CROF Council Meeting: Grid Stability Challenges 2026

06.05.2026

Room for questions…

Join at

slido.com

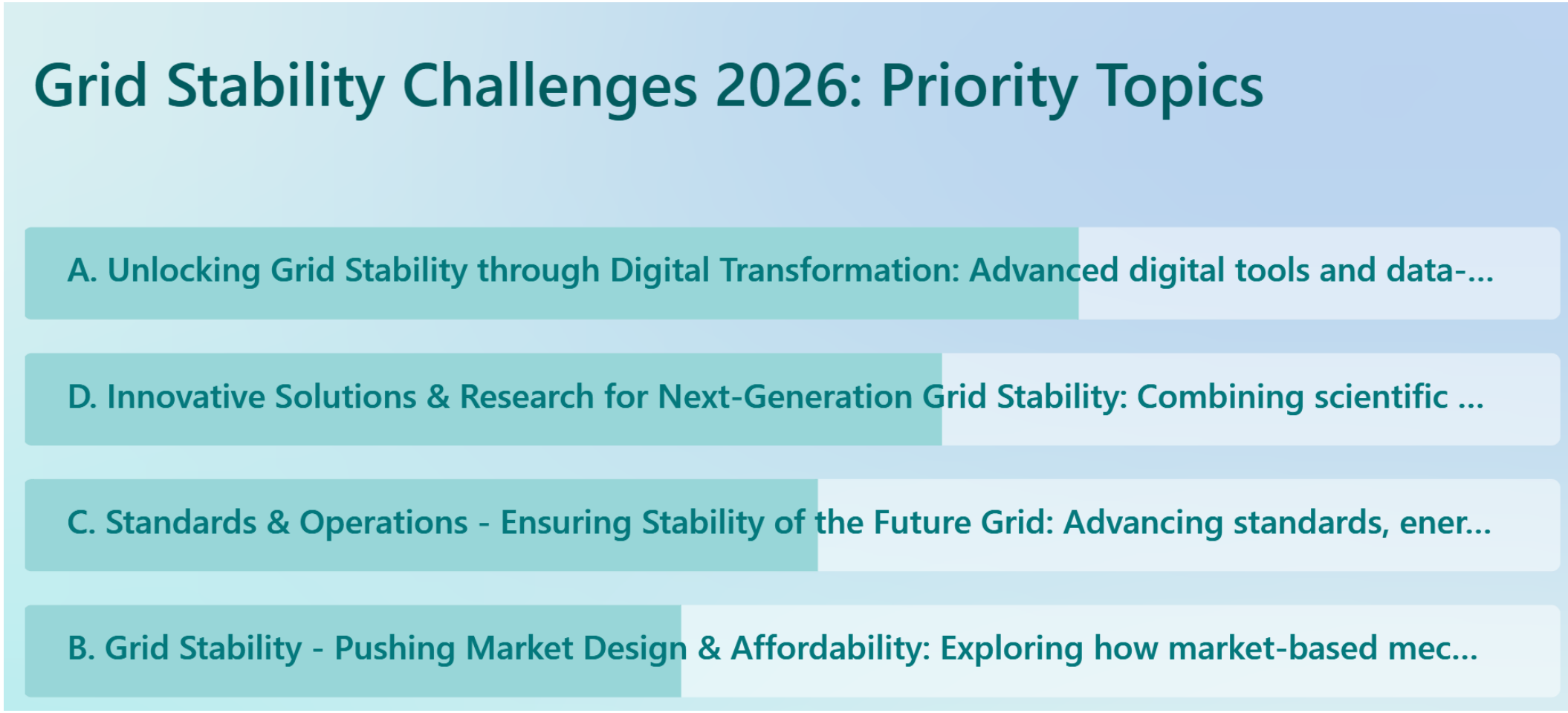
#133 742

AGENDA

1. Welcome
2. Updates on Elia Group Research Challenge
3. Berlin Grid Transformation Week 2026
4. Updates on MCCS
   - Volt Control + Topology Optimizer
   - Outage Planning
   - Permit Management
5. Updates on G-PST and Research Agenda
6. Essential metrics for realtime dynamic assessment
7. Wide Area Monitoring Protection and Control
8. Model free oscillation detection
9. Q&A Session

Survey Results

Survey Result



Updates on Elia Group Research Challenge

Overview Elia Group Research Challenge

WHY

- Growing challenges in system operations demand a faster approach and joint task forces
- Shortening time from R&D to operational implementation
- Show casing the practicality of the methods
- Supporting others by sharing knowledge

HOW

- Launch with set of real-world question, 50 institutes from 12 countries applied
- Selection of 5 institutes to work on 4 questions (Q1 2025)
- From May 2025 – May 2026
- Stakeholder: 50Hertz, Energinet, Elia-Group Innovation, Fraunhofer, Rensselear Institute, Forschungszentrum Jülich

WHAT

Questions:

- Integration on **impedance frequency scans**
- Acceleration of large batches of similar **loadflow computations**
- **Modelica-based model reduction** (Black-box DLL reduced-order model, error tolerance)
- **End-to-end system testing** (Power system simulator, communication interface)

Lessons learned Research Challenge:
Even further SOW definition and close collaboration are key!

Early alignment on scope and language is key: Be highly specific on research questions and align expectations, terminology, and interpretations early on **-> Joint scope-of-work phase.**

Clear framing drives results: A well-defined scope, shared understanding, and measurable milestones. **-> SOW as basis.**

Creativity needs flexibility: Plans must allow room for adaptation when assumptions or data availability change.

Embrace limits and setbacks: Having the courage to stop or redirect projects.

Close collaboration enables progress: Regular check-ins, clear objectives, and direct exchange are critical. Personal meetings strengthen alignment and trust.

Plan sufficient lead time: Allow adequate time for administrative and legal processes.

Quo Vadis Research Challenge - First outlook

Core objective of next phase/round:

- bridging the gap between research outcome(s) and system operations
- strengthening interaction between the research community and system operators

Potential contribution by 50Hertz:

- Dynamic Security Assessment (DSA) as a concrete use case to move advanced methods closer to operational deployment.

Way forward through crowd-funding:

- Interested Research institutes, TSOs/DSOs and other potentially stakeholders jointly co-fund, co-develop, and validate results.

❖ In case of interest, please contact João Carlos Nagel via Advirsory.Cooperations@50Hertz.com

Berlin Grid Transformation Week 2026

50hertz LFENERGY

Berlin Grid Transformation Week

15. – 18. September 2026
Berlin, Germany

LF Energy and 50Hertz bring flagship events together, offering a full week of cutting-edge developments, best practice exchange, and high-level networking.

LFENERGY SUMMIT EUROPE 2026

15. – 16. September 2026

Two days of collaboration, knowledge sharing, and practical insight into how **open source software and standards** are transforming energy systems & building **production-grade digital infrastructure**.

SMARTVILLAGE BERLIN
Karl-Marx-Straße 101, 12043 Berlin

SCAN ME FOR MORE INFORMATIONS !

mccs grid control Checkpoint

16. September 2026, afternoon

Showcasing the **latest developments and software releases of MCCS**. Presentations and insights from **system operators around the world** on their initiatives regarding **digitalization**. Exchange on cooperation and co-creation.

NEUENHAGEN BERLIN
Germany

SCAN ME FOR MORE INFORMATIONS !

Global System Operations Summit

17. – 18. September 2026

Two days of open exchange, best-practice sharing, and **technical deep dives** into the **future of system operations**. Bringing together TSOs, DSOs, Researcher and Industry partners worldwide. “By system operators, for system operators.”

CENTRAL BERLIN
Germany

SCAN ME FOR MORE INFORMATIONS !

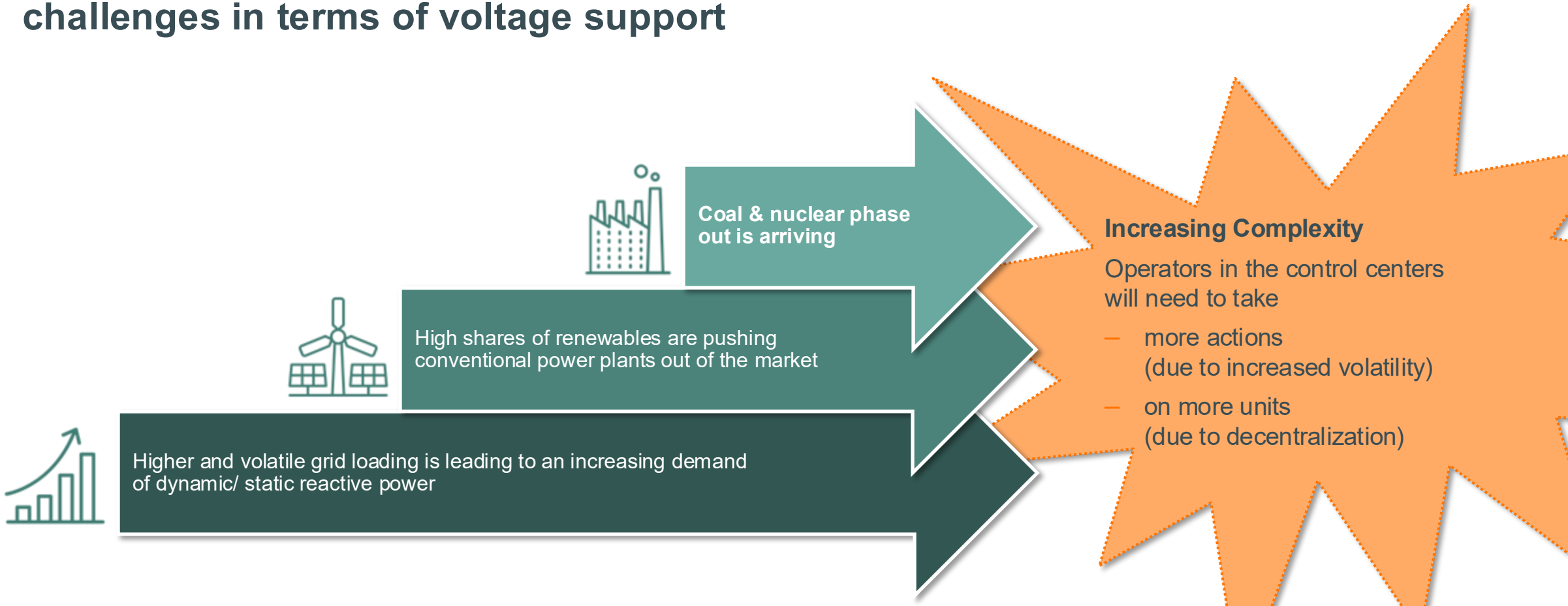
MCCS Checkpoint & Global System Operations Summit are by invitation only.

Supported by GLOBAL PST CONSORTIUM

Voltcontrol + Topology Optimizer

Status 06.05.2026

Operators from both TSOs of the Elia Group anticipate upcoming challenges in terms of voltage support



How does Voltcontrol support operators?

The **Voltcontrol** solution shall

- be used during **online operation**
- **Propose actions** to operate the grid close to a defined **target voltage & maximizing reactive power potential** in all directions for more flexibility in managing voltages

By:

- Accurately modelling the grid with an AC-optimal powerflow
- Calculating grid states based on forecast grid models from intraday and day-ahead forecasts
- Providing optimal actions for **all conventional means** of voltage control (i.e., generation, shunts & condensators, transformer, HVDC, SVC, STATCOM, DSO, batteries, etc.) to reach the overall goal
- **anticipating** future changes, and consider the N-1 (after proposed actions)
- being **transparent** and propose logical, reasonable and understandable measures (i.e., counterintuitive optimization shall be allowed only if the reason behind is understandable)

Simplified intraday process

Local | Shared (MCCS)

08:30

Local
- SCADA
- IDCF

Data pre-processing
~10 min runtime

08:40

- Grid model
- Timeseries file

Voltcontrol optimisation
- ~10 min runtime
- 6 hours ahead

09:00 (or before)

Results:
- Voltcontrol UI
- KPI files
- DGS files
- Raw result files

09:30 (rinse & repeat)

Local
- SCADA
- IDCF

Results from the previous optimization are integrated in the IDCF's to initialise the next run.
So the optimization doesn't need to start from scratch each run

Legend:

Data (Files, visualisations, databank,…)

Process

Outage Planning 2.0 (2nd Generation)

The tool for efficient, transparent, and collaborative asset outage coordination

06.05.2026 | Eva Levintova-Zimmermann & Christian Keller (ext)

The Challenge: Old Way of Working

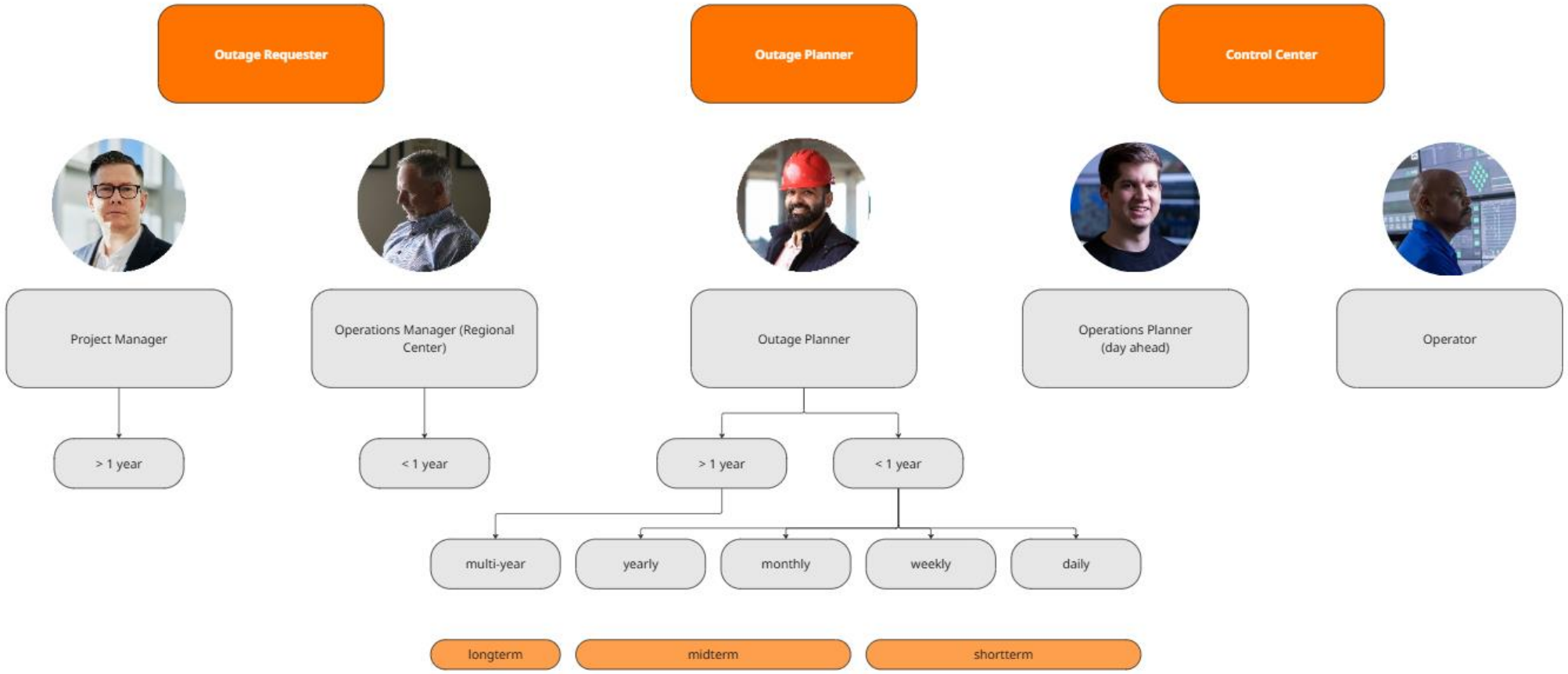
Numerous external tools: For each step in the process, different applications are used.

Endless Excel lists: Excel spreadsheets are generated and used for further data processing.

Constant version conflicts: The use of different tools and Excel spreadsheets leads to version conflicts in planning data.

Missing E2E Process: Due to multiple tool transitions, there is no seamless end-to-end process from creating a request to execution in the control center.

Outage Planning – relevant roles @50Hertz



Our Vision: Efficient, transparent and collaborative coordination of asset outages

The outage planner no longer needs multiple tools: **all information is in one place!**

MCCS as a product with multiple applications **sharing one data source,** ensures that everyone benefits from a **single source of truth!**

With **MCCS ASP 2.0** the outage planner can e.g. **calculate grid stability directly** within the system without switching between different tools!

Outage requests are visualized in an intuitive way (grid maps, single-line diagrams) using different Applications within **MCCS**, making planning more efficient!

Smart Scheduling: The system recommends the most suitable outage time based on grid conditions, regulatory constraints, and parallel outages and **spots potential conflicts at a glance**, which **significantly improves planning efficiency**.

Communication with stakeholders and users becomes **much easier and more effective:** everything happens in one tool, **simplifying coordination and reducing the risk of miscommunication**.

Automated and bilateral process publication via the ENTSO-E OPC platform including both sending and receiving data.

Next Steps: Making Workflows Smarter

- **request outages**
- **submit maintenance requests**
- **submit work during operations**
- **create incidents**
- **submit temporary decommissioning and recommissioning of assets**

- coordinate outage requests:
- calculate grid stability (N-1)
- **visualize planned outages** (e.g. **Gantt**, single line diagrams)
- visualize conflicting outage requests
- **communicate / notify (e.g. comments between different roles,** findings, etc.)
- documentation

- **communicate with external partners (TSOs (e.g. OPC ENTSO-E),** powerplants, DSOs, industries, etc.)
- **publish outage requests to operations (control center)**
- integrate other MCCS moduls and other external interfaces

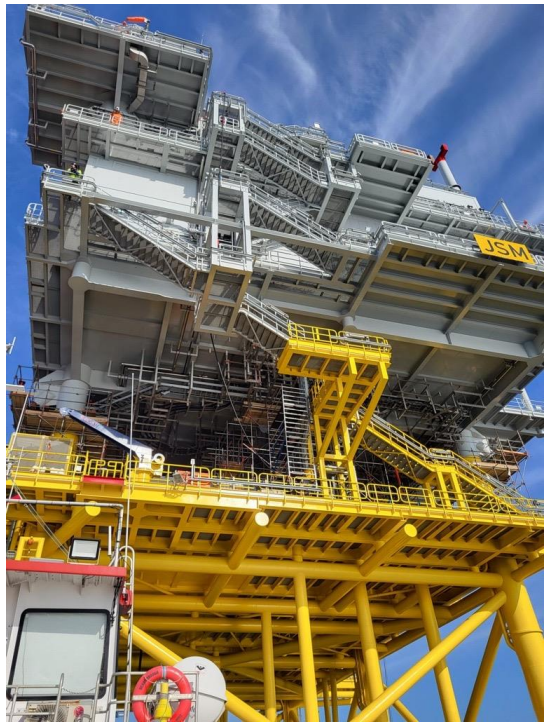
- **Central access to outage requests for all departments (e.g. Control Center)**
- Operators record execution status directly in the tool
- All stakeholders are automatically notified about execution, reasons for non-execution, and asset re-availability

- gain insights
- improve automation
- train AI

DEMO

elia group
mccs
grid control
OOC
SYSTEMS
GrASP
Permit Management

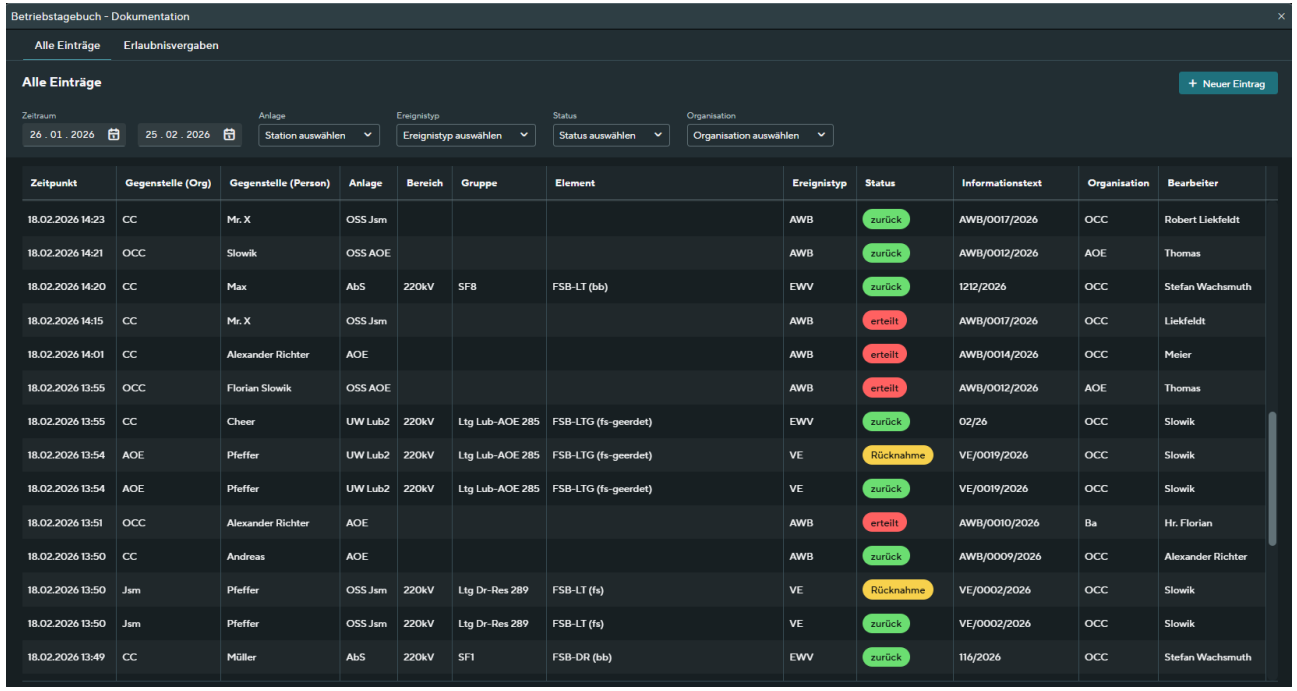
What is happening in the Offshore Department of 50Hertz?



Our new offshore platform:

Jasmund

Digital Shiftbook for Documentation



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Documentation of all relevant actions and events during operational business:

- Permits
- Switching Orders
- Switching Commands
- Trips
- Testruns
- Commissionings/Decommissionings
- Shift Handovers

So that it is always clear and documented what happened when in the grid and who was responsible.

Timeline

Dec. 25
Feature Completion
Feb. 26
Systemtests and User Acceptance Tests
Mar. 26
Go Live Pilot Phase
Testing Phase
...
Aug/Sept. 26
Feedback and Improvements
30. Sept. 26
Operational Go Live Offshore Platform

DEMO

Thank you.

BACK-UP

Internal Agenda / Schedule

TOP	Topic	Time frame	Speaker
1	Welcome + agenda + Survey results + introduction	10 min.	Moderation: Mahder, Mirko
2	Updates on Elia Group Research Challenge	10 min.	Mirko
3	Grid Transformation Week	5 min.	Sabine
4	Updates on MCCS • Volt Control + Topology Optimizer • Outage Planning • Permit Management	45 min.	• Dominique Wassermann; PO • Eva Levintova-Zimmermann; PO • Sabrina Mönch; PO
5	G-PST (NLR/AGORA), Research Agenda	10 min.	Lina Ramirez; Karin Wadsack
6	Essential metrics for realtime dynamic assessment	5 min.	• Lina Ramirez; G-PST
7	Wide Area Monitoring Protection and Control (WAMPAC)	10 min.	• Arthur do Carmo Mouco; ONS
8	Model free oscillation detection	10 min.	• Balarko Chaudhuri; Imperial College London
9	Q&A via Slido	15 min.	Lina Ramirez