

# UTInNOVATION



In-house training for one of the biggest DCS vendors of monitoring and control systems for conventional and hydro power plants.  
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Tuesday, September 4, 2007	09.00 – 17.15
Wednesday, September 5, 2007	09.00 – 17.15
Thursday, September 6, 2007	09.00 – 17.15
Friday, September 7, 2007	09.00 – 12.30

Location: [REDACTED]

## Tuesday, September 4, 2007

### I Introduction and IEC 61850 overview

09.00 – 09.30	30	S-0000 – Opening Welcome Roll call IEC 61850 in brief
09.30 – 10.15	105	S-0200 – IEC 61850 overview Design objectives and scope of IEC 61850 Technical approach A more detailed look at the 14 parts of IEC 61850
10.15 – 10.30	15	Coffee break
10.30 – 11.30	105	S-0200 – IEC 61850 overview (cont)

## II Application and data modeling

11.30 – 12.30	60	S-0201 – IEC 61850 application modeling principles Hierarchical data model IEC 61850-7-3 and –7-4 Basic example of a data model for a real substation
12.30 – 13.30	60	Lunch break
13.30 – 14.00	30	S-0208 – Common data classes Detailed overview on IEC 61850-7-3 Updates for Edition 2 of IEC 61850-7-3
14.00 – 14.45	45	S-0300 – Application modeling for substation automation Basic principles Protection and protection related functions Control Examples
14.45 – 15.00	15	Coffee break
15.00 – 15.30	30	S-0401 – Hydro power plants IEC 61850-7-410 overview
15.30 – 16.15	45	S-0403 – Application modeling for hydro power plants IEC 61850-7-410 modeling details
16.15 – 17.00	45	S-0301 – Applying IEC 61850 for SA – use cases Measuring current and voltage Operate switchgear
17.00 – 17.15	15	Summary of the day / Questions

## Wednesday, September 5, 2007

## III System design aspects

09.00 – 09.30	30	S-0202 – Engineering process with IEC 61850 Using IEC 61850-6 for the configuration of the substation and the IEDs
09.30 – 10.30	60	S-0303 – Architectural considerations for SA system Communication architecture and topology Device modeling and function allocation Availability considerations
10.30 – 10.45	15	Coffee break
10.45 – 11.30	45	S-0106 – Testing devices and systems Overview on testing, Testing requirements System testing

## IV Support and experience

11.30 – 12.00	30	S-0302 – Product specifications for SA equipment Implementation guideline of the UCA users group on IEC 61850-9-2 IEC 62271-003 from IEC SC17C/WG11
12.00 – 12.30	30	S-0800 – Practical experience Project examples for IEC 61850
12.30 – 13.30	60	Lunch break
13.30 – 14.00	30	S-0802 – User support Quality process and TISSUES Users group
14.00 – 14.45	45	S-0803 – Current and future standardization Use of IEC 61850 in wind power plants and for DER Condition monitoring, Security, Seamless communication between substations
14.45 – 15.00	15	Coffee break

## V Information exchange and communication

15.00 – 17.00	120	S-0203 – Information exchange and ACSI Information exchange models – IEC 61850-7-1 Abstract communication services (ACSI) – IEC 61850-7-2
17.00 – 17.15	15	Summary of the day / Questions

## Thursday, September 6, 2007

09.00 – 09.45	45	S-0700 – Extracting data from field devices General SCADA services – configuration of logs, reports, ... (IEC 61850-7-2)
09.45 – 10.30	45	S-0701 – Alarm handling Fundamentals of special SCADA services (IEC 61850-7-2)
10.30 – 10.45	15	Coffee break
10.45 – 11.15	30	S-0702 – Communication technologies Fundamentals of industrial Ethernet
11.15 – 11.45	30	S-0703 – Information presentation and encoding XML and XML schema, ASN.1 and BER
11.45 – 12.30	120	S-0704 – Protocol basics Fundamentals of ISO 9506 (MMS)
12.30 – 13.30	60	Lunch break
13.30 – 14.45		S-0704 – Protocol basics (cont.)
14.45 – 15.00	15	Coffee break

## VI Implementing IEC 61850 in devices

15.00 – 16.30	90	S-0204 – Implementation of IEC 61850 conformant devices Logical devices and physical devices Common logical node information
16.30 – 16.45	15	S-0205 – Device conformance testing Part 10 and conformance testing Test specifications of the UCA users group
16.45 – 17.15	30	S-0206 – The extension rules for IEC 61850 Extensions of logical nodes data and common data classes

## Friday, September 7, 2007

09.00 – 10.30	60	S-0705 – Implementation and mappings for IEC 61850-7-2 Implementation aspects for protocols and information models IEC 61850-8-1 mapping to MMS and TCP/IP
10.30 – 10.45	15	Coffee break

## VII Workshop

10.45 – 11.15	30	S-0706 – Demonstration of compliant SW Demonstration of client and server software
11.15 – 12.00	45	S-0801 – Tool support Tools supporting IEC 61850-6 Protocol analyzers Tools for testing
12.00 – 12.30	30	Final Q&A