

IEC 61850
Global
2018

Achieving IEC 61850 Interoperability within the Substation and across the wider Smart Grid

3-Day Conference, Exhibition & Networking Forum

16-18 October 2018 | **Berlin, Germany**



Hear In-depth Insights on:

- ✓ **IEC 61850 Standards Update:** Outlining updates to Edition 2.1 of IEC 61850-6 to address interoperability challenges and ensure efficient engineering in a multi-vendor, multi-edition system
- ✓ **Tendering and specification process:** Developing a new tendering and specification process to overcome the interoperability challenges of multi-edition systems
- ✓ **Edition 1 to Edition 2 transition:** Determining the optimum transition strategy from Edition 1 to Edition 2 depending on your current substation implementations
- ✓ **Engineering configuration tools:** Addressing current tool limitations and developing methodologies for configuring and testing the different IEC 61850 features
- ✓ **Maintenance testing:** Successfully implementing testing tools to ensure effective operation and maintenance in a multi-edition, multi-vendor system
- ✓ **Cyber security:** Ensuring cyber-security in the implementation of feature rich multi-edition multi-vendor IEC 61850 systems that include GOOSE, MMS and other messaging
- ✓ **GOOSE Messaging:** IEC 61850 for GOOSE and R-GOOSE for messaging in the LAN and WAN
- ✓ **Beyond the substation:** Integrating IEC 61850 with data management systems and the CIM and extending its application to the control centre
- ✓ **IEC 61850 for DER:** Making the business case for using IEC 61850 as the communication protocol to effectively integrate DER into the power grid

18+ Utility Case Studies From:

- | | | |
|---|--|--|
| <p>Peter Rügenapp
Team Leader, Control & Automation Technology
Amprion</p> <p>Rannveig Loken
Senior Specialist Control and Protection
Statnett</p> <p>Priyanka Mohapatra
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Team Leader, Distribution Protection and Substation Automation
Fluvius</p> | <p>Paul Hayes
Smart Networks Engineer
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R&D Project Manager
RTE</p> <p>René Troost
Specialist AM Network Intelligence
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Manager, System Integration & Testing
New York Power Authority</p> <p>Mehrdad Vahabi
Transmission & Distribution, Substation Projects
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Southern California Edison</p> <p>Mohd Iqbal Ridwan
Principal Researcher, Utility Automation
TNB Research Sdn Bhd</p> <p>Byung Tae Jang
Principal Researcher
KEPCO</p> |
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Expert Advice From:

- Christoph Brunner**
President of it4power & Convenor
IEC TC 57 WG10
- Grégory Huon**
Head of Engineering Governance at Elia & Group IEC 61850 Convenor
ENTSO-E
- Thomas Schäfer,**
Board Member - **EDSO**
- Charles Newton**
President
Newton-Evans Research Company
- Sebastian Krause**
Group Leader Security Audits
GAI NetConsult

Technology Innovations From:

- Gerardo Rebolgar**
Executive Product Line Leader
GE Energy
- Leandro Henrique Monaco**
Global Product Manager, Electrical Control Systems
ABB
- Gilad Bandel,** VP Products
Radiflow
- Andrea Bonetti,** Senior Application Specialist Relay Protection and IEC 61850 -
Megger
- Fred Steinhauser,** IEC 61850 and Digital Substation Expert -
OMICRON
- Simon Rodriguez,** Vice President of Business Development -
SUBNET
- Joe Stevens,** Marketing Manager - **Triangle MicroWorks**
- Jürgen Resch,** Industry Manager Energy - **COPA-DATA**
- Eric Xu,** Lead Simulation and Automation Engineer - **RTDS**
- Bas Mulder,** Senior Consultant
DNV GL
- Claudio Silva,** Lead Product Manager, Software and Systems - **Efacec**
- Alexey Anoshin,** Technical Director - **Tekvel**
- Dustin Tessier**
Managing Director & IEC 61850 Expert
Tesco Group

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Dear Colleague,

We are delighted to bring you the 5th annual **IEC 61850 Global 2018** conference, exhibition and networking forum.

This year's programme draws together 150+ IEC 61850 experts and implementation leaders for a review of the latest utility implementation case-studies and supplier technology innovations.

We are including several international presentations and inviting a more global delegation to facilitate a wider exchange of end-user experiences and ensure the optimal development of the standard for the global power grid community.

Highlights of this year's programme includes:

- ✓ **Case-Study Programme** – hear from 18+ international utility IEC 61850 experts and implementation leaders on the lessons learnt from actual deployments of the standard across smart grid infrastructures
- ✓ **Utility Heavy Speaker Line-Up** – selected on the strength of the projects they are involved in, their pivotal roles in implementation decision making, and their insights into lessons learnt and future roadmaps
- ✓ **Roundtable Discussions** – the opportunity to brainstorm and problem solve with peers from across the IEC 61850 ecosystem
- ✓ **Fundamentals Workshop** – run by Christoph Brunner, Convenor of IEC TC57 WG10, taking place the day before the main conference, this workshop demystifies the fundamental building blocks and provides a comprehensive yet in-depth understanding of IEC 61850
- ✓ **Solution Zone** – running alongside the conference, the solution zone provides a focused display of IEC 61850 products and services, with experts on hand to discuss your specific challenges and provide tailored advice to help propel your implementation plans to the next level
- ✓ **Live Demo Labs** – a 1:1 private demonstration, providing you with the opportunity to gain hands-on experience of the most advanced and forward-looking IEC 61850 solutions and services
- ✓ **Evening Networking Reception** – taking place the evening of conference day one, this networking event is open to all participants enabling you to relax and unwind, allow new ideas to cement and new partnership opportunities to emerge

We look forward to welcoming you to the event in October 2018!

Kind Regards,

Mandana white
Director | **Smart Grid Forums**

PS: Early Bird Rates - Save €200 on delegate places and €500 on exhibitor spaces by booking before Friday 31st August 2018!

PPS: Group Booking Discounts - Save a further 10% on 3+ delegates booked from the same organisation at the same time - Call us on +44 (0)20 8349 6360 to arrange!

Workshop

Tuesday 16th October 2018

Fundamentals of IEC 61850 Workshop

Workshop Leader



Christoph Brunner
President of
it4power
& Convenor
IEC TC 57 WG10

Workshop Format

The IEC 61850 standard is an extensive and complex set of international standards specifically designed for substation automation and the smart grid. Now universally recognised as the de-facto standard for power utility compliance, it presents as many challenges as it does opportunities.

During this workshop Christoph Brunner, Convenor of IEC TC57 WG10 provides a comprehensive and in-depth insight into the building blocks, key applications, and optimal operations of the standard within the substation environment and beyond. Whether you are just at the start of your IEC 61850 investigations or have several years' practical implementation experience, this workshop will provide you with a much-needed update on the fundamentals of this evolving standard.

- 09:30 Registration & Welcome Refreshments
- 10:30 **Session 1: Introduction to IEC 61850 - key benefits, alternatives and implications for the utility engineer**
Gain clarity on how IEC 61850 was conceived, its key objectives and features, and how it has evolved to support interoperability, free configuration and long-term stability. A comparison with other communication standards will be made, and the impact on engineering processes will be clarified. Edition 1 will be reviewed in relation to its application in different domains. Key functions such as Process Bus, Goose Messaging, Sampled Values, Data Models and Data Attributes will also be discussed.
- 11:15 **Session 2: Evolution to Edition 2 – product introductions, utility implementation experiences, interoperability advancements**
Understand how Edition 2 builds up from Edition 1, the backward compatibility aspects, new features and functionalities, the rate of take up within vendor products and feedback from utility implementations. In this session, the major new features such as Common Data Classes, ACS, and SCL will be discussed, as well as the benefits of the new Testing Capabilities and Diagnostic Features.
- 12:00 **Session 3: Data Modelling Fundamentals**
Deep-dive into the function of IEDs, Logical Nodes, and Data and Logical Node Groups. Examples of Logical Nodes and Logical Node Instances will be given. Insights will also be shared into Common Data Classes, CDC Measured Values, Hierarchical Data Models, Specification Methods, acquisition of Current and Voltage and Modelling examples such as Control.
- 12:45 Lunch
- 13:45 **Session 4: Communication Fundamentals**
Various communication concepts will be discussed based on practical examples including Datasets, Reporting, Goose Object Oriented Events and Goose Repetition.
- 14:30 **Session 5: Quality Assurance – how to specify IEC 61850 to ensure your automation system works effectively**
Understand how the IEC 61850 requirement specification could look like, learn how to assure your automation system will work as early in the project as possible and what kind of test tools are required for optimal performance validation.
- 15:15 Afternoon Refreshments
- 15:45 **Session 6: Future Directions and New Activities – further improvements, wider smart grid applications, and suitability for new domains**
Get up to speed with the latest IEC 61850 implementations across the wider smart grid, as well as in new domains such as hydroelectric power plants, distributed energy resources, and wind turbines. Understand how to work around current gaps in the standard, and how to ensure true multi-vendor interoperability and effective future proofing.
- 16:30 **Session 7: Practical Group Exercise and Q&A**
In this final session a series of practical exercises will bring to life the application of IEC 61850 and provide attendees with the chance to have all their questions answered in great depth and detail by the workshop leader.
- 17:00 Close of Workshop

Sponsorship & Exhibition Opportunities



Would you like the opportunity to raise your brand profile, demonstrate your products and services, and share your expertise with a highly concentrated and influential group of utility IEC 61850 implementation leaders and decision makers? Our adjoining exhibition area provides the perfect platform for you to do this and more! Capped at 20 stands we ensure a focused and relevant display of the latest tools, technologies and services for our audience and maximum visibility for each exhibitor.

To find out more about the various sponsorship and exhibition opportunities:

Call: +44 (0)20 8349 6360

Email: registration@smartgrid-forums.com

Download: [Exhibition Opportunities Brochure](#)

07:00	Registration & refreshments	15:00	<p>In-House Testing: Developing in-house testing tools to improve IEC 61850 implementation, operation and maintenance in substation fields</p> <ul style="list-style-type: none"> • Outlining the benefits of developing in house versus using third party testing tools • Detailing projects covered in the system verification and simulation process: • Virtual Server based IEC 61850 Ed 2.0 • SCL Checker based IEC 61850 UML Information Model & Rule • IED Conformance Verifier based graphic test case modelling & IEC 61850 Ed 2.0 • Ensuring full compliance with IEC61850 testing procedures <p>Byung Tae Jang, Principal Researcher - KEPCO</p>
08:20	<p>Opening remarks from the Chair Christoph Brunner, President of it4power & Convenor of IEC TC 57 WG10</p>	15:30	<p>Integrated Monitoring: establishing real-time monitoring of IEC 61850 systems to support advanced forecasting and asset management</p> <ul style="list-style-type: none"> • Benefits of adopting integrated monitoring in digital substations (architecture, sensors, protocols, configuration, HMI integration) • Determining how real-time applications can be supported • Leveraging DLR weather-based solutions for inter-substation networks • Evaluating the potential of wide area automation solutions to strengthen the operational capacities <p>Thierry Buhagiar, R&D Project Manager - RTE</p>
08:30	<p>IEC 61850 Standards Update: Outlining updates to Ed 2.1 of IEC 61850-6 to address interoperability challenges and ensure engineering efficiency in a multi-vendor multi-edition system</p> <ul style="list-style-type: none"> • Ensuring that IEC 61850 can support mixed edition and multi-vendor environments for both communication and engineering with the development of Ed 2.1 • Meeting the need for engineering tools to exchange files conformed to different versions of the standard • Assessing vendor independent tools to support engineering testing and maintenance and ensure an ability to work with multiple standards • Building into the standard future compatibility with later editions of IEC 61850 • Identifying potential challenges in upgrading edition 2 devices to 2.1 to meet future conformance standards • Detailing the latest work progressing towards edition 3 <p>Christoph Brunner, President of it4power & Convenor of IEC TC 57 WG10</p>	16:00	Afternoon refreshments, networking and exhibition
09:00	<p>Market Overview: Examining the current state of substation modernisation and IEC 61850 implementation and forecasting IEC 61850 product development and market growth in the next 5 years</p> <ul style="list-style-type: none"> • Examining the status of substation automation and integration programs in electric utilities around the world • Detailing the global implementations of IEC 61850 protocols, within substations, for communication and control, for both TSOs and DSOs • Understanding how international utilities are procuring substation automation systems and equipment and the integration support they require • What are the leading challenges that are slowing down and inhibiting IEC 61850 implementations? • Forecasting spending in the next 5 years for new and retrofit substation automation • Detailing the trends in the IEC 61850 market: <ul style="list-style-type: none"> • Number of IEC 61850 protection relays sold? • Number of 61850 data gateways/RTUs applied? • Forecasting the market of SCADA end-users who potentially need IEC 61850 <p>Charles Newton, President - Newton-Evans Research Company</p>	16:30	<p>Advanced Testing: managing testing complexity in multi-vendor multi-edition IEC 61850 systems</p> <ul style="list-style-type: none"> • Identifying the key causes of testing complexity in advanced IEC 61850 systems • Establishing design parameters that support testing accuracy once the system is operational • Leveraging testing tools and procedures that accurately predict the behaviour of new functionalities in complex systems • Ensuring that communication failures between IEDs are easily identified, isolated and rectified to avoid wider system impact • Maintaining high system performance visibility at all times <p>Fred Steinhauser, IEC 61850 and Digital Substation Expert - OMICRON</p>
09:30	<p>Tendering and Specification Process: Developing a new tendering and specification process to address the challenges of ensuring interoperability for multi-edition systems in the immediate and long term</p> <ul style="list-style-type: none"> • Identifying the challenges of accurately defining end user requirements in a way that drives suppliers to provide the right system at the right cost • Addressing the specific challenges of specifying SCL files in the tender process to ensure interoperability • Outlining the need for tools that streamline and automate the specification process and verify results from the different vendors • Building testing pass rates into the contract: cyber security, IOP testing, conformance testing and a final test and SAT (Site Acceptance Test) <p>Ronald Poesen, Team Leader, Distribution Protection and Substation Automation - Fluvius</p>	17:00	<p>EDSO for Smart Grid: Addressing DSO specific requirements for IEC 61850 and outlining the latest trials and implementations</p> <ul style="list-style-type: none"> • Outlining the work of EDSO for smart grid in relation to IEC 61850 and the implications for DSOs and suppliers in achieving the long-term goal of the flexible smart grid • Examining DSO drivers for IEC 61850 implementation, how they differ from TSO's and the implications of this for utilities and suppliers • Detailing the limitations which are currently holding back IEC 81850 deployment in DSOs and the steps being taken to overcome them • Factoring the DSO requirement to extend IEC 61850 beyond the substation across the distribution network into the implementation strategy • Evaluating the latest DSO IEC 61850 trials and implementations across the smart grid <p>Thomas Schäfer, Board Member - EDSO</p>
10:00	<p>Advanced Cyber-Security: establishing a robust cyber-security framework to combat the vulnerabilities inherent in complex IEC 61850 systems</p> <ul style="list-style-type: none"> • Showcase of cyber security key points in system vulnerabilities in complex IEC 61850 system • Presenting threat detection, intrusion protection and secure remote access solution to IEC 61850 devices and how new solutions are being developed to combat the threats • Understanding how the threat landscape is developing and the implications for next generation IEC 61850 systems • Before engaging into cyber security protection project, conducting a European NIS Directive and national (German BSI, UK NCSC, etc.) implementations - gap and security assessment process <p>Gilad Bandel, VP Products - Radiflow</p>	17:30	<p>Future Proofing IEC 61850: Determining how IEC 61850 can evolve to meet user needs to be more cost effective and highly functional</p> <ul style="list-style-type: none"> • Modifying tools and practices to use existing standards and future proof design and specifications for next generation substation automation system • Addressing the challenges of multi editions, multi-vendor interoperability • Improvements needed in process, parameter identification, documentation capabilities and configuration & test tools • Optimizing vendor community and standard development (IEC WG10) to ensure IEC 61850 is future proofed for the long term • Evaluating new developments in computer networking and cyber security beyond the current scope of IEC 61850 and examining their potential role in future proofed implementation <p>Deepak Maragal, Manager, System Integration & Test - New York Power Authority</p>
10:30	Morning refreshments, networking and exhibition	18:00	<p>Grid Edge Trials: Planning and conducting IEC 61850 trials as part of a long-term strategy for the roll out of smart grid model management and communications across the grid</p> <ul style="list-style-type: none"> • Outlining the long-term goal of having 61850 as standard across all IT systems and measuring devices across the distribution network, including DER • Planning an effective trial of IEC devices including: solar sensors, battery storage, EV chargers • Evaluating the relative benefits of working with an independent systems integrator to plan the trial and invite device vendors • Making the case for the deployment of a live test bed to optimise the configuration of the implementation • Addressing the challenge of getting internal buy in to 61850 for the smart grid and cost justifying the long-term requirement for the replacement of all devices <p>Paul Hayes, Smart Networks Engineer - ESB Networks</p>
11:00	<p>System Interoperability Panel Discussion: Outlining the challenges vendors face in achieving interoperability and the steps they are taking to address these</p> <ul style="list-style-type: none"> • Detailing plans for product upgrades to support the latest standards • Assessing the case for enabling flexibility in prefixes for logical nodes and dynamic data sets to give utilities the opportunity to effectively manage IEDs and limit the need for continual retesting • Outlining the challenges in achieving interoperability between the IED and SCADA • Addressing the challenges interoperability between mixed merging units from different vendors within substations <p>Gerardo Rebollar, Executive Product Line Leader - GE Energy Leandro Henrique Monaco, Global Product Manager, Electrical Control Systems - ABB Andrew West, Regional Technical Director - SUBNET Joel Greene, Senior Software Engineer - Triangle MicroWorks</p>	18:30	<p>Roundtable Discussions - during this session the audience breaks out into several smaller working groups, each focused on specific themes that arose during the day's presentations. Each working group will comprise of representatives of the entire IEC 61850 community to ensure a well-rounded and holistic discussion. Key issues raised, and solutions proposed will be collated for presentation to the wider group at the end of the session.</p> 
12:30	Lunch, networking and exhibition	20:00	<p>Networking Reception - time to relax and unwind after an intensive day of presentations and discussion! All participants are invited to join this networking reception where you will have the opportunity to enjoy the company of colleagues from across the European smart grid technical community.</p> 
14:00	<p>The Digital Substation: Successfully implementing IEC 61850 for the next generation digital substation</p> <ul style="list-style-type: none"> • Evaluating the advantages of a fully digital sub-station in terms of cost benefits, and safety • Implementing IEC 61850 in a digital sub-station using station bus and process bus • Examining how the control and protection functions can be combined for more bays in a common PCU • Assessing the pros and cons of implementing an all-digital process bus with NCIT, MU and SAMU • Outlining the design of the future Digital substation <p>Rannveig Loken, Senior Specialist Control and Protection - Statnett</p>	22:00	Close of conference day one
14:30	<p>Protection and Automation Applications: Examining the standardisation progress being made in functional interoperability and how this is translating to field deployment</p> <ul style="list-style-type: none"> • Evaluating the scope for improving the dependability and security of IEC 61850 based protection systems • Understanding how different IEC committees including TC 38 (Instrument Transformers), TC 95 (Measure Relays and Protection Equipment), and TC 17 (High Voltage Switchgear and Control gear) are working together to drive interoperability beyond the scope of TC 57 • Highlighting the work of TC 95 Ad Hoc Group 3: AHG 3 Use case of digital sampled values instead of analogue input, in speeding up interoperability • Setting timelines for the completion of this work and quantifying the results that can be expected in field deployments <p>Andrea Bonetti, Senior Specialist for Protection and IEC 61850 applications - Megger Member of TC 95/MT 4 and member of TC 95 / AHG 3 Volker Leitloff, Senior Engineer for Substation Protection Automation - RTE Chair of TC 38, member of TC 95/MT 4 and convener of the TC 95 / AHG 3</p>		

07:00	Registration & refreshments	14:30	<p>Beyond the Substation: Integrating IEC 61850 with data management systems and the CIM and extending its application to the control centre and beyond</p> <ul style="list-style-type: none"> Identifying the synergies between and 61850 and CIM and the drivers for integration beyond the substation Addressing the specific challenges of achieving effective integration of IEC 61850 and CIM: examining areas of overlap and determining where each is most effective Comparing the suitability of IEC 61850 for the control center environment with other protocols such as IEC 60870-5-104 and DNP 3 Outlining the drivers for making data from IEC 61850 available enterprise wide to improve decision making, asset investment planning, operations and maintenance Stedin's initiatives towards IEC 61850-90-2 for control center integration and its project to connect the 61850 substation data to the PI infrastructure Evaluating the implications of 61850-90-2 for the substation, control center and data infrastructure <p>Anne van der Molen, Technology Officer - Stedin René Troost, Specialist AM Network Intelligence - Stedin</p>
08:20	Opening remarks from the Chair	15:00	<p>Combining IEC 61850 with CIM: Results from two proof-of-concept and pilot projects at Vattenfall</p> <p>Case 1: Going down in voltage level: Increasing the efficiency of secondary substation monitoring using CIM and IEC 61850 engineering process</p> <ul style="list-style-type: none"> Utilizing CIM to populate SCL with network and component information for RTU and HMI Secondary substation configuration in the field and automatic HMI configuration using auto-generated SCL from Network Information System database <p>Case 2: Beyond the substation: Utilizing substation IEC 61850 data to drive predictive and remote maintenance in the wider enterprise</p> <ul style="list-style-type: none"> Supporting the information exchange between components at central level based on CIM and substation protocols Enabling configuration and use of IEC 61850/CIM gateway to transfer data from substation automation systems to central systems <p>Anders Johnsson, Power System Specialist - Vattenfall Distribution Nordic</p>
08:30	<p>Cyber Security: Ensuring cyber security in the implementation of feature rich multi-vendor IEC 61850 that includes GOOSE</p> <ul style="list-style-type: none"> Setting proper security requirements for vendors during the tendering process and implementing cyber security acceptance in digital substations – real life experiences Vulnerability testing at FAT / SAT phase to evaluate security risks – is IEC 62351 enough? Robustness tests of substation protocols like IEC 61850 and IEC 60870-5-104 – speaking the wrong language Examining the top ten vulnerabilities in IEC 61850 based substations during FAT / SAT <p>Sebastian Krause, Group Leader Security Audits, GAI NetConsult Peter Rümenapp, Team Leader, Control & Automation Technology - Amprion</p>	15:30	Afternoon refreshments, networking and exhibition
09:00	<p>Industrializing IEC 61850: Designing an interoperable system which will reduce routine engineering, commissioning and maintenance effort</p> <ul style="list-style-type: none"> Defining an automated engineering process for the configuration of the substation automation system Using a third-party configuration tool to create multivendor CID and one-click configuration with the ICT Ensuring effective integration of software systems to automate engineering processes Enabling single data origin for the substation HMI and SCADA telecontrol system Verifying configuration files and management of firmware to assure correct SAS Performance Implementing condition monitoring and ensuring easy replacement to reduce maintenance effort <p>David MacDonald, System Monitoring Lead Engineer - Iberdrola Zigor Ojinaga, Industrialisation Project Leader - Iberdrola</p>	16:00	<p>ENTSO-E Roadmap & OSMOSE Project: Outlining ENTSO-E's action plan and role in specifying IEC 61850 and the OSMOSE (Optimal System-Mix Of Flexibility Solutions for European electricity) Horizon 2020 project to enable the integration of renewables into a flexible smartgrid</p> <ul style="list-style-type: none"> Outlining the aims of the OSMOSE Horizon 2020 project Outlining the status of the global ENTSO-E profiling roadmap Upgrading the ENTSO-E profile ensuring interoperability, with a specific focus on storage devices Developing an interoperability framework based on the IEC 61850 ENTSO-E requirements for the engineering process Presenting the architecture of tools for profiling, specifying, comparing and configuring functionalities within an interoperable framework Outlining timescales for practical end to end demonstrators of the interoperability framework for IEC 61850 engineering by manufacturer partners in OSMOSE <p>Grégory Huon, Head of Engineering Governance at Elia & Group IEC 61850 Convenor at ENTSO-E Christoph Brunner, President of it4power & Convenor of IEC TC57 WG10</p>
09:30	<p>Multi-Vendor Interoperability: Outlining the latest trial results for the design, deployment and operational control of an interoperable multi-vendor digital substation, using IEC 61850</p> <ul style="list-style-type: none"> Examining the drivers for ensuring that that new protection and automation solutions, based on IEC 61850-9-2 process bus standard are interoperable and suitable for established transmission networks Ensuring interoperability with existing conventional systems to optimise asset replacement Achieving interoperability with a mixture of protection and control equipment from different manufacturers at process and station bus, as well as Substation Control System (SCS) Achieving interoperability between mixture of technologies (conventional and digital) Assessing the reliability of IEC61850-9-3 (Power Profile) Precision Time Protocol (PTP) Detailing the latest results of off line interoperability testing <p>Priyanka Mohapatra, Senior Project Manager - SP Energy Networks</p>	16:30	<p>IEC 61850 for DER Environments: Determining the optimum design and implementation of substation automation unit for future active distribution grids</p> <ul style="list-style-type: none"> Examining the challenges faced by DSOs in managing the incremental growth of DERs connected to the grid Making the case for developing a new framework for network automation, moving part of the grid control logics into the substation Decentralising monitoring and control functionalities and bringing them near to the field in the Substation Automation Unit reduce complexity increasing the network controllability and system performance Effectively ensuring cyber security in the integration of DER to the power grid Outlining the current status of standardisation for IEC 61850 and DER integration <p>Abhinav Sadu, Research Associate - E.ON Energy Research Centre</p>
10:00	<p>Testing and Maintenance: Outlining TNBR's latest research into effective testing and maintenance of IEC 61850 based substation protection, automation and control systems</p> <ul style="list-style-type: none"> Outlining the projects covered in the system verification and simulation process in the TNB labs: Functional and Interoperability Test for IEC 61850 compliant IEDs, SCADA Gateway, Station HMI and Proxy servers Time Synchronization protocol accuracy and performance test Comparing the relative benefits of developing in-house testing or working with a consultancy or integrator Designing and testing process bus network architecture in the lab and in field trials <p>Mohd Iqbal Ridwan, Principal Researcher, Utility Automation – TNB Research Sdn Bhd</p>	17:00	<p>Enabling DER Generators to Connect to the Grid: Developing a IEC61850 basic application profile to meet EU RfG (Requirements for Generators) and effectively integrate DER into the power grid</p> <ul style="list-style-type: none"> Quantifying and addressing the challenge of monitoring and controlling growing DER resources such as wind / hydro power, solar panels, battery storage, now and as future smart grids evolve Outlining the drivers for creating an IEC 61850 profile to control and monitor distributed energy resources Detailing the use cases such as reducing load and predicting congestion Overcoming the technical challenges of aligning infrastructure and data models Determining the different IEC 61850 standards required <p>Sander Jansen, Data Architect - Alliander</p>
10:30	Morning refreshments, exhibits & networking	17:30	<p>Data Driven HMI Application: reducing configuration time and cost through the implementation of a high functionality HMI application into a third generation substation automation system</p> <ul style="list-style-type: none"> Mapping out the range of functionalities incorporated into the third generation of substation automation with a focus on the data driven HMI application Evaluating when and how process bus and device management will be introduced Determining how automatic configuration in minutes rather than months is being facilitated Understanding the business benefits and cost savings being realised by the adoption of IEC 61850 into the overall grid modernisation programme Ensuring that future standardisation work through the work of IEC 61850-6-2 (HMI) Task Force fully supports the data driven HMI application Determining the overall specification and engineering process including additional file types as compared with that proposed by IEC 61850-6-2 (HMI) Task Force Achieving open source open standard solutions to avoid single vendor lock in <p>Mehrdad Vahabi, Substation Automation Project Manager - Southern California Edison Jeremy Califano, Engineering Manager - Southern California Edison Dustin Tessier, Managing Director & IEC 61850 Expert - Tesco Group</p>
11:00	<p>Tool Interoperability Panel Discussion: Meeting the need for multi-edition and multi-vendor interoperability for configuration and testing tools</p> <ul style="list-style-type: none"> Quantifying the impact, the lack of tool interoperability is having on maintenance efficiency Ensuring that configuration tools can manage a hybrid environment – standardising SCL files Reducing the need for multiple software programmes to configure one device Testing multiple device systems effectively to reduce retest requirements Future proofing tools for IEC 61850 Edition 3 and 4 <p>Bas Mulder, Senior Consultant – DNV GL Jürgen Resch, Industry Manager Energy – COPA-DATA Eric Xu, Lead Simulation and Automation Engineer – RTDS Claudio Silva, Lead Product Manager – Software and Systems – Efacec Alexey Anoshin, Technical Director – Tekvel</p>	18:00	Closing remarks and end of conference
12:30	Lunch, networking and exhibition		
14:00	<p>Utility Maintenance Panel: Sharing experience on how utilities are addressing the on-going, practical challenges of managing and maintaining IEC 61850 networks</p> <ul style="list-style-type: none"> Comparing the relative benefits of using the vendor for IED maintenance Addressing the practical challenges of managing the system upgrade /modification process when new devices are added to the network Assessing the software tools available to assist with system modification Determining how to effectively document the development of the substation: documenting SCL, IED configurations Developing effective documentation approval processes Maintaining and validating ongoing firmware revisions for IEC 61850 Making the case for centralised substation protection as opposed to it being distributed across all relay devices <p>René Troost, Specialist AM Network Intelligence - Stedin Priyanka Mohapatra, Senior Project Manager - SP Energy Networks Nikolay Ignatovski, Automation Engineer - Electricity System Operator Bulgaria</p>		

"The conference has really expanded my knowledge of IEC 61850 which will allow me to inform my colleagues and assist our DNO/ DSO based approach to outlining our smart network strategy."

Sean Stack, UK Power Networks

"A very useful time, open exchange of ideas and information. Excellent real-world presentations."

Allan Wales, SP Energy Networks

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For over 20 years, the RTDS Simulator has been the industry's de facto tool for the closed-loop testing of protection and control systems. Today, RTDS Technologies continues to lead the way with innovative developments, ensuring real time simulation's applicability for the grid modernization practices that are so critical for utilities, protection and control manufacturers, and research institutions around the world. NovaCor™, our newest generation of simulation hardware, is bringing digital grid, distribution automation and grid-edge connectivity to life in real time.

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Triangle MicroWorks, Inc. provides software libraries and PC-based tools to help implement and maintain systems using industry-standard communication protocols such as IEC 61850 [including: -9-2 (Sampled Values); -7-410 (Hydro); -7-420 (DER); IEC 61400-25 (Wind); and GOOSE]. We also support IEC 60870-6 (TASE.2/ICCP); IEC 60870-5 (-101, -102, -103, & -104); DNP3; and Modbus. Our Protocol Test & Verification Tools make it easy to test, troubleshoot and configure communication protocols and devices. Our Software Libraries help equipment vendors cost-effectively implement communication protocols in any device. We also offer OPC Drivers/Translators, Protocol Gateways, Visualization Tools, Web-based Training, and Implementation Services.

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Efacec is a Portuguese company with a strong exporter profile and geographical footprint in more than 65 countries. Efacec is present in the development of infrastructures for important sectors of economic activity: Energy, Environment & Industry, Mobility & Transportation. Part of Efacec Group, Efacec Automation focuses on engineered solutions for protection, control and management of electric power networks. Through the development of its own advanced technology and the expertise gained through over 30 years of system implementation experience, Efacec Automation operates globally, focusing strongly on Europe, North and South of Africa, Middle East, India and Latin America.

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SUBNET is a software products company dedicated to serving the needs of the electric utility industry. SUBNET provides innovative interoperability solutions that combine the latest SUBstation technologies with modern day NETWORKING and computing technologies enabling electrical utilities to build a smarter, more efficient electricity grid. We create products that make your substations- and your overall power grid- more intelligent; allowing you to more reliably and safely deliver power to your customers.

SUBNET Solutions has recently expanded its operations into South American, African, Australian and European markets. With steadfast campaigns focusing on IEC 61850, DNP3 and other communication protocols and architectures, SUBNET continues its proud 25-year history of conducting in-person training courses for utilities and energy vendors worldwide.

As a software-oriented firm and as a Microsoft Certified Partner, SUBNET also has a clear comprehension of the technologies and possibilities available in a world defined by the information economy. In an industry where most device management providers are equipment/device manufacturers themselves, SUBNET's standout feature lies in the fact that we provide unbiased device management solutions. SUBNET vendor-agnostic solutions give energy and utility firms the freedom of choice in collaborating with diverse suppliers and third-party vendors.

Driving interoperability and multi-function integration through its technology, SUBNET is raising the bar for energy management and distribution standards, with its display of comprehensive grid solutions. Integration solutions offered to energy and utilities used to lag behind IT technology by 10 to 15 years. SUBNET's goal is to create products that keep pace with technology, and the company will continue to leverage the best of breed new IT technologies into operational technologies.

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COPA-DATA is the technological leader for ergonomic and highly-dynamic process solutions. The company, founded in 1987, develops the software zenon and is headquartered in Austria. zenon is sold through its own offices in Europe, North America and Asia, as well as partners and distributors throughout the world. Customers benefit from local contact persons and local support thanks to a decentralized corporate structure. As an independent company, COPA-DATA can act quickly and flexibly, continues to set new standards in functionality and ease of use and leads the market trends. zenon Energy Edition is the industry-specific SCADA solution from COPA-DATA for power plant automation and substation automation, grid control technology and wind park management. The drivers developed by COPA-DATA guarantee adherence to international standards such as IEC 61850/IEC 61400-25, IEC 60870 and DNP3.

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The Artech Group, with over 70 years of experience designing, engineering and manufacturing equipment and systems for the electric power industry, focused on generation, transmission and distribution grids, offers a complete range of solutions for the IEC61850 Digital Grid.

As an international benchmark with equipment operating in over 150 countries, with companies in Europe, America, Asia and Oceania, Artech offers new approaches to measurement in HV grids with some differentiating features that are not only interesting for digital substation applications, but also new approaches to solve challenging application scenarios.

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Kalkitech is a leader in solutions that securely bridge the data communications gap between utility field devices, substations and head-end systems across vendors and protocols, including IEC 61850. By transforming and accelerating interoperability and accessibility to real-time data and analytics, our solutions aid utilities in improving system reliability and operational efficiencies. Kalkitech's products are used throughout the lifecycle of IEC 61850 installations from design, test, simulation and commissioning, to operation and maintenance. Solutions are used by utilities, test houses and product vendors: test tools, data concentrators, protocol translators, gateways, energy IoT platform, IED protocol modules and embedded edge gateway software.

For more information visit: www.kalkitech.com

Exhibitors:



DOBLE Engineering Company offers diagnostic instruments, services, and the world's premier library of statistically significant apparatus test results for the benefit of energy generation and delivery companies and industrial power users worldwide. Now in 110 countries, DOBLE Engineering Company has been helping clients in the electric power industry improve operations and optimize system performance for nearly a century. Doble is a world leader in diagnosis and testing of protection, control and automation systems, including IEC 61850-based PACS. DOBLE delivers test instruments and software to help power companies meet the challenges of protection testing in today's time sensitive regulatory environment.

For more information visit: www.doble.com/en



JP Embedded is a company located in Kraków, Poland. Founded in 2006 by software enthusiasts Paweł Filipek and Jan Mazan, currently employs 30+ software, hardware and test engineers, who are passionate about embedded systems development and technology in general. The initial focus of the company was offering embedded systems design, implementation and testing services. Today our primary interest is development of state of the art products for energy market. Currently we offer the following software and hardware solutions:

IEC-61850 library for embedded devices (MMS server, GOOSE, SV, control model) ICCP/TASE.2 library for embedded devices (client & server, compliant with security standard IEC-62351) IEC 60870-104 library for embedded devices hardware module allowing integration of IEC-61850 with products like protections, relays, current transformers or power meters We believe that beside our knowledge, competences and experience another important advantage is our location, which is nowadays recognized as one of the most important IT hubs in Europe.

For more information visit: www.jpembedded.eu/en



SAE IT-systems GmbH & Co. KG develops and produces highly innovative and reliable products in the fields of substation automation, telecontrol and automation. We offer compact and modular systems with state of the art technology and outstanding performance for application areas like energy, natural gas, water or infrastructure. We proudly look back on more than 40 years of experience and are considered as one of the leading manufacturer in the market. Our new product line "series5+" provides the IEC 61850 client version (Edition 2) e.g. for the coupling of protective equipment.

For more information visit: www.sae-it.com



OPAL-RT TECHNOLOGIES is the leading provider of open Real-Time Digital Simulators to design, test and validate complex controls for electrical, electro-mechanical and power electronic systems. OPAL-RT simulators are used by engineers and researchers at leading manufacturers, utilities, universities and research centres around the world.

For more information please visit: www.opal-rt.com



SISCO provides standards based, real-time communications and integration solutions to end users and OEMs in the energy industry. We specialize in the application of IEC 61850 and CIM to manage the complexity of electric power systems while building a flexible Smart Grid integration architecture that is robust and scalable. Products include source code, off-the-shelf interfaces, remedial action systems, and special protection systems. Services available include use case and model consulting, systems integration, application development, training, support and maintenance.

For more information visit: www.sisconet.com



With the introduction of IEC 61850 new system designs are enabled that allow creating of fully digital substations. In such substations, primary and secondary equipment will exchange information based on serial communication networks using Ethernet. Testing such integrated systems, however, requires serious consideration. How to verify correct implementation of a function when it uses multiple Intelligent Electronic Devices communicating over network? How to test it in the factory but also in service? The answer is simple with advanced simulators and support tools provided by GridClone!

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Inorks has created a software solution to automate management, monitoring, and security of data networks inside power industry. Using software-defined networking (SDN) and Network Functions Virtualization (NFV) as enabling technologies, Inorks's solution offers a flexible suite that removes the complexity of configuring the data network ensuring that the resulting configuration on the IEDs, SCADAs and sensors will match the network design reducing the errors and optimizing the human resources.

Inorks helps experienced power engineers to be master on networking by giving them the tools to create their own telecommunication architecture ensuring the security, bandwidth and latency required by the specific application without learning CLI commands from specific legacy vendors.

For more information visit: www.inorks.com



SEL is a recognized leader in electrical protection, communications, monitoring, cyber security, automation, and control solutions for mission-critical utility and industrial applications. Products that support and enhance IEC 61850 and other international standards include protection class IEDs, computers, software, and services for reliable, ultra-high-speed protection, control, and automation of power system components in generation, substation, transmission, distribution, and industrial applications. Cyber security products and services support substation DMZ strategies, prevent intrusion, and protect the P&C devices from external attack, and internal attack when a windows device becomes corrupted. SEL also provides mission critical LAN and WAN technologies including software defined networking (SDN).

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Siemens AG (Berlin and Munich) is a global technology powerhouse that has stood for engineering excellence, innovation, quality, reliability and internationality for 170 years. The company is active around the globe, focusing on the areas of electrification, automation and digitalization. One of the world's largest producers of energy-efficient, resource-saving technologies, Siemens is a leading supplier of efficient power generation and power transmission solutions and a pioneer in infrastructure solutions as well as automation, drive and software solutions for industry. With its publicly listed subsidiary Siemens Healthineers AG, the company is also a leading provider of medical imaging equipment - such as computed tomography and magnetic resonance imaging systems - and a leader in laboratory diagnostics as well as clinical IT. In fiscal 2017, which ended on September 30, 2017, Siemens generated revenue of €83.0 billion and net income of €6.2 billion. At the end of September 2017, the company had around 377,000 employees worldwide.

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Speaker Biographies



Christoph Brunner
President of it4power & Convenor
IEC TC 57 WG10

Christoph Brunner graduated as an electrical engineer at the Swiss Federal Institute of Technology in 1983. He is a Utility Industry professional with over 25 years of industry experience with both knowledge across several areas within the Utility Industry and of technologies from the Automation Industry. He is president of it4power in Switzerland, a consulting company to the power industry. He has worked as a project manager at ABB Switzerland Ltd in the business area Power Technology Products in Zurich / Switzerland where he was responsible for the process close communication architecture of the substation automation system. He is convenor of the working group (WG) 10 of the IEC TC57 and member of WG 17, 18 and 19 of IEC TC57. He is IEEE Fellow, member of IEEE-PES and IEEE-SA. He is active in several working groups of the IEEE-PSRC (Power Engineering Society - Relay Committee) and member of the PSRC main committee and the subcommittee H. He is international advisor to the board of the UCA international users group.



Grégory Huon
Head of Engineering Governance at
**Elia & Group IEC 61850 Convenor
ENTSO-E**

Grégory Huon received degrees of Master of Engineering (Electrical Engineering, Institut Supérieur Industriel de Mons, Belgium - 2000) and Master of Science (IT and Management, Faculté Polytechnique de Mons, Belgium - 2003). Grégory began his career in the Transmission field in 2000. After an experience as Project Leader (2001-2006) and Team Leader (2006-2008) in infrastructure projects, Gregory was between 2008 and 2012 head of Secondary Systems department (technical governance & expertise level) within Elia TSO in Belgium. In 2013 Grégory took on responsibility for the infrastructure replacement projects - primary and secondary systems - for the Elia network in Belgium. In 2015, Grégory took on responsibility for the Engineering Governance department. Grégory is specialised in infrastructure project management, asset management and secondary systems expertise. Since 2012 Grégory has been leading the ENTSO-E WG on IEC 61850 standard and the Cigré Working Group B5.50 "IEC 61850 Based Substation Automation Systems - Users Expectations and Stakeholders Interactions". Grégory is also active within IEC TC57 WG10 as liaison D for ENTSO-E and he convenes the Belgian mirror committee of IEC TC57. In 2017, Grégory took on the leadership of the Task 7.1 Interoperability of the European Commission funded project "Osmoste".



Charles Newton
President
Newton-Evans Research Company

Charles W. (Chuck) Newton is the President of Newton-Evans Research Company, a firm focused on electric power industry marketing research and technology consulting. Newton-Evans conducts research on grid-related automation and modernization trends, control systems and infrastructure topics. Key publications provide coverage of trends in control systems, substation automation and grid modernization topics and systems protection each with content which includes coverage of cyber and physical security issues. Prior to launching Newton-Evans Research in 1978, Chuck had been a senior product planner with General Electric Information Systems and earlier with Control Data Corporation. Chuck began his SCADA work with early military deployment of SCADA technology while serving in the U.S. Army. Chuck received an MBA in Marketing from Loyola University in Maryland and an undergraduate degree in Economics from Fordham University in New York City. Chuck is a life member of IEEE PES and an active CIGRE member, serving on several working groups related to electric power grid modernization and cyber security efforts.



Ronald Poosen
Team Leader, Distribution Protection
and Substation Automation
Fluvius

Ronald Poosen has a Bachelor in Process control automation, and a Master in Automation, electrical power networks. In 2008 Ronald undertook a research project on Automation in Smart Grids, Microgrids at the University of Hasselt. In 2010 he explored Automation - Industrial networks (profibus-profinet) at ACRO, a spin off company related to University Hasselt. In 2012 he became an Engineer for secondary systems in electrical networks (RTU, IED, SCADA, IEC61850) at Infrac (DSO in Belgium). In 2018 he became the Teamleader for secondary systems in electrical networks (RTU, IED, IEC61850, IEC 60870-5-104 at Fluvius.



Gilad Bandel
VP Products
Radiflow

In his over 25 years of experience in the cybersecurity and networking industries, Gilad Bandel has held multiple positions in which he was responsible for the conceptualizing, development and marketing of cyber protection devices and solutions for OT networks. Prior to joining

Radiflow, Mr. Bandel served as Director of Product Management at CyberSeal. After the company's acquisition he joined Magal Security, providing cybersecurity solutions for critical infrastructure. Prior to that Gilad managed the Command and Control division at MER Security. Gilad holds a BSc in Computer Science and Physics from Bar Ilan University.



Gerardo Rebollar
Executive Product Line Leader
GE Energy

Gerardo Rebollar is currently Executive Business Development Leader within Grid Automation, having completed a seven-year cycle as Substation Automation general manager from 2010. He was leading the operation & development of innovative products, concepts and architectures in the domain of protection and control systems for Digital Substation solutions. Gerardo has 30 years' experience in both electrical and industrial automation industries. He graduated as Electronic and Communications Engineer and joined Telemecanique in 1988 in the field of power electronics and motor controls. He moved to France in 1992 leading the road map of speed drive controllers. In 2005 he obtained his Executive MBA. In 2007 he was appointed Innovation Vice President in Schneider Toshiba Joint Venture, last position before moving to Areva T&D by 2009 as Gas Insulated Substations marketing and project director. Gerardo is married with two kids and likes aircrafts, sport flying and automotive car design. He enjoys also playing theater, travel in natural open spaces and visiting historical cities.



Leandro Henrique Monaco
Global Product Manager, Electrical
Control Systems
ABB

Leandro Monaco is graduated in Electrical Engineering with an emphasis on Automation and Control and holds a Master's Degree in Systems Engineering from the University of São Paulo, Brazil. He is also post-graduated in Business Management and Marketing by the Administration Institute Foundation, in São Paulo, Brazil. Leandro has more than 10 years' experience in Process Automation, and since 2009 he has been focused on Electrical Control Systems (ECS) applied to industrial plants, with special attention in the IEC 61850 standard. Having worked as Process Control Engineer at the start of his career and thereafter to Electrical Control Engineer, he led and commissioned more than 25 ECS projects since then, in Oil & Gas and Mining plants. He was Engineering Manager for ECS in ABB Brazil and also was globally responsible for the IEC61850 Center of Excellence for Mining projects in ABB. His experience of both Process and Electrical Control allows him to perfectly understand the needs of an industrial plant regarding electrical systems. In 2014, he joined ABB Sweden to act as Global Product Manager for Electrical Control Systems in the Industrial Automation division. Leandro has published several articles in the area of Electrical Control Systems and IEC 61850 standard.



Simon Rodriguez
Vice President of Business Development
SUBNET Solutions Inc

Simon is currently Vice President of Business Development at SUBNET Solutions Inc. He is an electrical engineer and MBA with more than twelve (12) years of progressive working experience in Digital Grid Business Development, Sales and Project Management. He has a passion for managing teams and exceeding customer expectation. Simon has international experience in the electrical utility space where he have led large teams, negotiated and managed contracts, and successfully grew businesses. Specialties: Management, Digital Grid, Electrical Transmission and Distribution, Sales and Marketing, SCADA, Account Management, Utilities, Energy Service.



Joe Stevens
Marketing Manager
Triangle MicroWorks

Joe Stevens leads the product management and marketing at Triangle MicroWorks which includes software for implementing and testing standard communication protocols. Joe helps utilities, manufacturers, and integrators find the right solutions for IEC 61850, IEC 60870-5, DNP3, IEC/ TASE.2, Modbus, and OPC communications. Prior to Triangle MicroWorks, Joe worked on demand response and metering solutions at Siemens and designed communication hardware at IBM. Joe graduated from Georgia Institute of Technology and Kenan-Flagler Business School at the University of North Carolina.



Rannveig Loken
Senior Specialist Control and Protection
Statnett

Rannveig Loeken's special field of interest is protection and control for the transmission system. She is currently the project manager in Statnett for an R&D project related to Digital substation. She has many years' experience from her position as Head of the Control and Protection section in Statnett. Since 2012 Rannveig has been the secretary of CIGRÉ Study Committee

B5. In addition, the work in CIGRÉ Working groups is of great interest, she is currently a member of WG B5.53. In addition, she is in the Advisory board of PAC world, Committee member of DPSP, and Member of International Advisory Committee APA.



Mohd Iqbal Ridwan
Principal Researcher, Utility Automation
TNB Research Sdn Bhd

Mr. Mohd Iqbal bin Ridwan is currently Principal Researcher (System Automation) in TNB Research Sdn Bhd. He received his Bsc. Degree from Keio University, Tokyo, Japan in 2005 and MBA from University Tenaga Nasional in 2018. He has been with Tenaga Nasional Berhad for 13 years. His research interests include; IEC 61850 based Substation Protection, Automation and Control; Smart Grid; Reliability Engineering. He is involved as corresponding member in the following international technical committees; CIGRE WG B5.59 "Requirements for Near-Process Intelligent Electronic Devices"; CIGRE WG B5.53 "Test Strategy for Protection, Automation and Control (PAC) functions in a full digital substation based on IEC 61850 applications"; North America IEC 61850 Process Bus User Task Force. He received the Best Promising Researcher award by TNB Research Sdn Bhd in 2013. He also has authored and presented more than 25 technical papers and journals throughout his career.



Byung Tae Jang
Principal Researcher
KEPCO

Byungtae Jang received his B.S degree in electrical engineering from Busan National University, Korea in 1990. His research interests are protective relaying, Substation Automation System. He has been working in KEPCO since 1990. He is currently a Principal researcher at KEPCO research institute. He is in charge of development of testing tools for IEC 61850 system and substation restoration.



Fred Steinhauser
IEC 61850 and Digital Substation Expert
OMICRON

Fred Steinhauser studied Electrical Engineering at the Vienna University of Technology, where he obtained his diploma in 1986 and received a Dr. of Technical Sciences in 1991. In 1998 he joined OMICRON, where he worked on several aspects of testing power system protection. Since 2000 he worked as a product manager with a focus on power utility communication. Since 2014 he has been responsible for the Power Utility Communication business of OMICRON. Fred Steinhauser is a member of WG10 in the TC57 of the IEC and contributes the standard IEC 61850. He is one of the main authors of the UCA Implementation Guideline for Sampled Values (9-2LE). As a member of CIGRÉ he is active within the scope of SC D2 and SC B5. He also contributed to the synchrophasor standards IEEE C37.118.1 and IEEE C37.118.2.



Paul Hayes
Smart Networks Engineer
ESB Networks

Paul Hayes holds a primary degree in Electrical Engineering from the University College Cork. In previous roles within ESB, Paul has worked in the areas of Load Research, Power Procurement, Wholesale Electricity and Gas Trading, Regulation, Electricity and Gas Demand forecasting, Wholesale Electricity Price Forecasting. Prior to working in ESB Paul worked for Southern Electric (now SSE) in Use of System Charging section and for SEEBOARD in the post privatisation Power purchasing department. Paul is currently a team member of the Smart Networks function within ESB Networks, responsible for all R&D activities and strategic guidance to the utility.



Sebastian Krause
Group Leader Security Audits
GAI NetConsult

Sebastian Krause, worked for more than 20 years for different consulting companies in the areas of information security and IT forensics after his study of communications engineering. Since 2010, Mr. Krause is working with GAI NetConsult GmbH as senior consultant and head of security audits. In this role, he is responsible for technical security audits with a major focus on process control and automation technologies as well as consulting services in terms of information security managements systems based on ISO/IEC 27001. Mr. Krause has conducted security audits of substation automation systems (IEC 60870-5-104 and IEC 61850) as well as SCADA systems of all major vendors in the D-A-CH market based on the BDEW Whitepaper and ISO/IEC 27019.



Peter Rügenapp
Team Leader, Control & Automation
Technology
Amprion

Mr. Rügenapp studied electrical engineering with specialization in automation at the University of Applied Sciences Hagen. He has more than 35 years' professional experience in power generation and transportation. Mr. Rügenapp is an employee of the secondary technology department at Amprion GmbH. Within the department, he is team leader for the field of control and automation technology. He is also Information Security Manager

for the area of secondary technology. Mr. Rūmenapp has been involved in information security for more than 10 years as part of his work. Amprion has been operating an ISMS in accordance with ISO / IEC 27000 since March 2010. One of the many rules outlined is, that all new technologies of secondary systems that are integrated into the process network must be audited according to BDEW white papers. In this respect, Amprion has formulated a separate chapter "IT Security" for the tendering of a new substation automation system based on IEC 61850 in 2014.



David MacDonald
System Monitoring Lead Engineer
Iberdrola

David works for Iberdrola Distribucion, a leading distribution network operator in Spain and early adopter of substation automation systems. His role is to provide technical and asset management support to the Protection team, where he specializes in disturbance analysis and is also involved in the standardization of IEC 61850 across the business. He received his MEng degree in Electrical and Mechanical Engineering, from the University of Strathclyde, before joining Scottish Power in 2009 and consequently Iberdrola Distribucion in 2012



Zigor Ojinaga
Industrialisation Project Leader
Iberdrola

Zigor Ojinaga joined Iberdrola Distribucion (IBDE) in 1997 and has worked in different distribution areas, such as, Remote Control Systems (SCADA, DMS) and MV automation. Since 2009 he has been technical responsible of the Star project, an ambitious deployment that has successfully transformed technology in the field of Smart Grids. He is currently leading the definition of the Substation Automation System within the Processes & Technologies department at IBDE.



Priyanka Mohapatra
Senior Project Manager
SP Energy Networks

Priyanka Mohapatra is currently working as RIIO T2 Innovation Lead at SP Energy Networks. She previously led, and was involved in, the conceptualisation of several innovation projects enhancing grid observability, controllability and standardisation of digital technologies. Prior to joining SPEN, Priyanka was working with Siemens AG for 8 years. She started at Siemens Ltd., India as an electrical engineer before moving to Siemens AG Global R&D, Germany working as a software developer and project manager for SCADA, EMS, DMS systems. She then worked with Siemens Protection Devices Ltd., UK as a product owner and senior engineer designing and developing protection devices. Priyanka holds a B.Tech in Electrical Engineering and an MSc. in Renewable Energy Systems Technology.



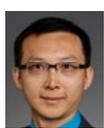
Andrea Bonetti
Senior Specialist Protection Relay and IEC 61850 Applications
Megger

Andrea Bonetti graduated as electrotechnical engineer at Sapienza University of Rome, Italy, in 1993. After five years in ABB Italy as protection engineer, Andrea worked 10 years as HV relay protection specialist at ABB Grid Automation Products in Västerås, Sweden, for relay post-fault analysis, commissioning support, IEC 61850 applications and trainings. From 2008 to 2013 Andrea worked at Megger in Stockholm, as product manager and technical specialist for relay test equipment, dealing with the development of IEC 61850 test set and tools, test algorithms for distance protection and transformer differential protection relays. From 2013 to 2018 Andrea worked as consultant in Relay Protection and IEC 61850 Applications: procurement specification for TSOs, IEC 61850 specification and attendance for FAT/SAT, IEC 61850 troubleshooting in operative substations, trainings, IEC 61850 top down specification and engineering process, development of IEC 61850 test equipment and tools. From April 2018, Andrea works at Megger in Stockholm, as senior specialist in relay protection and IEC 61850 applications. Andrea holds a patent in the area of IEC 61850 testing tools and algorithms. Active member of the IEC TC 95/MT 4 since 2006, Andrea has been sub-group leader for the development of the IEC 60255-121 standard and has received the IEC 1906 Award in 2013.



Jürgen Resch
Industry Manager Energy
COPA-DATA

Jürgen Resch graduated from the HTBLA [Higher Technical School of Engineering] Saalfelden, Electrical Engineering Department. He started his career at the ÖBB [Austrian Federal Railways] in the power plants division, where he was responsible for the execution of power plant automation projects. After this, he worked for Frequentis GmbH as a Product Manager for telecommunication equipment for railroads. Since 2003, Mr. Resch has been employed by COPA-DATA and occupies the role of Industry Manager Energy there. He manages a team that is responsible for product expansion and international sales in the energy sector. Mr. Resch is a member of the Technical Subcommittee MR 57 of the OVE [Austrian Electrotechnical Association] and a lector at the Salzburg University of Applied Sciences.



Eric Xu
Lead Simulation and Automation Engineer
RTDS

Eric joined RTDS in 2009 after graduated from University of Manitoba with the Distinguished Award. Since joined, Eric has been involved in technical support, user training and GTNET component

models development. Eric is a Registered Professional Engineer in the Province of Manitoba and a member of IEEE. He is also an active member of IEC Technical Committee 57 Working Group 10 which is the section working on the development of the communication standards for substations - functional architecture and general requirements. Eric currently serves as the Lead Simulation and Automation Engineer in the protection and automation group.



Bas Mulder
Senior Consultant
DNV GL

Mr Mulder is working as an International Business Developer, Consultant and Project Manager in the field of IEC 61850 Substation Automation together with other IEC standards like IEC 60870-5 for substation to control centre communication and CIM (IEC 61968, 61970) for control centre applications. Mr Mulder has gained expert knowledge of IEC 61850 by developing conformance test tools and performing conformance tests for many numerous suppliers of substation automation equipment. Next to conformance testing Mr Mulder performed several international training sessions for utilities and technology providers.



Cláudio Manuel Silva
Lead Product Manager for Software and Systems
Efacec

Cláudio Manuel Silva is currently a Lead Product Manager for Software and Systems within the Protection, Control and Automation division at Efacec. With over 10 years of background experience in R&D, he participated in different projects related with Power Systems PAC, with a strong focus in systems engineering and tool interoperability. He holds a BsC in Informatics Engineering (2005) from Faculdade de Engenharia da Universidade do Porto and advanced courses in Computer Science. He is also an active participant in Cigré B5 Working Groups.



Alexey Anoshin
Technical Director
Tekvel

Alexey Anoshin has graduated with Master Degree from Protective Relaying Department of Moscow Power Engineering Institute (Russian Federation) in 2008. Earlier in 2005 started his professional career as an Engineer in Switchgear Department at Tavrida Electric company. In 2011 became a Marketing manager at Profotech, where was responsible for optical instrument transformers marketing strategy. Since 2012 he has been a co-founder and Executive director at TEKVEL Ltd. He has been involved in development of several products with IEC 61850 support as well as design and commissioning of IEC 61850 communications including GOOSE and Sampled Values



René Troost
Specialist AM Network Intelligence
Stedin

René Troost, graduated as an Electrical Engineer, and started his career in Telecommunications. He has an extended experience of over ten years in the modern Substation Automation business. In 2014 René joined Stedin, the DSO in the Rotterdam, The Hague, Utrecht area of The Netherlands. René oversees the Substation Automation policy at Stedin and is an active member of the Dutch mirror committee of the IEC TC57 (NEC57) and the TC57 WG10 dealing with power system IED communication and associated data models. He is an expert in the domains of Protection, Automation, Control and Telecommunication and fulfils several roles.



Nikolay Ignatovski
Automation Engineer
Electricity System Operator Bulgaria

Nikolay Ignatovski received his MS degree in Electrical Engineering and Automatics from the Technical University in Sofia, Bulgaria. He has more than 15 years' experience in the maintenance and testing of operation, control and protection equipment in power distribution and transmission substations in Bulgaria. In 2001, he started to work as Relay protection and Automation engineer and later he joined the Distribution network operating regimes analysis group at the Sofia city DSO Company. In 2007, he became a member of the "Electrical Power Substations Operation & Maintenance" department at the Bulgarian TSO company "ESO" EAD where he worked as a Power transmission engineer. From 2012, he works as an engineer in Automation - substation automation systems in the TSO's National Dispatching Center.



Anne van der Molen
Technology Officer
Stedin

Anne van der Molen is grid strategist for the Dutch DSO Stedin He joined Stedin in 2011 to help develop Stedin's emergence as digital DSO. In the past five years, he has been involved in strategy planning and asset management, distribution automation programs and programs around digital asset lifecycle management, analytics and digital grid operations. Anne has represented Stedin in several national task forces and is member of EDSO's technology committee. Previously, Anne worked as solution manager and strategic product manager for a major telecoms equipment and services company. He holds a Msc degree in Electrical Engineering.



Anders Johnsson
Power System Specialist
Vattenfall Distribution Nordic

Anders Johnsson has more than 20 years' experience in substation automation, with a focus on IEC 61850 communication. He is the Swedish representative in Cigré study committee B5 Protection and Automation as well as in IEC TC57 and earlier also as convenor of TC88/TC57 joint working group 25 that develops IEC 61850-based standards for wind power. Since 2015 he has, as Power System Specialist at Vattenfall Eldistribution, a coordinating role in the roll-out of a tool-based process based on IEC 61850. Anders Johnsson has a Master of Science in Electrical Engineering from the Royal Institute of Technology in Stockholm."



Abhinav Sadu
Research Associate
E.ON Energy Research Centre

Abhinav Sadu received his M.S. degree in electrical engineering and information technology from RWTH Aachen University, Aachen, Germany in 2014, where he is currently working toward his Ph.D. degree with the Institute for Automation of Complex Power Systems, E.ON Energy Research Center. Abhinav is currently employed as Research Associate at E.ON Energy Research Centre, RWTH Aachen. His current research interests include design of monitoring and automation systems for active distribution grids, IEC 61850 based automation, grid resiliency studies and modelling of complex power systems.



Sander Jansen
Data Architect
Alliander

At the Alliander IT department, Sander takes a role as data architect and is involved in the use of IEC CIM and IEC 61850. Sander had multiple positions within Alliander on the edge of electrical technology and IT/OT. Being a strong open source believer, Sander consults in the use of open source within the energy world. He is convinced that open source can help to make the energy grid more reliable, innovative, secure, flexible and sustainable, all resulting in a lower cost for society.



Mehrdad Vahabi
Substation Automation Project Manager
Southern California Edison

Mehrdad Vahabi served as technical lead and project manager for the third generation of Southern California Edison (SCE)'s Substation Automation System (SA-3) since 2011. He is also responsible for researching, designing, and testing the SCE's next generation of substation automation applications. Additionally, he is the subject matter expert of SCE's 61850 SCL extensions to auto build the Human Machine Interface (HMI). He holds a B.S. degree in mechanical engineering and he is a member of IEC61850-6-2 (HMI) task force.



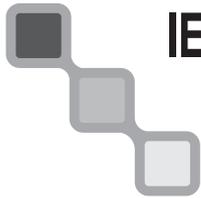
Jeremy Califano
Engineering Manager
Southern California Edison

Mr. Jeremy Califano has over 15 years of electric utility experience, focusing mostly in substation automation, substation apparatus, project management, and company strategy. He is currently the Engineering Manager of Grid Modernization - Substation Automation Deployment, with an ambitious goal of deploying SA-3 to over 400 substations over the next 15 years. Jeremy has a B.S. Degree in Electrical Engineering from UC San Diego, an MBA from the University of La Verne, a P.E. in Electrical (CA), and PMP credentials.



Dustin Tessier
Managing Director
Tesco Group

Dustin Tessier is the Managing Director for Tesco Group of companies, which is a turn-key substation provider that specializes in the engineering, construction and commissioning of protection, control and automation systems within the power system sector; with a focus on IEC 61850 based systems. Dustin was an early advocate for IEC 61850 during his days with a Canadian Utility, and eventually migrated to Siemens where he was involved in Australia's first IEC 61850 substation applications. Dustin has since moved back to Canada to assist in his family-based company, and has been involved with IEC 61850 on a global perspective since, including leadership roles and participation in a number of standards activities including: The Canadian Chair of the IEC Technical Committee 57, Canadian Chair of the IEC Smart Energy Systems Committee, Founder of the IEC 61850 University.com among others.



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