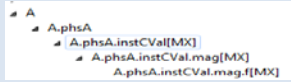entsoe

ISSUE N°	Category	Description	Edition	Chapter	Kind?	IEC TC57 WG10 comments	IEC TC57 WG10 action plan proposal	IEC TC57 WG10 timing proposal
1	Tool interoperability	Free interpretation of the SCL file structure makes exchanges of files almost impossible without the additional use of XML-editors, or Excel. This increases the complexity for third party tools and overall system engineering.	Ed.1		Impl. & Stand.			
2	Mandatory/optional fields	Selection of mandatory/optional fields in DA and DO in class definition of LN. So far there is a restriction concerning the Vendor opinion on what is needed and what is not. Also, the standard gives no restrictions in the use of optional features, as well as proprietary extensions. At the same time, there are no guidelines given for the handling of such features. The meaning of the 'optional' keyword is not clear in the context of data exchanges: is this the receiver of information who needs to be able to process any number and combination of optional elements, or is this the provider of information who needs to be able to tailor the information to the specific client? This issue is not related to the functionality (thus the Data itself) requested by the user and not supported by IED, but this issue is related to the problem where the Vendor imposes the gathering of Data, which is not requested by the user (not needed). Each Vendor can expand the structure of elements which definitely impacts the interpretation of the rest of the structure. A problem could arise on the receiver side as an induction of specialized processing of each piece of Data, even though it's the same type of Data coming from IEDs of different Vendors.	Ed.1					
3	Mandatory/optional fields	The "Vendor/User" and "Vendor/Vendor" Interoperability list (the structure of the users' "mandatory" fields), is an agreement between two parties which is required and fulfilled (Data types, LNs, services, modeling, comm. requirements, etc.) as in IEC 60870-5-101/104. This is not fulfilled by PICS (Protocol Implementation Conformance Statements) that contain information (typically about optional parts, specific restrictions, or add-ons) regarding the ACSI. PICS are vendor statements on what IED is capable of. There should be a user document correlated to Vendors' specifications to limit implementation problems. These types of lists/tables later allow descriptions of the communication between subsystems. Also PICS, MICS and other statements should be formally defined in a way that eases the detection of potential interoperability issues by the final users.	Ed.1					

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4	Logical nodes	Too loose or non-existant guidelines for the organization of the structure tree (construction of each LD, LN etc). The Manufacturer is filling it with his own private shares. The use of GGIO in order to cover more, then signaling part (a wide range of protection function parameters is not covered with predefined LN's). A continuous standardization work is required in order to standardise commonly used data and data attributes such as protection parameters which are found in most IEDS developed for our domain.	Ed.1		Implementation			
5	Logical nodes	In the case of configuration, attributes means are required in order to make the Logical Node data, semantically defined, able to communicate, even if the data is retrieved through an input to the IED and not through modeled in the device.						
6	SCL	The substation part in SCL is mostly non-existant in the Manufacturers' SCD export files or in a form that is defined as the Standard. The substation part in the 'configured' SCLs should not be optional as this is the only way to link certain functions to a part of the substation Manufacturer's tool for this feature.	Ed.1	6	Implementation			
7	Data modeling	In general, the standard says that Ethernet is fully capable to carry all its tasks. Too often, a huge amount of data is transferred to the MMS client because the required information cannot be separated in the model. A typical example is sending the entire DO structure for measurements when only the measurement value and quality are needed. Some guidelines for data modeling are needed. This is not solved by the support of DataSets with FCDA because in Standard Ed1 (page 86, 7-2), it is defined that if elements of DataSet are stVal, q and t (as attributes!), a change of the stVal report will be sent only with stVal (without q and t). So, even if the device supports the DataSet with FCDA, it won't send all elements of the structure that are requested or required. The IEDs should support each variant of the FCDs and FCDAs in their DataSet configuration. For example a FCD with only the first part of the Data Object Name, as well as FCDs and FCDAs with more levels.	Ed.1	7-3				
8	Tool interoperability	The implementation and integration of the software for different Manufacturers should have the same mandatory tasks in order to be used as tools for all types of IEDs.	Ed.1					

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9	LN modeling	There is no mechanism proposed by the Standard to positively identify data points in the data model. For instance PTOC can refer to any number of protection events related to the current. Does the user have to ask the Vendor to make indexing and prefix arrangements as he (user) would specify for each generic LN that covers functionality segregated to several instances(for example definite time OC Dt1EftPTOC1, Dt1PhsPTOC2,.)? And how software that will import/communicate a model is going to recognize which DO has the required semantics? Should the description be a mandatory part of the import process during a client configuration? And how should it be integrated (rules)? Some more precise LN modeling rules are required.	Ed.1	7				
10	GOOSE	The DataSets for GOOSE messaging - modeling with: only DA, only DO or both? The Standard allows combination (7-2, Ed.1 Member of GoCB is DataSet with Member Reference of FCD OR FCDA), but there will be an implementation problem if Vendors are only supporting DA or only supporting DO, and the system integrator has to decide one type of DataSet modeling to use. Also, it's up to the Manufacturer to choose many other features of GOOSE messaging.	Ed.1	8				
11	MMS	Some minimum requirements should be defined, in order to establish data acquisition and control through MMS communication, or at least some guidelines on how to perform basic tasks must be given. Part 8-1 describes how the control services from 7-2 are mapped onto MMS, but no description on how, or in which order these services should be used, is given (basic state machine for example). The handling of errors also needs to be addressed.	Ed.1	8-1				
12	Project Management	The project management as proposed by IEC61850-4 is not supported by commercially available tools. This document confirms that quality assurance and test stages, as well as basic engineering and life- cycle requirements are important and mandatory. Yet, in its current state, this is more of a "good practice" description than a document on requirements. It is not clear enough on what is implied and on what means in practice the defined compliance of this part through a system implementer.	Ed.1					
13	Implementation methodology	The implementation of 61850 leads modeling to LN and to GOOSE. The document IEC61850-4 covers 61850 project and system management. It could be possible to include a part that describes and gives some advice regarding the modelling.	Ed.2	4	Standard			

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14	Tool interoperability	The tools must follow the rules on what they are allowed or intended to change in an SCL file at each stage of the engineering process. These rules are defined in the Edition 2 but not implemented.	Ed.1&2	6	Implementation			
15	Tool interoperability	The Vendor tools shall allow (Vendor independent) Integration tools to do the engineering based on ICD Files, which allow them to instantiate IEDs.	Ed.1&2	6	Implementation			
16	Tool interoperability	The restrictions in the configuration (GOOSE, REPORTS and DATASET) shall be described in the ICD Service section and completely explained in the PIXIT. This will allow (Vendor independent) tools to configure the communication via SCD file.	Ed.1&2		Impl. & Stand.			
17	System Integrtaion Tool	System Integration Tools must analyze the ICD Service Section and follow the vendors PIXIT documentation.	Ed.1&2	6	Implementation			
18	Communication Configuration	DataSet: the IEDs shall support each variant of the FCDs and FCDAs in their DataSet configuration. E.g. FCD with only the first part of the Data Object Name, as well as FCDs and FCDAs with more levels: A A.phsA A.phsA.instCVal[MX] A.phsA.instCVal.mag[MX] A.phsA.instCVal.mag.f[MX]	Ed.1&2	6	Implementation			
19	Communication Configuration	If the above point (Item 11) is not supported, Vendors shall describe in the PIXIT document what they support.	Ed.1	6	Implementation			
20	Communication Configuration	Input configuration: the IEDs shall support ExtRef entries pointing to Data Objects as well as to the DataAttribute with all possible levels.	Ed.1	6	Impl. & Stand.			
21	Tool interoperability	The AED certification needs to include tool interoperability validation.	Ed.1&2	6	Standard			
22	Goose interoperability	The IEC 61850 part 6 defines how to describe/configure the subscription to GOOSE messages using ExtRef or InRef. But not all the IEC61850 compliant IEDs support this definition in SCL, thus it is impossible for a third party tool to describe the subscriptions of an IED without having the specific vendor packages integrated within the tool. This subscription description/definition should be part of the certification tests for an IEC 61850 server IED.	Ed.2	6	Standard			

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23	Client - Server interoperability	There are interoperability problems between client and server IEDs due to product implementation. For example, some IEDs do not allow to change the "OptFlds" of a report by means of an ACSI service, even when the ServiceSection defines the ReportSettings->optFields to "dyn". The conformance testing on the SCL file be aware of these issues and confrim that the SCL is totally in line with the product implementation.	Ed.1&2	6,7-2	Implementation			
24	Client specification	There appears to be a certification for client implementations similar to the certification of IED servers, but there is no written standard (IS, TS, TR) about client functionality. From a utility side, we do not know what tests are done for a client and what the certification is about? There should be a standard for client specification.	Ed.2		Standard			
25	Conformance testing	Freedom of choice seem to be too wide on which services the IEC 61850 should be tested. The Vendor can select exactly which UCA accredited test center will do the test, and the report will be limited to those details. If the IED doesn't succeed on one of the tested services regarding interoperability, the Vendor can skip this particular service from the list of tested services, and the final user won't know which service failed the test. Also, PIXIT & PICS, TICS and SICS are too detailed and the final users won't be able to check the validity and suitability for their own applications.						
26	Interoperability btw vendors	Today, the interoperability with other Vendors' products is not verified by the UCA accredited test centers. If it's up to the final users or to the system integrators to prove the interoperability for each required service, then the situation will be very confused with partially tested combinations of products and services and no one having the complete list. How can this be handled properly?						
27	Mandatory/optional fields	There are too many options in the standard. An analysis should be done in order to define which option could become mandatory and to reinforce the interoperability of the standard.			Impl. & Stand.			

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28	Interactions between Logical Nodes	The IEC 61850-6 defines the use of the Inputs Section, ExtRef tags, to create bindings between Logical Nodes. From the point of view of the engineering tool and the users, this option cannot be used in most of the IEC 61850 conformance of the IEDs in the market. (1) It is not defined as mandatory, while it should be. (2) The capacity of bindings between logical nodes for a given IED is not defined. (3) The number of bindings a logical node can support is not defined. (4) It has not been tested in the conformance test.	Ed.2	6, 10	Impl. & Stand.			

* The goal of this punch list is to identify issues encountered by some ENTSO-E TSOs members to prove that the standard as well as the implementation of the IEC61850 still need a lot of improvements in order to be acceptable for implementation by the TSOs. This punch list supports the ENTSO-E statement but does not represent the final output of the ENTSO-E IEC61850 taskforce, which will need to have a common specification requirement. The type and the final content of this forthcoming specification document is yet to be defined but will focus on interoperatbility among other things: on both real-time and long-term views (backward compatibility). From a high-level perspective, the final objective of interoperability required by the members of ENTSO-E is summarized on the interoperability scheme also published on the ENTSO-E website.