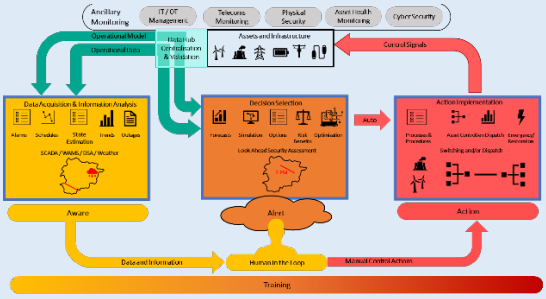
Supplemental Project Notice

CONTROL CENTER OF THE FUTURE ROADMAP

Developing Operational Capabilities for the Transmission Network of the Future



EPRI Control Center of the Future Vision

PROJECT HIGHLIGHTS

- Develop a specific vision, roadmap and action plan for uplifting operational capabilities
- Build on the standardised EPRI roadmap framework for the control center of the future (CCOTF) to ensure allignment with industry trends
- Develop requirments for future operational technologies, equipment, simualtors, and human resources.

Background, Objectives, and New Learnings

Transmission companies around the world are facing operational challenges associated with decarbonisation efforts. For example:

- Smaller, variable, decentralsied resources are replacing large conventonal resources in remote areas or on distribution networks.
- Demand patterns are changing due to behind the meter resources,electrification and large data centers.
- New, power electronic interfaced transmission and distribution network assets are proliferating. New HVDC, offshore wind assets are in development.
- Distribution networks are becoming active, with demand aggregators and virtual power plants impacting T&D operational contexts.
- New markets, ancilliary services and regulatory requirments to coordiante with other functional entities.
- Extreme weather events are becoming more frequent and impactful on network assets.

In the face of these challenges, operational capability has been slow to adapt. The pace of innovation has been limited as the operational systems are resource and time-intensive, overly complex with onerous reliability and cyber security requirements. Operators struggle with data overload, manual processes, sub-optimal visualizations, decision making challenges, training and control room equipment and facility limitations.

EPRI identified a need for a generalized roadmap that can be adopted by the industry at large to develop the operational capability and the control center of the future to meet these challenges. In 2023, EPRI released the *Transmission Control Center of the Future Roadmap* (3002026896) which introduced a vision and a standard framework and roadmap for the control center of the future structured around core operational capabilities. This supplemental project aims to apply the standard framework with participating utilities to develop a company-specific vision, roadmap, and action plan to uplift operational capability.

Benefits

Operational capability improvement efforts are resource intensive and can take years from inception to approval. The roadmap and action plan may:

- Inform planning for future operational capabilities, with line of sight to addressing the challenges on their systems.
- Inform business cases for funding approvals as part of a long-term strategy, including major IT/OT projects.
- Engage internal and external stakeholders on the need for operational upgrades.
- Create awareness of leading-edge operational technology and applications and peer innovations.

Project Approach and Summary

EPRI plans to work with project participants to apply the Transmission CCOTF framework to develop a company-specific vision, roadmap, and action plan to achieve their control center of the future objectives. The following tasks are envisioned:

1. Conduct a review of strategy materials/documents and SME interviews to understand the underlying company strategy—the drivers, impacts, and objectives for control center modernization.
2. Identify new or enhanced control center capabilities that will be needed in the future to accomplish company objectives. Capabilities include people, processes, data, and technologies.
3. Conduct virtual workshops with key stakeholders in operations to review capabilities; assess characteristics of the company's current state and desired future state; and identify capability gaps, barriers, and risks to achieving the future state.
4. Develop company-specific roadmaps (based on the EPRI framework) for each capability. Develop company-specific action plans with milestones based on the roadmap.

Deliverables

The expected deliverables for the project are:

- A vision for the company's control center of the future based on a list of drivers on the network that will necessitate operational capablity enhancment.
- List of operational capabilites, processess, and impacts on operational capbility and risks, collated and tabulated format.
- Roadmap and action plan document to deliver the capability uplift for the control center of the future in a reusable slide format.

The non-proprietary results of this work will be incorporated into EPRI's R&D programs.

Price of Project

$ 90,000 per company.

If a company has more than one transmission control center the roadmap will relate to the uplift of all control centers, with operational nuances identified and highlighted.

Project Status and Schedule

Each engagement should last 4-6 months, dependent on engagement levels and nature of the system characteristics. Regular meetings with project counterparts to workshop the roadmap and plan and for fact finding.

Who Should Join

Transmission system operator with a functional role in monitoring or controlling the bulk electricity system that are planning to upgrade operational capabilities to manage the network of the future.

Contact Information

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