

IEC 61850 Europe 2014

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Driving the Large-Scale Deployment of IEC 61850 across TSO and DSO Smart Grid Infrastructures

Pre-Conference Workshop - Fundamentals of IEC 61850: Tuesday 14th October 2014
2-Day Conference: Wednesday 15th & Thursday 16th October 2014
NH Hotel, Prague, Czech Republic

Hear In-depth Insights on:

- ✓ **IEC 61850 Edition 2:** the impact of edition 2 on new product development and large-scale utility implementations
- ✓ **Optimal Architectures:** future proofing IEC 61850 implementation through scalable, extensible and secure architectures
- ✓ **Advanced Service Features:** leveraging the potential of the Process Bus, Goose Messaging, Sampled Values, MMS and many more service features
- ✓ **Operations & Maintenance:** ensuring the smooth transfer of IEC 61850 knowledge and responsibility from engineering to operations and maintenance
- ✓ **System & Tool Development:** evaluating the latest products on the market and in development to support the implementation of edition 2 enabled infrastructures
- ✓ **Future Smart Grid Applications:** opportunities for extending IEC 61850 beyond the substation

Utility Case-Studies From:

Javier Amantegui
Head of Protection & Substation Standardisation Department
Iberdrola Distribución

Grégory Huon
Substation Replacement Projects Team Leader
Elia
& Leader of ENTSO-E Taskforce
ENTSO-E

Yang Wei
Director, Power Automation
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R&D Nester

Ray Zhang
Technical Leader, Protection, Control & Automation
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Research Engineer
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RTE

Berkan Kapkac
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Steve Van den Berghe
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Carsten Strunge
Senior System Engineer, Smart Grid
Energinet.dk

Enrique García García
Head of Telecoms and Telecontrol Network Operations
Iberdrola Distribución & EDSO for Smart Grids

Expert Advice From:

Christoph Brunner
President – it4power & Convenor – IEC TC 57 WG 10

Robin Massink
Engineer
DNV GL

Richard Schimmel
Product Manager IEC 61850
DNV GL

Benjamin Amsler
Director New Technologies
NetModule

Jim Coats
President
Triangle MicroWorks

Juergen Resch
Industry Manager Energy
COPADATA

Maik G. Seewald
Technical Lead
Cisco

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Dear Colleague,

We are delighted to bring you the **2nd Annual IEC 61850 Europe 2014** - the only European conference, exhibition and networking forum that specifically addresses the information and implementation needs of the end-user community; **TSOs and DSOs**.

With utility commitment to IEC 61850 now firmly in place, the successful introduction of Edition 2 under way, more extensive implementations of key features and functionalities, and the relative ease with which multi-vendor interoperability is being achieved, this year's IEC 61850 Europe 2014 programme goes beyond utility roadmaps and **reveals the success criteria that is driving large-scale deployment of the standard** within TSO and DSO organisations.

Issues such as securing investment, establishing the right organisational structure, optimising the engineering process, planning for operational excellence and much more, will be discussed in great depth and with complete transparency.

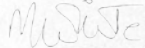
Highlights of this year's programme include:

- ✓ **Case study led agenda** – gain deep insights into the investment, organisational, engineering and operational strategies of the pioneering European utilities that have actually implemented the standard and are ready to share their experiences and lessons learnt
- ✓ **Tech innovator panel discussions** – hear from technical representatives of the leading system and tool vendors and understand how they are integrating Edition 2 into their products and facilitating interoperability for the long term
- ✓ **Fundamentals of IEC 61850 workshop** – led by **Christoph Brunner**, *Convenor of IEC TC57 WG10* and **Richard Schimmel**, *Product Manager IEC 61850 at DNV GL*, this pre-conference workshop will demystify the standard and provide you with a robust working knowledge in preparation for the conference discussions
- ✓ **Working group discussions** – this series of highly interactive group discussions on key implementation themes, will challenge the status quo, allow you to feedback your suggestions, and influence the future shape and direction of the standard's development
- ✓ **Solution zone** – positioned alongside the conference this highly focused display of the latest IEC 61850 enabled technologies and services, will allow you to discuss your specific system, tool, testing & certification, and system integration needs with technical representatives of leading suppliers
- ✓ **Networking drinks** – taking place at the end of conference day one, this is the perfect opportunity to relax and unwind after an intensive day of presentations, panel discussions and working group debates, meet with end-user colleagues and make new contacts to help you take your IEC 61850 implementation plans to the next level

This is the most focused forum in Europe to get up to speed with the latest IEC 61850 implementation experiences and lessons learnt directly from the end-user community.

We look forward to welcoming you to the event in October.

Kind Regards,



Mandana White
Managing Director
Phoenix Forums

Gold Sponsor:



in DNV GL we unite the strengths of DNV, KEMA, Garrad Hassan, and GL Renewables Certification. DNV GL's 3,000 energy experts support customers around the globe in delivering a safe, reliable, efficient, and sustainable energy supply. We deliver world-renowned testing, certification and advisory services to the energy value chain including renewables and energy efficiency. Our expertise spans onshore and offshore wind power, solar, conventional generation, transmission and distribution, smart grids, and sustainable energy use, as well as energy markets and regulations. Our testing, certification and advisory services are delivered independent from each other. Our Intelligent Networks and Communication department is global thought leader on and specialized in SCADA EMS/DMS, smart meter, data communication infrastructures and protocols and cyber security projects. We have successfully completed more than 300 SCADA EMS/DMS projects around the globe. We have worked with all major vendors in numerous projects, and are intimately familiar with their systems, their staff, and their record in implementing systems. In addition, several DNV GL staff members are actively involved in several International Standardization groups defining the new generation of EMS and DMS systems.

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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.



NetModule provides everything required to develop, test and approve IEC 62439-3 FRP/HSR devices! We are a technology company applying communication & Internet technologies to Embedded System solutions for the segments Automation, Tele/Datacom and Life Science. The offering comprises hardware & software products as well as extensive professional engineering services and consulting. Founded in 1998 NetModule is a Swiss based company with headquarter in Berne (Niederwangen) and offices in Winterthur, Basel, Frankfurt and Hong Kong. From these locations, NetModule serves the central European market. A subsidiary in Hong Kong supports sourcing activities in Far East and serves as a stepping stone for the commercialization of our products and services in China.

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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Pre-conference Workshop | Fundamentals of IEC 61850 Tuesday 14th October 2014 | 10:30 to 17:00

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* and **Richard Schimmel**, *Product Manager IEC 61850 at DNV GL*, provide 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 investigation or have several years' practical implementation experience, this workshop will provide you with a much needed update on the fundamentals of this evolving standard.



Workshop Leaders

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.



systems.

Richard Schimmel works at the protocol competence & test center of DNV KEMA. Since 1996 Mr. Richard Schimmel has been fulltime involved with open data communication protocols such as IEC 60870-5-101/103/104, TASE 2 (ICCP) and IEC 61850. He supports both utilities and manufacturers in implementing these protocols. He is product manager for IEC 61850 and TASE 2 testing, certification and training services and test tools. Since 2000 he is an active member of IEC TC57 working group 10 and the UCA international users group - test subcommittee. He is editor of IEC 61850 conformance test procedures. As such he has developed an in depth knowledge of the data communication protocols used in EMS, SCADA, gateways, RTU's and substation automation and protection

Workshop Programme

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.

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, ACSI, and SCL will be discussed, as well as the benefits of the new Testing Capabilities and Diagnostic Features. Detailed information on harmonisation with the CIM protocol will also be explored.

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.

Session 4: Communication Fundamentals

Various communication concepts will be discussed including Datasets, Reporting, Goose Object Oriented Events and Goose Repetition.

Session 5: Quality Assurance - how to specify IEC 61850 to ensure your automation system work 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.

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.

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.

Conference Day One: Wednesday 15th October 2014

08:30 Registration and welcome refreshments

09:20 Opening address from the chair

09:30 **Speeding up Deployment: laying the strategic foundations for the rapid deployment of IEC 61850 across European TSO and DSO systems**

- Clarifying the business case for the large-scale deployment of IEC 61850 in T&D systems
- Driving internal IEC 61850 skills and knowledge development and establishing a robust framework for multiple departments to work seamlessly on the implementation, operation and maintenance of IEC 61850 enabled infrastructures
- Identifying the IEC 61850 features and functionalities to prioritise to deliver maximum business benefit and return on investment
- Evaluating the opportunities and costs of extending IEC 61850 beyond the substation – which other sections of the smart grid infrastructure would most benefit?

Javier Amantegui, *Head of Protection & Substation Standardisation Department – Iberdrola Distribución*

10:00 **Standards Development: updating on the progress being made in Edition 2 adoption, its implications for multi-vendor interoperability, and the migration path to Edition 3**

- Highlighting the weaknesses of Edition 1 and understanding how these have been addressed in Edition 2 to ensure a more robust and user-friendly standard
- Reviewing how gaps in SCL are being addressed to meet future requirements
- Clarifying the new features introduced by Edition 2 and understanding how these are speeding up deployment of IEC 61850 in T&D systems
- Analysing the end-user gaps remaining and determining how Edition 2 will be further enhanced to fully meet utility requirements
- Understanding the implications for multi-vendor interoperability and interchangeability
- Ensuring a future-proofed approach to multi-vendor interoperability during all stages of system deployment and operation: repair, maintenance, replacement, changes to system functionality

Christoph Brunner, *President – it4power & Convenor – IEC TC 57 WG 10*

10:30 **ENTSO-E Profile Implications – updating on the latest profile development findings from the ENTSO-E and understanding how this will support the rapid deployment of IEC 61850 within European utilities**

- Evaluating the ENTSO-E profile
- ENTSO-E function/signal specification tool at information level
- Concept of Basic Application Profiles from IEC/Cenelec
- Exploring lessons learnt from the ENTSO-E use cases to improve the standard
- Engineering guidelines
- Testing guidelines
- Establishing a sustainable process between stakeholders in order to reach the objective of robust interoperability
- Liaisons between main stakeholders ENTSO-E, IEC, UCA Iug
- Link with European Commission and mandate 490 – IEC 61850 roadmap

Grégory Huon, *Substation Replacement Projects Team Leader - Elia & Leader of ENTSO-E Taskforce – ENTSO-E*

11:00 Morning refreshments, networking and exhibits

11:30 **New Substations: future-proofing new build IEC 61850 architectures to ensure long term support of multi-vendor interoperability and interchangeability**

- Identifying the design and architecture criteria that will ensure a future-proofed approach to new substation automation using IEC 61850
- Planning in IEC 61850 extensions despite limited visibility of future standards developments to optimise the engineering process today and in future
- Getting to grips with Ethernet based communication networks and understanding how this technology is developing to better support IEC 61850 enabled infrastructures
- Selecting the optimal range of features and functionalities to exploit for new substations today and in the longer term
- Evaluating the various configuration tools on the market to support the effective top-down design of new IEC 61850 enabled substations
- Determining the pros and cons of engaging supplier support beyond first build and establishing a framework to optimise long term collaborations

Yang Wei, *Director, Power Automation – CEPRI & Project Co-Leader – R&D Nester*

12:00 **Legacy Substations: managing cost and complexity in the integration of IEC 61850 within established substations, seamlessly mixing old and new technologies, and maximising asset lifecycles**

- Establishing the business case for the large-scale deployment of IEC 61850 enabled substations including retrofits and expansions
- Reviewing recent deployments of IEC 61850 within legacy substations and determining the lessons learnt and the implications for future cost reduction of such deployments
- Identifying the key points of technical complexity and establishing innovative techniques to overcome these
- Understanding how Edition 2 will support implementation within legacy infrastructures and ease multi-vendor interoperability and interchangeability
- Optimising the design, engineering, operations and maintenance procedures for IEC 61850 enabled legacy substations
- Factoring in effective gateways to ensure the smooth transformation of old substations
- Exploiting the latest generation of configuration tools best suited to the legacy substation environment

Thierry Buhagiar, *Project Manager, Smart Substation Projects – RTE*

12:30 **Advanced IEC 61850 Service Features: evaluating the complete range of IEC 61850 features and establishing an implementation plan that balances cost, functionality and future proofing objectives – Process Bus, GOOSE Messaging, Sampled Values, MMs and more**

- Examining the business benefits and drivers for adopting the various IEC 61850 service features
- Optimising design and architecture criteria to ensure long term viability of these features
- Re-evaluating testing requirements to support effective implementation

Ray Zhang, *Technical Leader, Protection, Control & Automation – National Grid*

13:00 Lunch, networking and exhibits

14:00 **Process Bus: optimising the implementation of the process bus to ensure interoperability between merging units and protection devices from multiple vendors**

- Examining the business benefits and drivers for adopting the process bus
- Optimising the design and architecture to ensure long term viability
- Re-evaluating testing requirements to support process bus implementation

Speaker to be confirmed

14:30 **Edition 2 Technology Panel: determining how key equipment vendors are adopting the latest version of IEC 61850 and supporting multi-vendor implementations within T&D systems**

During this session several key vendors will discuss their internal strategy for helping to speed up the deployment of Edition 2, the new features and functionalities they are building in, how they are better supporting multi-vendor interoperability and interchangeability, the new testing opportunities they are adopting, and how they propose to support the migration path to Edition 3.

Juergen Resch, *Industry Manager Energy, COPADATA*

15:30 Afternoon refreshments, networking and exhibits

16:00 **Advanced IEC 61850 Architectures: developing a scalable, extensible and secure infrastructure to maximise throughput and performance of IEC 61850 based networks**

- Establishing the suitability of IEC 61850 as a standard for current and future, greenfield and retrofit, substations and related infrastructures
- Forecasting the functionality requirements and cost-effectively building these into the architecture
- Ensuring effective support of services such as WAMS, tele-protection, physical security, and workforce management
- Leveraging IP/MPLS as a scalable platform for a consolidated multi-service network and a driver for more advanced and distributed IEC 61850 installations

Maik G. Seewald, *Technical Lead – Cisco*

16:30 **Working Group Breakout** – during this 2-hour session the audience will break out into several small discussion groups, each tackling a key issue, challenge or theme facing the IEC 61850 end-user community. Initial brainstorming will lead to identifying potential solutions and preparing recommendations for presentation on conference day 2. This session presents the ideal opportunity for the end-user community voice to be heard loud and clear, heavily influencing the direction and development of the next phase of IEC 61850.



18:30 **Networking Drinks Reception** – take this opportunity to relax, unwind, and enjoy a few drinks with colleagues and peers. The perfect way to round off an intensive day of presentations, discussions and learning.



20:00 End of conference day one

Conference Day Two: Thursday 16th October 2014

08:30 **Registration and welcome refreshments**

09:20 **Opening address from the chair**

09:30 **Working Group Presentations:** during this session a representative from each of the working groups will present the findings and recommendations that arose from the previous day's discussions. The perfect opportunity for the end-user community to influence and drive the next phase of the standard's development.



10:30 **Robust Project Planning & Documentation: optimising the team set-up, developing robust documentation procedures, and mitigating risks to the large-scale deployment of IEC 61850**

- Establishing the optimal use of IEC 61850 and laying out the features, functionalities and applications roadmap to best serve this
- Determining the most effective way to interwork departments to maximise leverage of internal resource and optimise reliance on external vendors
- Adopting the appropriate processes, engineering and testing tools to support immediate and long term deployment needs
- Identifying effective documentation procedures and ensuring these are fully understood and adopted by internal and external teams
- Ensuring a smooth migration of IEC 61850 responsibility from the engineering to operations and maintenance teams
- Evaluating how best to adopt a top-down engineering process and creating a robust and future proofed internal profile

Berkan Kapkac, *Protection & Control Engineer*
Vattenfall Distribution Nordic

Morning refreshments, networking and exhibits

11:00 **Operations & Maintenance: managing the migration of IEC 61850 responsibilities from the engineering to the O&M team and optimising the total cost of ownership**

- Setting up a documentation procedure that ensures IEC 61850 implementation is effectively carried out to time, within budget and with complete buy-in from all internal and external stakeholders
- Establishing an effective operations and maintenance framework to ensure maximum uptime and effective predictive maintenance
- Developing a real-time procedure for pinpointing degradation of assets
- Optimising the total cost of ownership
- Building in the capability to extend the standard whilst substations remain fully operational

Steve Van den Bergh, *Project Leader, Smart Grids – Eandis*

Enrique García García, *Head of Telecoms and Telecontrol Network Operations – Iberdrola Distribución & EDSO for Smart Grids*

12:30 **Conformance & Interoperability Testing: mapping out the range of testing procedures required to ensure full conformance and robust interoperability of IEC 61850 enabled infrastructures**

- Identifying the complete range of testing procedures required to ensure a high performance and fully interoperable IEC 61850 enabled substation infrastructure
- Determining the timelines, costs and skillsets required to optimise the process
- Evaluating the range of tools on the market and in development to fully support the testing process

- Ensuring effective testing at all levels including device, functional and performance

Carsten Strunge, *Senior System Engineer, Smart Grid Energinet.dk*

13:00 **Lunch, networking and exhibits**

14:00 **Cyber-Security: devising a robust cyber-security strategy to guard against emerging cyber-attacks on IEC 61850 enabled infrastructures**

- Establishing the key points of security vulnerability in IEC 61850 enabled substations and associated infrastructure
- Understanding how Edition 2 will more comprehensively protect substation assets
- Determining the risks and solutions associated with:
 - IP/Ethernet based communication infrastructures
 - SCADA and control room infrastructure
 - Advanced metering infrastructure
- Evaluating the impact of cyber-security on engineering tools and procedures
- Striking the balance between security and functionality in the large-scale deployment of IEC 61850 enabled substations

Robin Massink, *Engineer – DNV GL*

14:30 **Tools Advancement Panel: evaluating the latest developments in third party tools for ease of engineering, analysis, testing and more**

In this session several innovative tools manufacturers will show-case their latest vendor-independent tools to support a variety of processes including: project design, configuration, documentation, testing, monitoring and analysis tools. Special attention will be given to how standards are being further developed to support the expansion of the generic tool ecosystem.

Benjamin Amsler, *Director New Technologies – NetModule*
Jim Coats, *President – Triangle MicroWorks*

15:30 **Afternoon refreshments, networking and exhibits**

16:00 **IEC 61850 and DER: successfully implementing IEC 61850 as the standard communication protocol for distributed energy resources**

- Understanding the drivers for the application of IEC 61850 in DER infrastructures
- Evaluating the key challenges and points of complexity in achieving large scale implementation
- Optimising the data model and architecture and ensuring appropriate alignment of DER and substation infrastructures
- Determining the most effective use of the control centre in the architecture
- Ensuring the substation remains the main point of automation
- Utilising the latest tools for testing IEC 61850 within DER infrastructure

Thierry Coste, *Research Engineer – EDF*

16:30 **Beyond the Substation: opportunities for extending IEC 61850 across the wider smart grid infrastructure**

- Identifying and prioritising the key elements of the smart grid that would most benefit from IEC 61850 capability
- Determining the timelines and costs associated with the full deployment of IEC 61850 across all smart grid systems and infrastructures
- Overcoming the complexities of extending IEC 61850 to SCADA and Control Centre environment
- Determining the implications for end-to-end communications infrastructures

Speaker to be confirmed

17:00 **Closing remarks from the chair and end of conference**

Speaker Biographies:

In order of appearance



Javier Amantegui
*Head of Protection & Substation
Standardisation Department*
Iberdrola Distribución

Javier Amantegui received his Ph.D. degree from the University of the Basque Country University in Bilbao. He joined Iberdrola in 1979 and worked in the areas of Hardware Maintenance, Protection and Power Quality. At present he is the manager of the Protection and Substation Standardization Department in Iberdrola Distribución in Spain. Their main current areas of interest include advanced application of Protection, IEC 61850 developments and applications, standardization of equipment and substation asset management. He has been involved in CIGRE and IEC activities since 1988. He has been the chairman of CIGRE SC B5 "Protection and Automation" between 2008 and 2012. Dr Amantegui is an honorary member of CIGRE.



Grégory Huon
*Substation Replacement Projects
Team Leader*
Elia
& *Leader of ENTSO-E Taskforce*
ENTSO-E

Grégory Huon was born in 1977. He 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. Since 2013 Grégory is responsible for the infrastructure replacement projects – primary and secondary systems – for the Elia network in Belgium. Grégory is specialised in infrastructure project management, asset management and secondary systems expertise. Grégory published recently different papers regarding Elia's strategy over IEC61850 standard implementation and leads the ENTSO-E Task Force on IEC61850 standard and the Cigré Working Group B5.50 "IEC 61850 Based Substation Automation Systems – Users Expectations and Stakeholders Interactions".



Yang Wei
Director, Power Automation
CEPRI
& *Project Co-Leader*
R&D Nester

Mr. Wei Yang is doing research project of smart-substation in R&D NESTER (www.rdnester.com) which is owned by both CEPRI and REN in Portugal. He is a Director of the Power Automation Test Lab at CEPRI. He has been doing research work concerning SAS, Smart Grid, SCADA system software, and system function since 1995. He has extensive experience in substation automation, protocols conformance testing and function type and system function testing. He holds a MSc. in Electric Power System Automation from Northeast China Electric Power University.



Ray Zhang
*Technical Leader, Protection,
Control & Automation*
National Grid

Dr Ray Zhang, CEng, MIET the Technical Leader of Protection, Control & Automation, has the overall technical responsibility for the secondary systems within National Grid UK. Previously he was the Technology Development Manager, responsible for technology development in the area of HVDC transmission, Series Compensation, Smart Grid, Energy Storage as well

as Strategic Asset Management for the company. Dr Zhang joined National Grid in 1996 and had a number of managerial and technical positions. As a technical specialist, he has primarily worked in the area of power system protection, control and automation, some recent developments under his leadership include Multi-Terminal HVDC protection and control, IEC61850 based Architecture of Substation Secondary Systems and Smarter Transmission. Dr Zhang was born in PR China. He completed his BSc(Eng) and MSC course in China prior to his PhD study and Post-Doctoral fellowship in Power System Engineering at the University of Strathclyde, Scotland. He is an active member of various CIGRE working groups.



Maik G. Seewald
Technical Lead
Cisco

Maik G. Seewald has over twenty years of engineering, security, and technical architecture experience, and focuses on power grid automation, smart grid architecture, cyber security and business development for Cisco's Connected Energy Networks team. He is Cisco's representative for communication, security and energy automation in IEC TC 57, DKE, IEEE PES, IEEE P1901.2, CEN/CENELEC/ETSI, and UCA. He participates actively in standard development with the focus on IEC 61850 and IEC 62351. Before Cisco, Maik was a senior research and development architect and CISSP for Siemens Energy Automation, specializing in systems, software, and security architectures and energy automation. Earlier, he was an IT architect at T-Systems Multimedia Solutions, and held project management, architecture, and engineering positions at Comneon/Infineon, Audi, Siemens COM, and AMD. Maik received a degree in Informational Techniques and a Qualified Engineer degree from Dresden University. His special fields of interest comprise cyber security, system and software architecture as well as the Internet of Things (IoT) domain.



Berkan Kapkac
Protection & Control Engineer
Vattenfall Distribution Nordic

Berkan Kapkac, Vattenfall Distribution Nordic, has a MSc in Electrical Engineering from Royal Institute of Technology (KTH) in Stockholm, 2007. He started his working career at Sweco Energiguide in 2006 as a Power System Analyzer. Since 2008 he has been working at Vattenfall as a Protection & Control Engineer. Berkan has been involved in several IEC 61850 deployment & development projects for Vattenfall. He is a member of Cigré working groups B5.39 and B5.50.



Steve Van den Berghe
Project Leader, Smart Grids
Eandis

Steve Van den Berghe joined Eandis in 2010 as project leader for the Smart Grid program. His projects are focused on the rollout of intelligent devices on the electrical network, which includes sensors, RTUs and IEDs as well as the telecom solutions to enable those devices to communicate to the central SCADA systems. He graduated in 1995 at the University of Ghent, and obtained a PhD as an Electrotechnical Engineer at the same university in 1999. Before joining Eandis he was active both in the telecom sector as a R&D engineer at Alcatel Lucent, as well as in smart meter development as R&D manager at EnergyICT.



Enrique García García
*Head of Telecoms and Telecontrol
Network Operations*
**Iberdrola Distribución & EDSO
for Smart Grids**

Electrical Engineer from ICAI – Univ. Pontificia Comillas, 1987. Master Executive Program ESADE. Working for Iberdrola since 1988, starting in the Energy Control Systems Area. Involved in several projects developing and commissioning

Energy Control Centers in Iberdrola. Actually since 2002 responsible for Iberdrola's Operation of Telecommunication and Telecontrol Network. In the R&D area has participated in the VI and VII European FP (FENIX, ADDRESS, OPERA, OPENmeter projects) and INTEK projects (INTERUCA, H2SAI). In the Standardization area is president of the Spanish IEC TC 57, participating in the WG10 of the TC57 and in the Smart Grid Coordination Group from CEN/CENELEC/ETSI.



Carsten Strunge
*Senior System Engineer, Smart
Grid*
Energinet.dk

Carsten Strunge is a specialist in Power System Design, Smart Grid Control and Communication. M.Sc.EE from the Technical University of Denmark from 1997. Since 1997 employed as Development Engineer at the Danish Utility R&D working with Power Systems Fault Statistics, Power Quality, Metering and Power System ICT. From 2001 employed at Copenhagen Energy as Protection Engineer including ICT infrastructure design for Power System Monitoring and Control. Since 2006 employed at Energinet.dk as Senior Development Engineer with focus on Smart Grids, Grid Codes, Power System Monitoring, Data Communications and standardization. Member of Danish member national mirror group for IEC TC57 and TC8.



Robin Massink
Engineer
DNV GL

Robin Massink is a cyber-security specialist at DNV GL (former DNV KEMA) and located in Arnhem, the Netherlands. Robin Massink is focusing on SCADA EMS/DMS, Substation Control System and smart meter cyber security. Robin Massink contributes to the establishment of the European Network for Cyber Security, of which DNV GL is a founding member. He also performed ISO 27002 based security audits and consultancy assignments for various European transmission and distribution grid companies. Besides cyber security, Robin Massink is also a specialist on telecommunication infrastructures and data communication protocols like IEC61850, IEC60870-5-104, ICCP and DLMS. He is a senior conformance test engineer for the substation automation protocol IEC61850, and performed conformance, functional, type testing and trainings related to substation automation. He also performed a pre-audit and provided training for acquiring IEC61850 level A test lab status of a National body in Asia.



Benjamin Amsler
Director, New Technologies
NetModule

Benjamin Amsler has over 10 years of engineering experience in the field of embedded systems. As system engineer and project manager he realized tailor made solutions from concept to volume production, addressing customers in the medical, industrial and defense sectors. In 2011 he graduated with an EMBA in MoT and took the responsibility to introduce new technologies to NetModule and drive business activities in the Asia-Pacific region.



Thierry Coste
Research Engineer
EDF

Thierry Coste joined EDF in 1985 and is currently a researcher and project manager in the R&D System Automation department. His responsibilities include new architectures for embedding system automation, specification and design of ICT between DER and DSO, cyber-security, and the research laboratory. Mr Coste is extensively involved in standardisation activities of WG10 TC 57 and WG17 TC 57, and is a UCA member. He is fluent in both English and French.

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