

# Paris Session 2022



Test harmonisation and automation.

B3/B5 Joint PS3

Q3.04 What are other experiences to improve the specifications, engineering, testing and maintenance to address the challenges in our industry?

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# Test harmonization and automation

Elia has launched the SPACS 3 framework agreement 3 years ago:

- Third generation of bay protection systems
- IEC61850 Substation Bus
- Introduction of Test Harmonization and Automation

## Gains:

- Suppression of many terminals (marshaling racks) and wiring in the relay house.
- Less hardwired in- and output contacts on bay controller and DCS

## Drawback:

- Tools to develop and manage, more complex engineering process
- **Combination of hard-wired and IEC61850 I/O's makes testing more complex – need for appropriate testing tools and methods**

Group Discussion Meeting

# Test harmonization and automation

- Elia did not find an adequate testing tool on the market being able to define test sequences with a mix of hardwired and IEC61850 in- and outputs to test functions as the synchrocheck function.
- To test the synchrocheck function in the Elia applications (SPACS 3):
  - The bay controller needs to receive the closing order via IEC61850 protocol
  - If synchrocheck conditions are met, a hardwired contact is closed on the bay controller to energize the closing coil of the circuit breaker
  - To validate the synchrocheck 57 test sequences needs to be executed

Two separate testing tools were needed to perform this test:

- A 1st tool to inject the IEC61850 closing order
- A 2nd tool to check the hardwired feedback

As a consequence:

- **testing is very heavy and time consuming**
- test automation not possible

# Test harmonization and automation

- With new technologies it is possible to achieve efficiency, cost and quality gains.

**• But adequate and user-friendly tools are a must (one unique tool being able to define test sequences with a mix of hardwired and IEC61850 signals)**

- The first step has been taken, but we are only at the beginning of a revolution: large-based process bus deployment in the ten next years, further functional integration, increased complexity at system level.

**• There is a need for a close partnership between TSO's and suppliers of test solutions to anticipate this revolution and be prepared on time.**

- The customers should have a clear view on their needs and communicate these needs
- The suppliers should well understand the precise needs and constrains of the customers and develop the corresponding solutions on-time