Aufgaben
der Prozessleittechnik -
Fließbilder und Datenaustausch
zwischen EDV-Werkzeugen
zur Fließbilderstellung und CAE-Systemen
(IEC 62424:2008)

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CENELEC

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

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 65/420/FDIS, future edition 1 of IEC 62424, prepared by IEC TC 65, Industrial-process measurement, control and automation, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62424 on 2009-07-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2010-04-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2012-07-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62424:2008 was approved by CENELEC as a European Standard without any modification.

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

| | | |
|-------------|------|---|
| IEC 60848 | NOTE | Harmonized as EN 60848:2002 (not modified). |
| IEC 61512-1 | NOTE | Harmonized as EN 61512-1:1999 (not modified). |
| IEC 61987-1 | NOTE | Harmonized as EN 61987-1:2007 (not modified). |
| ISO 13628-6 | NOTE | Harmonized as EN ISO 13628-6:2006 (not modified). |
| ISO 13703 | NOTE | Harmonized as EN ISO 13703:2000 (not modified). |

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.

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-----------------|--|----------------|--------------------|
| IEC 61346-1 | - ¹⁾ | Industrial systems, installations and equipment and industrial products - Structuring principles and reference designations - Part 1: Basic rules | EN 61346-1 | 1996 ²⁾ |
| IEC 61511-1 | - ¹⁾ | Functional safety - Safety instrumented systems for the process industry sector - Part 1: Framework, definitions, system, hardware and software requirements | EN 61511-1 | 2004 ²⁾ |
| ISO 10628 | - ¹⁾ | Flow diagrams for process plants - General rules | EN ISO 10628 | 2000 ²⁾ |
| ISO 13849-1 | - ¹⁾ | Safety of machinery - Safety-related parts of control systems Part 1: General principles for design | EN ISO 13849-1 | 2008 ²⁾ |
| XML 1.0 | 2004 | Extensible Markup Language, W3C Recommendation | - | - |

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

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INTERNATIONAL STANDARD

Representation of process control engineering – Requests in P&I diagrams and data exchange between P&ID tools and PCE-CAE tools

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**REPRESENTATION OF PROCESS CONTROL ENGINEERING –
REQUESTS IN P&I DIAGRAMS AND DATA EXCHANGE
BETWEEN P&ID TOOLS AND PCE-CAE TOOLS**

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.
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International Standard IEC 62424 has been prepared by IEC technical committee 65: Industrial-process measurement, control and automation.

This standard cancels and replaces IEC/PAS 62424 published in 2005. This first edition constitutes a technical revision.

The text of this standard is based on the following documents:

| | |
|-------------|------------------|
| FDIS | Report on voting |
| 65/420/FDIS | 65/428/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.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

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INTRODUCTION

Efficient process engineering requires highly sophisticated tools for the different needs of the involved work processes and departments. These engineering tools are normally specialized in Process Design (PD), in Process Control Engineering (PCE), etc. Therefore a working interoperability is essential to optimize the engineering process in total. Thus, the definition of a harmonized interface and data management is a core task to ensure a smooth workflow during the whole project and to guarantee data consistency in the different tools.

This standard defines procedures and specifications for the exchange of PCE relevant data provided by the Piping and Instrumentation Diagram (P&ID) tool. The basic requirements for a change management procedure are described. A generally accepted technology for machine information exchange, the Extensible Markup Language (XML) is used. Hereby, a common basis is given for information integration.

However, a definition for uniform semantics is still necessary. CAEX (Computer Aided Engineering eXchange) as it is defined in this document is an appropriate data format for this purpose. This concept of data exchange is open for different applications.

The main task of a data exchange is transporting/synchronizing information from the P&ID database to the PCE databases and vice versa. The owner's reference designation system and a unique description of the processing requirement is the key for a unique identification. For detailed information about representation of PCE loops in P&ID's see Clause 6.

The data exchange system may be a stand-alone, vendor independent application or a module in an engineering environment. The data between a P&ID tool and a PCE tool and vice versa is exchanged via CAEX.

After the data exchange, there are three places where information about the plant is stored. Both the proprietary databases of the considered tools include private and common information. Both are stored at different places and different divisions that are working on them. Hereby, the intermediate database CAEX only stores common information. In a wider approach, the intermediate database should store both common and private information. This becomes important if a third application is connected to the neutral database. If the intermediate database is used as a temporary data stream only (without storing the information in a file), the information will be lost after processing the data conciliation.

Figure 1 illustrates the information flow for the P&ID and the PCE database reconciliation. The data exchange is done via a neutral intermediate CAEX database, not directly from database to database. The intermediate CAEX database should be a file (for file based data exchange) or a stream (for network based data exchange). The term "CAEX database" within this standard has to be understood in this way, it does not denominate a database product as e. g. SQL.

Annex C of this standard contains the full XML schema of the CAEX Model. It is attached to this publication in XSD format.

NOTE Buyers of this publication may copy it for their own purposes only in the required amount.

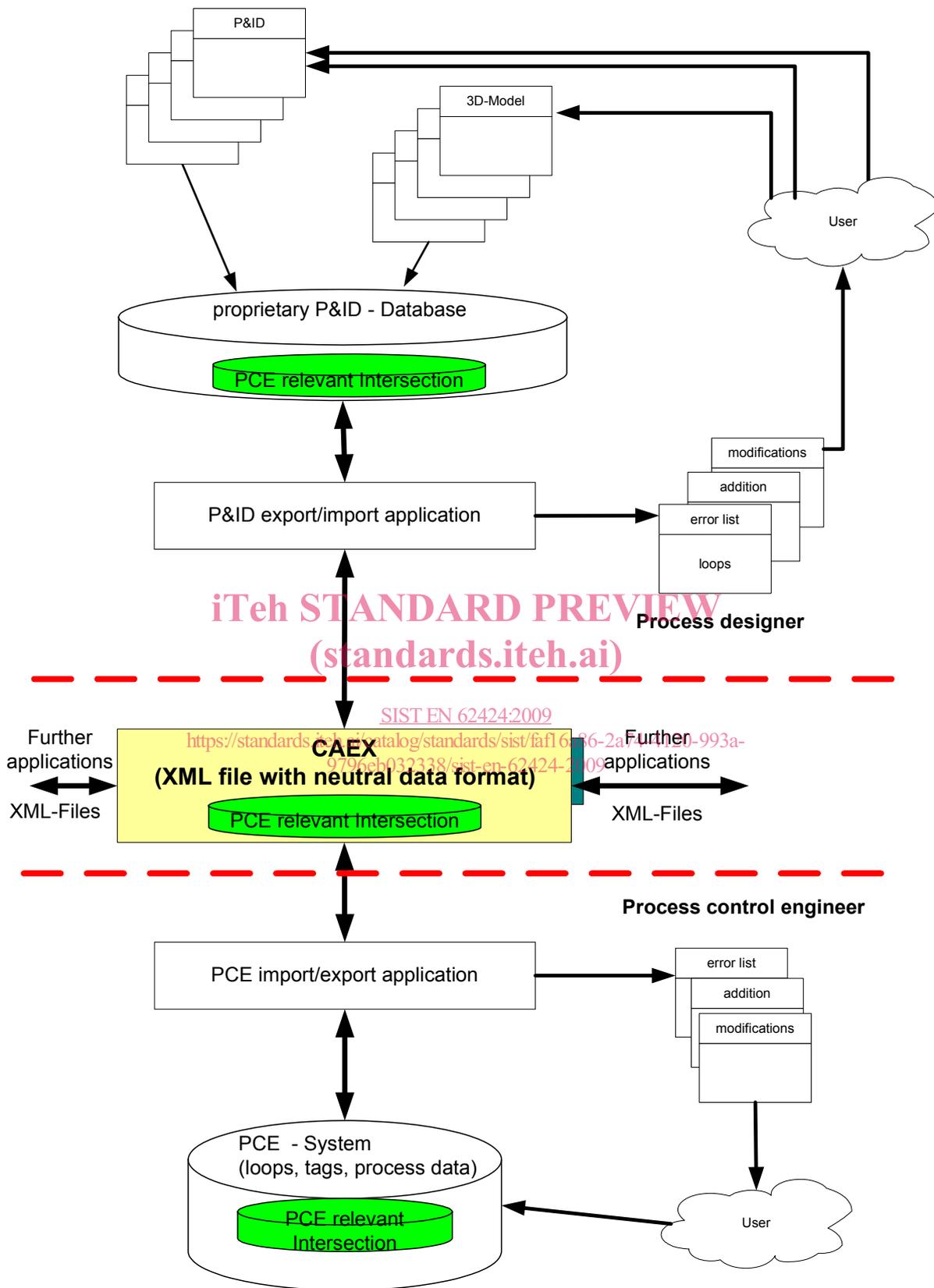


Figure 1 – Information flow between P&ID and PCE tool