

Distributed Control for Smart Grids (EPIC-1 Project)



A  Sempra Energy utility®



EPIC Public Stakeholder Workshop
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Distributed Control for Smart Grids

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Project Objectives



- **Demonstrate a distributed control scheme that fills gaps in existing systems at SDG&E**
- **Strategically interoperate the various types of actively controllable devices in the distribution system in response to dynamically changing operating conditions**
- **Improve distribution system electrical efficiency, reliability, power quality, voltage and frequency control, and operational costs**

Project Phases



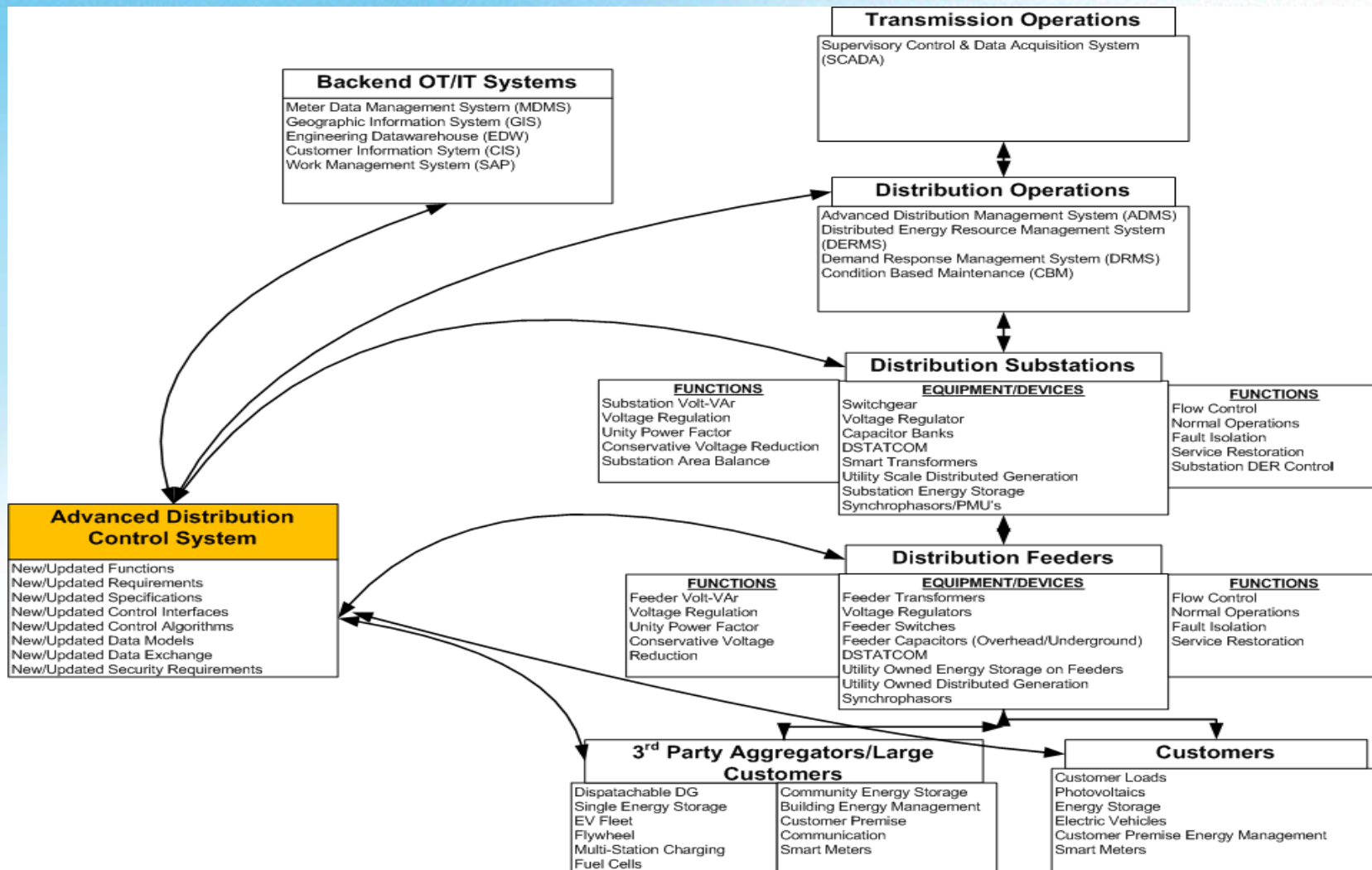
- **Phase 1: Design and development of technical solution(s)**
- **Phase 2: System installation and testing at Integrated Test Facility (ITF)**
- **Phase 3: System installation and testing on a simulated portion of distribution system**

Project Approach



- **Understand the preferred operational responsibilities and control characteristics of controllable distribution system assets.**
- **Identify distributed control methods and approaches to control resources and integrate as part of a unified control scheme.**
- **Test methods of communicating and coordinating control across multiple resources.**
- **Demonstrate distributed control concepts that fill gaps in the currently planned SDG&E control system infrastructure.**

Conceptual Diagram



Conceptual Overview of Control System Architecture Envisioned by this Project

Project Team



- **The project team is a combination of internal staff and contractor(s)**
- **Internal staff includes a Project Technical Lead supported by SDG&E technical staff.**
- **Plans, progress, results, and the final report will be reviewed by a technical expert review panel that includes SDG&E stakeholders who may be users the results.**
- **The ITF will be used for much, if not all, pre-commercial demonstration work.**

Key Deliverable



- **Comprehensive final report describing work done and results available**
 - **For use by SDG&E stakeholders and adoption as may be appropriate**
 - **For delivery to CPUC to be made available to other prospective users**

Project Schedule



- **Stakeholder (User) Consultation, Project Plan Development, and Contractor Procurement Activities**
Third Quarter of 2015 and First Quarter of 2016
- **Phase 1: Design and Development of Technical Solution**
June thru December 2016 (7 months)
- **Phase 2: System Installation, Testing, at SDG&E's Integrated Test Facility**
September 2016 thru May 2017 (9 months)
- **Phase 3: System Installation, Testing, in SDG&E's Utility Distribution System**
October 2016 thru September 2017 (12 months)

Project Status



- **Project plan developed and contractor competitively procured**
- **Internal SDG&E project team formed and activity launched**
- **Contract initiation meeting and workshop held with project review panel, including technical expertise from the following departments:**
 - ✓ **Electric Distribution Operations**
 - ✓ **Distribution/Substation Automation and Protection Engineering**
 - ✓ **Smart Grid IT**
 - ✓ **Distribution Resource Planning**
 - ✓ **Customer Programs**
 - ✓ **Distributed Energy Resources**
 - ✓ **Clean Transportation**
 - ✓ **Electric Distribution Engineering (Standards)**
 - ✓ **Enterprise Architecture**
- **Next step: Design and build the demonstration system**

Q & A