DRAFT PROGRAMME

SMART GRID FORUMS | SGT27

Smart Grid Technical Forum

16th to 18th March 2027

Palexpo Congress Centre | Geneva, Switzerland

1-Day Leadership Briefing: "Grid Resilience" Thought Leadership

2-Day Technical Conference: "Grid Modernisation & Transformation" Case Studies

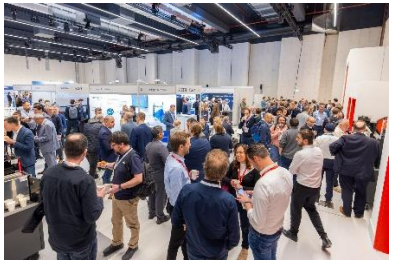
Awards Ceremony

Technical Conference

Leadership Briefing

Roundtable Sessions

Exhibition



For more information:

E: mandana.white@smartgrid-forums.com | T: +44 (0)20 8057 1701

LEADERSHIP BRIEFING: TUESDAY 16th MARCH 2027
"GRID RESILIENCE THOUGHT-LEADERSHIP"

1.	**Infrastructure Resilience** – developing a long-term grid investment plan that balances short term congestion management priorities with longer term climate, cyber, geopolitical and electrification pressures	**6.**	**Weather Resilience** – hardening assets, expanding redundancy and deploying smart flexibility to ensure climate resilience for the future power grid
2.	**Connectivity Resilience** – leveraging new satellite solutions to drive resilient, secure and interoperable communication infrastructure for European power systems	**7.**	**Cyber Resilience** – detecting, containing, and recovering from geopolitically driven hybrid threats to the power grid
3.	**Network Management Resilience** – driving the adoption of real-time monitoring and control across the grid to unlock flexible grid capacity while managing risks to grid resilience	**8.**	**Supply Chain Resilience** – securing the power grid supply chain through strategic spares, qualified multi-sourcing, cybersecure procurement and coordinated manufacturing
4.	**Flexibility Resilience** – designing flexibility services with deliverability, TSO-DSO coordination, cybersecurity and control of distributed assets at the heart	**9.**	**Workforce Resilience** – revising recruitment, retention and succession plans to secure the power grid workforce of the future
5.	**AI Resilience** – determining an AI roadmap that advances the grid's predictive operations while managing data, cybersecurity and automation risks	**10.**	**Innovation Resilience** – transitioning from pilot to business-as-usual through innovation partnerships, testing regimes, and implementation programmes while safeguarding against new cyber vulnerabilities

TECHNICAL CONFERENCE: WEDNESDAY 17th & THURSDAY 18th MARCH 2027
"GRID MODERNISATION & TRANSFORMATION PRACTICAL CASE-STUDIES"

	SUBSTATION VIRTUALIZATION	IEC 61850 IMPLEMENTATION	CONTROL ROOM SCADA	SMART METERING	TELECOM & CONNECTIVITY	RENEWABLE INTEGRATION	BIG DATA ANALYTICS	OT CYBERSECURITY
11.	**Market Development** – evaluating the ecosystem requirements to ensure the timely, secure, and commercially robust delivery of substation virtualization	**Standards update** – understanding the latest standardisation developments in IEC 61850, such as substation virtualization, cybersecurity integration, and future domains	**Opensource SCADA** – adapting opensource for safety-critical control systems, through a well-defined architecture including defined owner, secure development, compatibility testing, timely vulnerability remediation and recoverable support	**Smart Meter Roll-Out** – accelerating the next phase of smart metering roll-out across Europe through clearer roll-out incentives and accountability, interoperable secure data infrastructure, and consumer/flexibility activation	**Resilient Network Design** – optimising critical utility telecom design to ensure reliability, resilience, and security for a range of applications supporting a more dynamic, distributed and renewables driven grid topology	**Speeding Grid Connections** – implementing reliable queue discipline through effective management of grid capacity, seamless permitting and effective customer prioritisation	**Data Governance** – making data usable, trustworthy, timely, secure, and legally shareable across a growing ecosystem while protecting critical infrastructure, personal data, commercial confidentiality and national sovereignty	**Threat Landscape** – from opportunistic to coordinated disruption, preparing for unprecedented system wide attacks on remote access infrastructure, supply chains, AI-enabled social engineering, DER/EV/BESS fleet control, operational data manipulation, and more

12.	**Business Case** – establishing the upfront and ongoing costs of migration to substation virtualization to optimise CAPEX and OPEX	**Business as usual** – managing the migration of IEC 61850 process bus substations from pilot projects to business-as-usual, through rapid implementation, effective operations and simplified maintenance	**Modular SCADA** – driving vendor-independence through the phased upgrading of grid-control functions through a series of interoperable services enabling faster DER integration, high-quality analytics, and cyber resilience as the grid evolves	**Procuring Next Gen Meters** – balancing the need for scale with standards, local fit, and supplier diversity when specifying technology and managing the testing and implementation process	**Active Distribution Grid** – designing telecom networks for visibility and controllability of a range of renewable assets including rooftop solar, batteries, EVs, flexible demand, and community energy systems, without over relying on grid re-enforcement	**Flexibility Management** – coordinating diverse, uncertain and distributed resources so they respond at the right location, speed and duration without breaching network, customer, market or safety constraints	**Master System Synch** – aligning systems with the live grid by building in high levels of resilience through seamless failover, faster restoration, consistent situational awareness, accurate incident analysis, safer maintenance and stronger cyber recovery	**Quantum Readiness** – quantifying the risks and establishing the timeline and migration path for achieving quantum agility and effectively manage the impact of quantum attacks on OT infrastructure
13.	**Application Roadmap** – securing virtualization through the phased delivery of virtualized HMIs, Gateways, and non-critical Control applications to lay a solid foundation for full substation virtualization	**Automated Specification** – evaluating the progress made toward error-free machine-readable SCL specification processes that support the rapid deployment of process bus substations	**Centralised SCADA** – balancing a resilient real-time core for effective governance with modularity, cloud assistance, and grid edge autonomy to deliver end-to-end coordination and adaptability in the DER integrated grid	**Combined Meters** – evaluating progress toward combined electricity, gas, water metering solutions, and identifying the opportunities and challenges utilities face in installing and managing these	**Teleprotection** – ensuring deterministic performance, end-to-end resilience, cybersecurity and timing integrity for utility telecom networks supporting critical teleprotection applications	**Forecasting & Scheduling** – maximising the accuracy of day-ahead demand and renewable forecasts to better coordinate markets and maintain reliability at low costs	**CIM** – establishing and sustaining one trusted semantic view of the grid to connect multiple operational systems for auditable, topology-aware analytics	**10-year Cyber Investment** – balancing the threat, technology, asset and regulatory clocks to establish a resilient long term investment plan as the grid evolves
14.	**PAC Architecture** – optimising the design of virtualized protection, automation and control for deterministic and resilient transmission and distribution systems	**Automated Testing** – overcoming protection intent, interoperability and resilience validation complexity when adopting fully automated testing of process bus substations	**Virtualized SCADA** – managing the complexities around real-time performance, cyber isolation, and operational visibility in the drive toward software defined SCADA operating across shared compute infrastructure	**Meter Communication** – implementing a combined PLC, RF Mesh, Cellular LPWAN and fibre network to improve observability and reliability in basements, cities, and multi-utility environments	**Control Room SCADA** – providing secure, continuous, end-to-end communication across thousands of diverse, remote, legacy and modern assets, to enable grid visibility and control throughout normal and disrupted conditions	**DER Orchestration** - from passive unpredictable generation to local responsive flexibility through the combination of accurate network models, secure DERMS controls, and clear customer contracts	**AI-driven Data Quality** – from rule-based to context-aware systems for detecting, explaining, prioritising and estimating data problems across a range of operational systems	**NIS2 Cross-Border** – implementing NIS2 in coordination with TSOs, DSOs, market operators, cloud providers, telecom operators, OEMs, aggregators and DER operators to ensure end-to-end cybersecurity across an interconnected European power system

15.	**Migration Path** – mapping out the migration from IEC 61850 process bus substations to software defined substation architectures	**Top-down Engineering** – developing standardised reusable function models, adopting truly interoperable engineering tools and automated end-to-end assurance, to ensure the dependability of process bus substations	**LV Monitoring** – effectively combining smart meter data, feeder and transformer sensing, accurate topology, state estimation, edge processing, and safe automation to create a LV operations platform that provides truly granular situational awareness of the low voltage grid	**Gateways** – deploying secure, interoperable gateways, that support multi-utility data, customer access and controlled flexibility	**Digital Substations** – delivering deterministic, fail-safe real-time communications for protection and control over a shared digital network	**Wind Integration** – managing the technical complexities associated with wind power in terms of its variability, remoteness, and converter-connection to the grid to ensure a reliable source of continuous power where it is needed most	**Machine Learning** – leveraging ML to create a self-improving grid data layer that spots patterns beyond human capability and delivers predictive outcomes for a range of planning, operations, maintenance and flexibility services	**Power System Cybersecurity** – implementing IEC 62443 to establish a robust risk-based defence-in-depth OT cybersecurity architecture that seamlessly protects substations, SCADA systems, smart metering infrastructure, and telecom infrastructure from evolving threats
16.	**Organizational** – breaking down OT and IT silos, creating hybrid technical roles, clarifying accountabilities, and leveraging Digital Twins to fully prepare the workforce for substation virtualization	**Muti-Vendor Interoperability** – ensuring effective SCL configuration, reliable GOOSE and SV operation, and meticulous timing synchronisation in multi-vendor process bus substations	**Wide Area Monitoring** – maintaining an accurate, time-synchronised, cyber trusted model to translate high-rate measurements into safe operational decisions	**Security by Design** – specifying, testing and upgrading security features for next generation smart metering products to ensure cyber resilience for the entire lifecycle of the product	**Smart Meters** – connecting large numbers of low-cost, physically exposed endpoints over variable communication links while protecting customer privacy and supporting dependable two-way operations	**Solar Integration** – implementing accurate distribution visibility, PV and flexibility control, and system strength to handle midday surplus and evening ramps	**Deep Learning** – applying DL to large, heterogenous, fast-moving datasets including time series, waveforms, images, text, and network connected data to improve forecast accuracy, grid visibility, and predictive operations	**Smart Meter Roll-Out** – building cybersecurity into next generation smart meter roll-out from procurement to architecture, and deployment to operation
17.	**Reliability** – engineering redundancy, guaranteeing deterministic performance, and applying rigorous assurance and lifecycle control to ensure the consistent reliability of virtualized substations	**Multi-Editon Management** – effectively managing differences in information models, SCL schemas, GOOSE and SV behaviour, PTP profiles, cybersecurity support and engineering tools, to ensure the smooth migration from Edition 1 through to Edition 3	**Data Quality** – migrating data quality from the back-office to real-time control safeguard through well-defined quality contracts, shared data models, measurable SLAs and automated remediation workflows	**Interoperability** – turning DLMS/COSEM into detailed, testable specification and governance processes for your own market and operating environment	**Predictive Maintenance** – collecting trustworthy condition data from large, dispersed, legacy assets without exposing OT to cyber risk	**BESS Integration** – engineering storage systems into the grid as grid-connected, inverter-based, cyber-physical power plants to unleash the full benefits of high responsive, renewable shifting, congestion relief for the grid	**Large Language Models** – empowering the workforce through LLM based knowledge transfer to enable operators to query, interpret, coordinate complex information and speed up their decision making and operational intervention	**Flexibility Security** – maintaining trustworthy real-time control and visibility over a diverse range of flexible assets including, EVs, batteries, heat pumps, DER fleets

18.	**Cybersecurity** – managing the expanded attack surface and shared dependencies of virtualized substations to ensure their security and resilience	**Cybersecurity** – implementing IEC 62351 authentication, robust network architecture, and operational security controls to preserve the reliability and security of process bus substations in hostile environments	**Data Sharing** – establishing a model to enable data exchange with internal and external stakeholders, while maintaining control of data quality, cybersecurity, privacy, operational authority and accountability	**LV Grid Visibility** – combining AMI with targeted sensors and trusted LV digital twins to drive visibility for fast DER connection, congestions management and re-enforcement decisions	**Field Operations** – developing a resilient multi-bearer connectivity model with secure mobile access, offline capable workflows, and field to control room operational visibility	**HEMS Integration** – leveraging LV grid and DER data, interoperable and secure device control, and network-aware operating parameters, to gain clear visibility of all market participants, in order to reduce peak stress, improve resilience, and schedule infrastructure upgrade appropriately	**Agentic AI** – turning fragmented grid data, engineering tools, and procedures into coordinated, semi-autonomous workflows to deliver a range of operational advantages including faster outage response, more effective DER/flexibility orchestration, improved planning	**Virtualization Security** – effectively managing the cybersecurity risk attached to shared infrastructure comprised of a larger software, hyperviser, network and management-plane attack surface
19.	**Time Synchronization** – managing PTP determinism, GNSS resilience and protection level synchronisation in virtualized substation architectures	**Observability** – implementing IEC 61850-aware, time synchronised monitoring into substation architectures to ensure the reliability and resilience of the protection function	**Data Modelling** – interworking IEC 61850, COSEM, CIM, and CGMES to enable the powerful modelling and exchange of grid data from the substation through to external stakeholders	**DER Orchestration** – transforming millions of distributed assets into a controllable, locationally valuable grid resource, through an end-to-end system that makes technically sound decisions	**Cybersecurity** – applying the defence in depth model to utility telecom cybersecurity to protect distributed, long-lived OT systems from sophisticated threats without impairing safety-critical protection, control or restoration	**V2G** – from EV charging to V2G as a flexibility service through establishing interoperability, implementing customer protection, driving the right grid operating parameters	**Planning Twin** – optimising long term investment planning, through the use of a well governed, digital model of the grid to explore future grid conditions, including demand growth, power flows and network constraints, resilience requirements	**OT Asset Discovery** – overcoming the complexities of establishing asset visibility to ensure a common foundation for cyber defence, operational resilience, NIS2 evidence, supplier governance and long-term investment planning

20.	**Standards** – aligning IEC 61850, IEC 62351, PTP and virtual PAC to develop a dependable, secure and reusable protection and control platform	**DER Integration** – evaluating how IEC 61850 is evolving to support its plug and play use for DER integration across a wide range of renewable assets	**Cloud Management** – maximising the benefits and minimising the risks through a hybrid-cloud strategy that places edge-first for control, cloud-first for intelligence, federated for collaboration, and zero-trust by design	**Dynamic Tariffs** – establishing the technical foundations for standardised, authenticated, machine-readable, interoperable electricity prices, to enable dynamic pricing as electricity services evolve	**RF Mesh** – implementing cost-effective connectivity for smart meters and sensors to deliver two-way connectivity without the need for cellular services	**LV Visibility** – determining the optimal model for gaining LV visibility of renewable assets, through a combination of Sensors, Smart Meters, and Digital Twin	**Operational Twin** – enabling a more observable, predictive, coordinated and resilient grid through the use of trusted real-time data and topology, physics-grounded state estimation and validation, and a resilient, secure and safe operations architecture	**Intrusion Detection** – turning large volumes of network activity from complex OT environments into a small number of high-confidence alerts with a clear, engineering-approved response
21.	**Specification** – translating protection objectives into measurable requirements for compute, networking, timing, cybersecurity, resilience and lifecycle management	**Energy Storage** – interworking IEC 61850 with BESS specific standards to gain insights into status, measurements, alarms and availability, to maximise visibility of battery performance to the grid	**AI-Driven Automation** – identifying new AI applications in SCADA systems to support data quality, prediction, diagnosis, optimisation, decision support, and carefully bounded control	**EV Charging** – transforming smart meter infrastructure into a trusted visibility, tariff, verification and settlement layer enabling automated low-cost charging, targeted local congestion relief, and auditable flexibility payments	**Utility-Grade 5G** – ensuring grid safety, reliability and security in the deployment of private or hybrid 5G as a growing part of the utility telecom mix	**Real-time Balancing** – establishing trusted real-time observability of the grid state to secure real-time balance of power flows in an increasingly renewables driven grid	**Asset Twin** – combining real-time condition data, historical performance and engineering models to support predictive intelligence, proactive maintenance and improved reliability through the asset lifecycle	**Patch Management** - implementing a risk-based patch management strategy to ensure the timely and effective patching of the most vulnerable assets
22.	**Testing** – building system assurance test regimes for deterministic performance, failover and cyber resilience in virtualized substations	**Microgrids** – utilising IEC 61850 to enable interoperable DER coordination, adaptive protection, and resilient islanded operations	**HMI Visualization** – leveraging AI and digital twins to turn live SCADA signals into an open, model-driven, cyber-resilient, edge-capable, human centred, trusted operational cockpit	**Home Energy Systems** – interworking smart metering and home management systems to reduce network constraints and integrate renewables without sacrificing customer autonomy	**450MHz LTE** – investing in resilient low-bandwidth telecom for national and regional telecom coverage to support critical IoT and distribution grid digitalisation	**Frequency Control** – building a faster more observable energy-aware frequency-control system through real-time observability, layered reserves, and faster inverter response	**Flexibility Twin** – identifying which flexible resources are genuinely deliverable, electrically effective, and commercially controllable at the time and place the grid needs them most	**Man-in-the-Middle** – quantifying the risk of MitM attacks on an increasingly decentralised grid, and implementing appropriate trust strategies to mitigate the risk of silent but deadly attacks

23.	**Maintenance** – preserving protection grade determinism and configuration integrity while applying IT driven lifecycle practices such as patching, backup, and remote administration	**Wide Area Networks** – implementing IEC 61850 to support operational resilience for wide area inter-substation communication and protection	**Alarm Management** - from alarm floods to intelligent incident response through governed alarm lifecycle, contextual incident intelligence, and operator-centred action management	**Meter Data Management** – leveraging next generation open, real-time, AI-assisted grid edge data platform to accelerate smart meter roll-out through governed intelligence and interoperability	**IP/MPLS** – adopting the next level through SR-MPLS for policy driven traffic engineering, continuous telemetry, automated assurance and integration with edge and private wireless for WANs	**Voltage Control** – optimising a coordinated closed-loop voltage control system that links phase-aware distribution model and real-time measurements to smart inverters, battery and legacy device controls	**Congestion Management** – converting high volumes of diverse grid data into a trusted, time-aligned, topology-aware and physically feasible congestion decision model, within narrow time windows and strict safety, market and cyber constraints	**Digital Twin Cyber Testing** – prioritising the most appropriate Digital Twins applications for cybersecurity testing in the absence of high quality data
24.	**Asset Management** – managing software, platforms and protection system dependencies when migrating toward virtualized substations	**Virtualization** – understanding how IEC 61850 is being extended to enable the virtualization of process bus substations	**Congestion Management** – transforming operational data into real-time, forecast-led model of constraints, and orchestrating the least-cost mix of network actions, flexibility, redispatch and curtailment	**AI** – automating customer/flexibility services to reduce peaks and relieve local congestion while preserving customer choice, grid safety, and verifiable performance	**Satellite** – re-strategizing the use of satellite to deliver a more resilient observable, coordinated and recoverable grid when terrestrial communications are unavailable	**Congestion Management** – developing a real-time topology-aware congestion management capability that effectively forecasts constraints and activates verified location specific flexibility	**Vegetation Management** – developing a risk-based predictive vegetation management regime through the effective combination of LiDAR and imagery analytics with authoritative grid data, weather/hazard intelligence, transparent risk logic, and human field expertise	**AI-driven SOC** – from alert handling to risk reasoning, expanding the application of AI to speed up response rates and automate predictive context-aware defence strategies