ENTSO-E INTEROPERABILITY SPECIFICATION TOOL FOR IEC 61850

The final objective of ENTSO-E is to reach **multi-vendor interoperability** over **life cycle** of systems of assets, in an **efficient way** – see **ENTSO-E statement on IEC 61850 standard** (April 2012). **IEC 61850 is the unique standard** ambitioning to address **multi-vendor interoperability** at **communication**, **information** and **engineering** levels. Nevertheless, the standard provides **many options which can affect interoperability** between various vendors. Some **improvements** (non exhaustive list) have to be done to reach the above final objective, **by different stakeholders:**

- **Standard makers (IEC):**
  - to support the profiling initiative of users, e.g. by creating and managing the framework of BAP (**Basic Application Profile**).
  - to create the framework to enable efficiency and quality of the users multi-vendor systems purchasing process (e.g. introduction of ISD file – **IED Specification Description file**)
  - to **fill in the gaps** between IEC 61850 standard and users expectations, expressed by their respective profiles (see below)
- **Vendors**: to implement standard improvements in their products and tools for systems specification and configuration
- **Users:** to draw up their IEC 61850 standard profiles in order to specify their needs and to help to identify the gaps between the current edition of the IEC 61850 standard and their requirements.

At the end of the day, **conformance testing companies** have to check in a qualitative and quantitative way that the above objective is effectively reached (e.g. UCA Iug – IOP 2015)

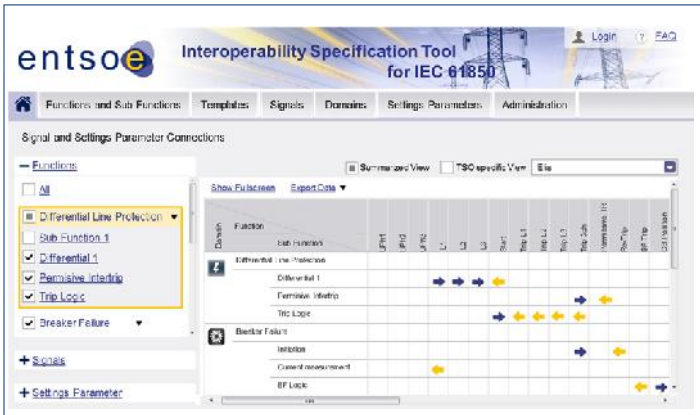
ENTSO-E Role

- **Contribution** to IEC 61850 standard improvement **from user side**
- ENTSO-E acts as **user association**, representing **41 TSOs of 34 countries** in Europe.
- ENTSO- E wants to define **one (super) profile**, so that devices and tools that are conform to that profile can be used by each TSO of ENTSO-E
- To determine the required data model, function decomposition and signals are collected for each TSO of ENTSO-E → **A tool was required** in order to ensure **data collection efficiency and quality, sustainable documentation and data conversion to IEC 61850 real world**
- ENTSO-E contracted with **it4power** and **Fraunhofer IFF** to develop the ENTSO-E Interoperability Specification Tool for IEC 61850 (ISTool)
- ISTool will cover the three interoperability domains: information (data models), communication (services) and engineering (process) and will be the **cornerstone of the ENTSO-E profile**
- The developed **ENTSO-E profile concept** will be coherent with the **concept of Basic Application Profile** developed by Cenelec.
- Finally, ENTSO-E profile will be a **superset**(*) composed of all the elements belonging to the different TSOs (bay) templates.

Aim and Purpose of the ISTool

- **Enabling collaboration** for building an ENTSO-E wide profile for IEC 61850 usage
- **Flexible TSO definition of signal usage** according to his needs
- Output aggregated signal usage **respecting input from each TSO**
- Enabling **history documentation functionality**

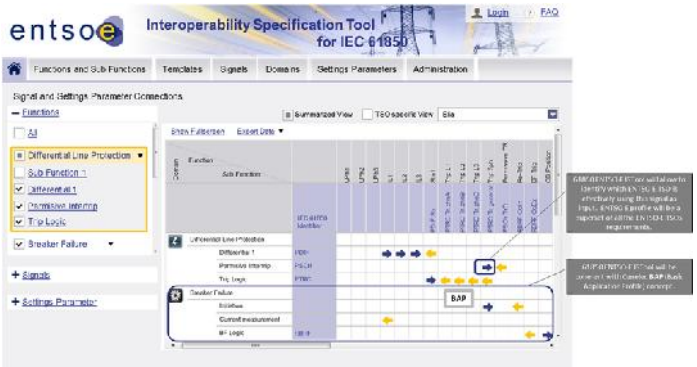
(*) From a standardisation/vendor point of view, the ENTSO-E profile is only a subset



ENTSO-E Interoperability Specification Tool: Signals and (Sub)Functions

ISTool Concept

- **Hierarchical information concept**
  - Profile workspace, domain, functions, sub functions
  - Signal and settings parameter assignment
  - TSO specific bay templates
  - IEC 61850 logical node, data attribute and data object and CIM assignments
- **Role based user concept**
  - Admin, Chosen TSO users, IEC 61850 experts, Viewers, profile workspace manager
  - Flexible user rights assignment
- **Keeping track of changes**
  - Using versioning on different levels
  - Who created, edited, deleted what and when?
  - Activity log for all users
- **Export functionalities as SCL or Excel**



ENTSO-E Interoperability Specification Tool: IEC 61850 Mapping

ISTool and profiling planning

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