IEC TR 61850-7-6

Edition 2.0 2024-12

TECHNICAL REPORT

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Communication networks and systems for power utility automation – Part 7-6: Guideline for definition of Basic Application Profiles (BAPs) using IEC 61850

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 33.200

ISBN 978-2-8327-0059-4

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Part 7-6: Guideline for definition of Basic Application Profiles (BAPs) using IEC 61850

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IEC TR 61850 has been prepared by IEC technical committee 57: Power systems management and associated information exchange. It is a Technical Report.

This second edition cancels and replaces the first edition published in 2019. This edition constitutes a technical revision.

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

a) New Clause 5 added to describe the way to express Basic Application Profile in SCL files;
b) New Annex F and Annex G added to list specific use cases and roles of the Concept Definition Tool.

The text of this Technical Report is based on the following documents:

Draft TR	Report on voting
57/2710/DTR	57/2735/RVDTR

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

The language used for the development of this Technical Report is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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NOTE The following print types are used:

Element and attribute types: in italic type.

This IEC technical report includes Code Components i.e. components that are intended to be directly processed by a computer. In this technical report, the code component includes all specifications of the XSD schema as well as all SCL examples.

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INTRODUCTION

The IEC 61850 series of standards offers a broad basis for communication networks and systems in power utility automation. Due to its broad coverage of power utility automation applications, it is up to the standard's user (utility, vendor, system integrator, etc.) to pick and choose specific options from the standard in order to meet the requirements of the intended objective. As a consequence, implementations of IEC 61850 represent specific subsets of the standard.

In the context of standards, the term "profile" is commonly used to describe a subset of an entity (e.g. standard, model, rules).

Accordingly, an IEC 61850 standard profile contains a selection of data models (mandatory elements), applicable communication services and relevant engineering conventions (based on the Substation Configuration Language SCL defined in IEC 61850-6) for an application function of a specific use case in the domain of power utility automation.

Depending on the scope and objective different profile types can be distinguished:

- User profile – defined subset that is valid for a specific user / organization (e.g. utility)
- Product / device profile – implemented subset in a specific vendor product / device
- Domain profile – defined subset for a specific domain and relevant use cases (e.g. monitoring of substation)
- Application / function profile – subset covering a specific application or function (e.g. substation interlocking)

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These profile types target the reduction of complexity and facilitation of interoperability for their specific scope and during engineering and device / substation lifetime. In order to achieve both these goals, a properly defined profile and appropriate implementations (processes, tools, products) that support the profile are required.

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This Technical Report was first published in 2019, to cover the methodology for profiling Basic Application Profile. The text of the first edition of the Technical Report is based on the following documents:

Draft TR	Report on voting
57/1986/DTR	57/2034/RVDTR

A request for revision of the Technical Report was circulated in 2022, in order to add information about machine processable Basic Application Profiles, described in SCL.

Revision Request	Report on voting
57/2475/DC	57/2493/INF

This document related to the second edition of the Technical Report, prepared, and circulated as a CD in 2023. Clauses 1, 2, 3 and 4 are taken from the first edition of the Technical Report (IEC 61850-7-6:2019) and reproduced here without modifications. A new clause (5) has been added to describe the way to express the Basic Application Profile in SCL files. Specific use cases and roles of the Concept Definition Tool are added in Annex G in relation with this new clause.