SLOVENSKI STANDARD
oSIST prEN 61131-10:2018
01-marec-2018

Formati izmenjave XML za programe v skladu z IEC 61131-3

XML Exchange Formats for Programs according to IEC 61131-3

Ta slovenski standard je istoveten z: **prEN 61131-10:2017**

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OF INTEREST TO THE FOLLOWING COMMITTEES: SC 65E	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	
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TITLE:

XML Exchange Formats for Programs according to IEC 61131-3

NOTE FROM TC/SC OFFICERS:

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PROGRAMMABLE CONTROLLERS –

Part 10: PLC open XML exchange format

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International Standard IEC 61131 10 has been prepared by subcommittee 65B: Measurement and control devices, of IEC technical committee 65: Industrial-process measurement, control and automation.

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

PNW	Result on voting
65B/912/NP	65B/937/RVN
Committee Draft	Report of Comments
65B/1070/CD	65B/1070/CC

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

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- withdrawn,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

The National Committees are requested to note that for this publication the stability date 2023.

Editor's note: THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

IMPORTANT – The 'colour inside' logo on the page of this publication indicates that it contains colours which are considered to be useful for the correct understanding. Users should therefore print this document using a colour printer.

INTRODUCTION

The International Standard IEC 61131 describes Programmable Logic Controllers (PLCs).

IEC 61131-3 defines programming languages. Users want standardized programming languages and the ability to exchange a complete program or parts of that program between different development environments, i.e. from an exporting environment to an importing environment.

IEC 61131-3 standard defines program organization units (POUs). But an entire program also consists of user defined data types, global and external declarations and other elements besides the POUs. In this standard the term IEC 61131-3 project is used. It contains all above mentioned language elements, required for an exchange, in order to get a consistent program in the importing environment.

The exchange of POUs developed in one of the textual languages, i.e. Instruction List (IL) and Structured Text (ST) or the textual representation of Sequential Function Chart (SFC) is possible, because a syntax description of these languages is part of the IEC 61131-3 standard. The objective of this standard is to extend the reuse of programmed solutions both for textual languages and graphical languages, i.e. Function Block Diagram (FBD) and Ladder Diagram (LD) or the graphical representation of SFC. Furthermore the completeness of exchange between the different environments depends on the supported features that are listed in the compliance list defined in IEC 61131-3.

This standard defines a solution independent eXtensible Markup Language (XML) based exchange format, to be supported by interfaces of different kinds of software tools. Beside textual and program logic information, it also provides the ability to transfer graphical-representation information, e.g. the position and size of function blocks and how they are connected. The design of the 'transferred' parts shall represent the same program logic, however it may be altered in look and feel.

This standard's XML exchange format enables a transfer of IEC 61131-3 projects, from an exporting environment to an importing environment, including extensions for layout and formatting.

This standard's XML exchange format can not only describe correct IEC 61131-3 POUs, but it can represent a working state of the IEC 61131-3 project. For example, even if the IEC 61131-3 source project is incomplete, e.g. contains compile errors, it can be represented.

Syntactically incorrect IEC 61131-3 projects can be represented. Such a project could be an in-between version, e.g. FBD containing several unconnected blocks, this too can be represented.

This standard's XML exchange format provides for life cycle management of automation systems, e.g. in case of redesign, maintenance or device replacement. If an IEC 61131-3 project is stored in this standard's XML exchange format, it could be reused independent of a special development environment. And thus, it could be modified and maintained by any other development environment supporting this standard's XML exchange format.

This International Standard was developed using material from PLCopen®[1]. This standard extends PLCopen® XML, adopts it to the features of IEC 61131-3 Ed.3 and is therefore not compatible to previous versions of PLCopen® XML.

[1] PLCopen® is the registered trademark of PLCopen. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.

PROGRAMMABLE CONTROLLERS –

Part 10: PLC open XML exchange format

1 Scope

1.1 General

This standard specifies an XML based exchange format for the export and import of IEC 61131-3 projects. A complete IEC 61131-3 project implemented in an IEC 61131-3 environment can be transferred between different programming environments. It allows for the exchange of configuration elements, data types, and POUs written in:

- the textual language, Instruction List (IL),
- the textual language, Structured Text (ST),
- the graphical language, Ladder Diagram (LD),
- the graphical language, Function Block Diagram (FBD), and
- Sequential Function Chart (SFC).

The exchange format is specified as a corresponding XML schema. The XML schema is an independent file with the .xsd extension and as such part of this specification. A description of this schema is contained in this standard. It is assumed that the reader of this standard is familiar with XML technology.

Figure 1 provides an example overview of the usage of the XML exchange format. Different tools may produce and consume XML based IEC 61131-3 information.

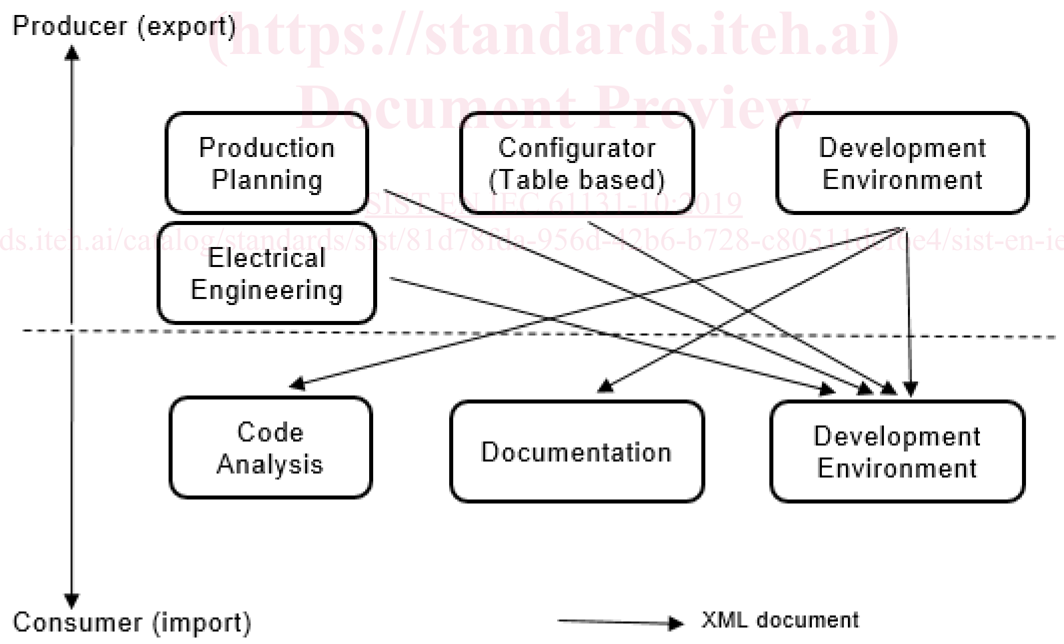

Figure 1 – Main overview of XML exchange format usage (example)

The usage of the XML exchange format should provide more than a simple export / import from one development environment to another. All relevant information should be exported. This may include coordinate information for graphical tools. The importing tool should be able to filter which parts of this information need to be imported into its destination environment. Vendor specific information and attributes may be included in the export file and selectively imported, if applicable. The vendor specific information shall not influence the logic part of the program. Filtering should be done on the import – thus vendors shall take care that their extensions of the XML schema shall be done in such a way that neglecting the information