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TECHNICAL SPECIFICATION

colour inside

AMENDMENT 1

Communication networks and systems for power utility automation – Part 1-2: Guideline on extending IEC 61850

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IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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COMMUNICATION NETWORKS AND SYSTEMS FOR POWER UTILITY AUTOMATION –

Part 1-2: Guideline on extending IEC 61850

AMENDMENT 1

FOREWORD

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Amendment 1 to IEC 61850-1-2:2020 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

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

Draft	Report on voting
57/2370/DTS	57/2408/RVDTS

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 Amendment 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/.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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- withdrawn,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

IMPORTANT – The "colour inside" logo on the cover page of this document 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.

Replace, throughout the document (with the exception of Subclause 6.1.7), "http" *with* "https".

3 Terms and definition

Add, between 3.1 and 3.2, the following new term:

3.14
deprecation (of an element of a given model)
action consisting in tagging this element specifically in order to discourage future usage of this element

Note 1 to entry: The deprecation of an element implies the deprecation of all included sub-elements.

Note 2 to entry: A deprecation is often the latest stage before withdrawing a given element.

Note 3 to entry: Once deprecation has applied to an element, this element is tagged as "deprecated".

Note 4 to entry: Deprecation may apply to any types of element of the model, including (but not restricted to) attribute, class, object, abbreviation, enumerated element, package, namespace.

6.1.5.2 Document introduction

Replace the existing text of Subclause 6.1.5.2 by the following new text:

As soon as code components are attached to the deliverables some "legal" specific information need to be added to the foreword (refer to section 5 of the guidelines document for handling code component as introduced in 6.1.4.2).

It is highly recommended to have namespace related information (see 6.1.6.2) included in Clause 1 of any IEC concerned publication (part of the scope).

More specifically, Clause 1 of such document should be broken down as below:

- Clause 1: Scope
- Subclause 1.1: General

  As usual …
- Subclause 1.2:

  In Clause 1, "Scope", a Subclause 1.2 "Published versions of this standard and related namespace name" shall be added with a table that provides a reference between all IEC editions, amendments or corrigenda and the full name of the namespace as shown in Table 10:

Table 10 – Reference between published versions of the standard and related namespace name

Edition	Publication date	Webstore	Namespace NSD
Edition 1.0	2003-05	IEC 61850-7-3:2003	IEC 61850-7-3:2003
Edition 2.0	2010-12	IEC 61850-7-3:2010	IEC 61850-7-3:2007

  If the deliverable includes more than one namespace, additional columns shall be added.
- Subclause 1.3: Identification of the namespaces included in this IEC deliverable

  For all the namespaces, the following information shall be provided:

  – The nameplate of the namespace with identifier, version, revision and release and associated code components

  – Namespace dependencies

  Depending on the namespace technology, additional information may be provided (see 6.1.6.2 for further details related to data model namespaces and to 6.1.7 for XML namespaces)
- Subclause 1.4 "Code component distribution"

As soon as at least one code component is present in an IEC deliverable, a Subclause 1.4 "Code component distribution" shall be added with some general explanations about code components and the description of the available code components per namespace (refer to section 5 of the guidelines document for handling code component as introduced in 6.1.4.2).

Typically this subclause shall start with the following generic explanation about the distribution of the code component:

"This document is associated with code components.

Each code component is a ZIP package containing at least the electronic representation of the code component itself and a file describing the content of the package (IECManifest.xml)."

If further versions/revisions may apply, due to some maintenance works, the above shall then be followed by the following:

"The life cycle of a code component is not restricted to the life cycle of this document. The publication life cycle goes through two stages, Version (corresponding to an edition) and Revision (corresponding to an amendment). A third publication stage (Release) allows publication of the code component in case of urgent fixes of InterOp Tissues, thus without need to publish an amendment.

Consequently, new release(s) of the code domponent(s) may be released, which supersede(s) the previous release, and will be distributed through the IEC web site at:

https://www.iec.ch/tc57/supportdocuments.

The latest version/release of the document will be found by selecting the file for the code component with the highest value for VersionStateInfo, e.g. IEC_61850-7-3.NSD.{VersionStateInfo}.Light.zip."

For each code component, the following shall be described:

– The reference to the schema file or any other file that describes the format of the code component
– If there is a full and light version available or only a full version
– The technical content of the code component

An example of this is as follows:

"The Code Components associated with this document are reflecting the data model specified in this document formatted in NSD files as described in IEC 61850-7-7. They are available in light and full version:

– *The full version contains definition of the whole data model defined in this standard with the documentation associated and access is restricted to purchaser of this part*
– *The light version does not contain any documentations but contains the whole data model as per full version"*

This shall be followed by a link to the code component that can be downloaded (note if the code component is only published as a full version, that will be the one that is freely downloadable; otherwise it will be the light version). An example is as follows:

"The light version is freely accessible on the IEC website for download at: https://www.iec.ch/tc57/supportdocuments, but the usage remains under the licensing conditions."

Because IEC de facto publishes the same content through two channels (the document and the code component), an additional sentence shall also indicate for each code component, which publication is of highest priority in case of differences/discrepancies:

If the downloadable code is of highest priority (typically because of maintenance work):

"In case of any differences between the downloadable code and the IEC pdf published content, the downloadable code(s) is(are) the valid one; it may be subject to updates. See history files."

If the pdf published version is of highest priority:

"In case of any differences between the downloadable code and the IEC pdf published content, the IEC pdf published content is the valid one."

Table 2 – Normative information related to a namespace (for example for IEC61850-7-499:2009B release 5)

Replace existing Table 2 with the following new table:

Attribute	Content
Namespace nameplate	
Namespace Identifier	IEC61850-7-499
Version	2009
Revision	B
Release	5
SCL Namespace Name	IEC61850-7-499:2009B
Full Code Component Name	IEC_61850-7-499.NSD.2009B.Full
Light Code Component Name	IEC_61850-7-499.NSD.2009B.Light
Namespace Type	domain
Namespace dependencies	
includes	IEC 61850-7-4:2007A version :2007 revision :A
Namespace deprecation	
Deprecation	true

6.1.7 XML namespace extensions

Replace the existing text of Subclause 6.1.7 by the following new text:

In order to harmonize the names of these namespaces and to ensure those extensions publication including XML namespaces will withstand an efficient versioning mechanism, these XML namespaces shall comply with the requirements below:

- XML namespace name should be formed this way:

  http://www.iec.ch/{series_name}/{First year of edition}/{CodeComponentName}/{PartNumber}

  where:

  – CodeComponentName as defined in the guidelines document

  – PartNumber **is an optional attribute which reflects** the part number of the considered IEC series part if not the core part i.e. not part 6, nor part 7-1, 7-2, 7-3, 7-4.

  This leads typically to:

  1) SCL
  2) SCL/80-1
  3) NSD
  4) SCSM_8_2

  – **First year of edition** designates the year of first edition of the considered part

NOTE At the time of publication of this document all 61850 XML namespaces do not follow this naming rule.

- The XML namespaces names shall be independent from:
  – Any version numbers
  – Any revision numbers
  – Any release numbers

The reason for it is to support the MustUnderstand/MayIgnore principles which thus lead to have XML namespace extension to have additional mean to express which version/revision/release is in use in a given XML file.

- The XML namespace "schema" tag shall introduce the version/revision/release under a single XML attribute called "version" with a value composed this way:

  {version}{revision}{release}

  Where version/revision/release are managed similarly to version/revision/release of data model namespaces:

  – "version" reflects the year of publication of the considered edition (or close to)

  – "revision" is an uppercase letter starting by "A", and incremented for each amendment or corrigendum

  – "release" is an integer starting at "1" helps managing the correction of the content for interop tissues, or IEC internal draft publication (if the value equals "1" its presence is optional)

- The XML namespaces should be associated with a "reference name" to be used at the time of use, for helping merging XML files from different manufacturers. The recommended reference name should be formed this way:

  eIEC{IEC document number of the namespace}{CodeComponentName}

  for example: eIEC61850-90-11SCL

Consequently, in addition to the namespace naming rule expressed above, the extensions of a core XML namespace (such as IEC TR 61850-90-2 versus IEC 61850-6) shall offer a specific host for versioning related information. Such XML feature may look like – at the time of use:

<{xmlns}:xmlnsVersion version="2009" revision="A" release = "2"/>

Where {xmlns} designates the reference name of this XML namespace provided as part of the header of the XML file.

It is recommended that the resulting string expressing the XML namespace name points to an IEC website providing links to the detailed XML namespace definition of all already published version/revision.

Finally, the document shall sum-up all attributes of the XML namespace in Clause 1 as expressed in 6.1.5.2. A typical representation of this summary could be similar to what in shown in Table 11:

Table 11 – Attributes of an xsd namespace (example)

Attribute	Content
Namespace nameplate	
Namespace Identifier (xmlns)	http://www.iec.ch/61850/2019/SCL/90-11
XSD version header attribute	2019A2
Recommended reference name	eIEC61850-90-11
Version	2019
Revision	A
Release	2
CodeComponentName	IEC_TR_61850-90-11.SCL.2019A2.Full

6.1.10.3

Replace the existing text of Subclause 6.1.10.3 with the following new text:

6.1.10.3.1 General

Deprecation of an element is expressed by applying the stereotype “deprecated” to the given element of the IEC 61850 UML model (with no upper case letter).

6.1.10.3.2 Deprecation of an element in an IEC 61850 namespace

The following rules apply for managing deprecation of an element in an IEC 61850 namespace.

- a deprecated element is shown as deprecated in the edition where the decision to deprecate it is made,
- a deprecated element should be kept present in any associated amendment and corrigenda of the same edition
- a deprecated element should be removed in the editions which follow (in order not to confuse the users and/or encourage some remaining usages of the deprecated element).

6.1.10.3.3 Deprecation of a namespace

Deprecation of namespaces mostly happens to namespaces of “transitional” type. This is implied to the process by which they were built and due to their announced limited life span.

It may also happen to past versions of any namespaces.

Deprecation shall at least happen when the publication of the given namespace is withdrawn from the IEC library, but this could also happen through amendment related to the considered namespace.

However, in order to still support existing projects having used namespaces now deprecated, those namespaces should/may remain present, as deprecated, in the UML Model, in available NSD files and as well as part of the webaccess service.

In all cases, a deprecated namespace shall be tagged explicitely as “deprecated”.

Table 8 – Typical compatibility table

Replace existing Table 8 with the following new table:

Adding elements	
Adding new LNs	
Namespace	Adding a new LN with DOs of existing CDC
Namespace (Ed 2)	(Abstract classes which are intermediary constructions are not considered here)
Adding elements of existing CDC	
Namespace	Adding a new optional DO with existing CDC in existing LN
Namespace (Ed 2)	(Indicate for each DO its associated CDC)
Namespace	Adding a new mandatory DO with existing CDC in existing LNs
Same as above	
Namespace	Adding a new optional DO of CDC ENx (enumeration)
Same as above	
Namespace	Adding a new mandatory DO of CDC ENx (enumeration)
Same as above	

Adding elements	
Adding elements of new CDC	
Namespace	Adding a new LN with DO of new CDC
Same as above	
Namespace	Adding a new optional DO with new CDC in existing LNs
Same as above	
Namespace	Adding a new mandatory DO with new CDC in existing LNs
Same as above	

Changing elements	
Modifying elements	
Namespace	Rename an existing DO
Same as above	
Namespace	Adding a new value of a standardised enumeration at DO level
Same as above	
Namespace	Modifying literals of a kind of enumeration values
Same as above	
Namespace	Modifying of the associated CDC of an existing DO
Same as above	
Namespace	Adding a new value of a standardised enumeration at CDC level
Same as above	
Changing elements presence condition	
Namespace	Changing presence condition to less stringent one: Mandatory/Forbidden to Optional/Conditional (M/F→O/C)
Same as above	
Namespace	Changing presence condition to more stringent one: Optional/Conditional to Mandatory/Forbidden (O/C→M/F)
Same as above	
Namespace	Changing presence condition Forbidden to Mandatory or reverse (F→M, M→ F))
Same as above	

Deprecating elements	
Namespace	Deprecation of LNs
Same as above	
Namespace	Deprecation of mandatory DO
Same as above	
Namespace	Deprecation of optional DO
Same as above	
Namespace	Deprecation of enumeration values
Same as above	