



IEC 61850 – Status update

When you will have the PAC world with this column in your hands, summer vacation will be over and by then, the first parts of IEC 61850 Edition 2 should be available as FDIS. Here is an update on the status.

Edition 2 of IEC 61850 is currently a focus in our standardization activities. The FDIS for Edition 2 of part 6 has been sent to IEC and should be officially circulated soon. So the technical work for that part is finished. With regard to parts 7-1, 7-2, 7-3 and 7-4, the final editing work is ongoing, and the goal is to send them to IEC this fall. The mappings (8-1 and 9-2) are currently in circulation as CDV – the voting closing in September. With regard to the other parts, a CDV for part 4 has been sent to IEC; for parts 1, 3, 5 and 10 we still need to prepare the first drafts.

Work has as well started for the preparation of Edition 2 of IEC 61850-7-410 – the object models for Hydro Power plants. With all the new domains that base their work on the concepts of IEC 61850 application modeling with logical nodes and common data classes, it is not easy to handle reusability of what is already defined somewhere in an IEC document. Therefore, the technical committee is looking into publishing all these models in an electronic way, as a kind of a database. A task force is currently preparing a specification for online access to the data models, which shall be ready for the TC57 plenary meeting in spring 2010 for decisions. Besides preparing the already published parts, there is a lot more ongoing work:

- A first major work that is close to publication deals with the aspects of using IEC 61850 for communication between substations.

- A technical report IEC 61850-90-1 that will be published this fall will describe the use cases of applications that require information exchange between substations. Examples are: line differential protection or distance protection with blocking schemes.

- **With IEC 61850-90-3** a technical report shall describe the aspects of using IEC 61850 for condition monitoring of power equipment. The modeling of the information gathered by condition monitoring devices will be an essential part, but the specification of a mapping for a sensor bus might be included in that work as well. Finally, a guideline for the engineering of communication networks is in preparation as well.

- **In the near future**, we will have to prepare a harmonized specification for the transmission of synchrophasors based on IEEE C37.118 standard using IEC 61850. That work has been recognized by the US NIST (*National Institute of Standards and Technology*) as one of the top priorities for the introduction of Smart Grid.

During our last meeting in Vienna we also addressed the topics related to testing. While conformance testing for devices is already covered, we identified several additional needs to be covered in the future with some new work:

- Conformance testing of tools is one such thing.

- Functional testing of the system that implements distributed

functions is another. Here, the purpose is to achieve automatic testing. A formal description of the behavior is required for this. Clearly there is more work ahead.

Speaking of testing there is a story I would like to share. I was confronted with a problem that a communication gateway from one vendor was not able to establish an association to an IED acting as server from another vendor, where both vendors claimed to be certified. The investigations showed that for the gateway, only the server interface was certified – (certification of client interfaces did not yet exist at that time.) But that was not the issue. The server device supported and checked some optional parameters used for the establishment of the association. The client device did not support that parameter and used a pre-configured value. However, the support of that parameter was declared in the PICS (*Protocol Implementation Conformance Statement*) of the server device and the value was declared in the ICD file.

So what do we learn from that story, why did I share it with you? It is important to understand that a conformance certificate alone does not tell everything. A conformance certificate refers to additional documents like the PICS, the MICS and the PIXIT. IEC 61850 is a flexible standard that supports options. These additional documents tell you which options are implemented by a device and are therefore key for interoperability. ■

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