Next Generation PQ Software, Modeling & Analysis Tool Roadmap

Preliminary Draft

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Technical Update, October 2002

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Next-Generation PQ Software, Modeling & Analysis Tool Roadmap

Preliminary Draft

Target 1, Project Set 1B, Project 8

Next-Generation Power Quality Diagnostic System Modules Requirements and Development Plan

Product ID 1002659

PQ Software Users Group Meeting (May 22-23, 2002, Charlotte)
PQ Advisory Group Meeting (July17-19, 2002, San Diego)

Roadmap Organization

- Introduction and objectives.
- Key platform.
- Engaging stakeholders.
- Roadmap planning.
- Plan for implementation.

Introduction and Objectives

- Develop a roadmap for evolution of EPRI's PQ software platform in the next 10 years that will address the emerging PQ challenges facing the industry.
- Transform the roadmap into a plan of action with scope, schedule, cost, and funding plan.
- Gradually implement the plan and update as new challenges emerge.

Key Platforms

1. Managing PQ monitoring systems.
2. Enhancing value of PQ monitoring data.
3. Enhancing capabilities of simulation and engineering analysis tools.
4. Expanding software support function.

Platform 1: Managing PQ Monitoring Systems

- Continue upgrade/development/application support for PQVIEW® / PQWeb®.
- Web applications for managing monitoring data from other disparate sources.
- Development of virtual PQ monitoring system using state estimation.
- Independently evaluate of emerging PQ monitoring systems to provide unbiased feedback to members.

Platform 2: Enhancing Value of PQ Monitoring Data

- Implementing adaptive trend analysis and other PQRCM algorithms.
- Integrating PQ data with other system database using enabling tools such as Maintenance Management Workstation (MMW).
- Using PQ data for evaluating system load modeling requirements and risk analysis for voltage stability.
- Using PQ data for asset management.

Platform 3: Enhancing Capabilities of Simulation and Engineering Analysis Tools

- Next generation simulation and modeling platform based on flexible, user-defined system instead of fixed one-line diagram.
- Leverage existing commercial simulation and modeling tools (PSCAD/EMTPDC, ATP/ATPDRAW, EMTP, PCFLO, ETSA, CAPE, and so on) with extensive support base and user.
- Develop PQ specific analysis modules for distributed generation, variable-frequency drives, DC/AC arc furnaces, and so on.
- Help members develop in-house modeling and simulation expertise.

Platform 4: Expanding Software Support Function

- Access industry experts to provide guidance on modeling and simulation.
- Hands-on workshop on modeling and simulation.
- Library of modeling and simulation.
- Integrate modeling support with a worldwide user base with common interest in similar area.

The Building Blocks

- ***Monitor PQ system management.***
  - Continue upgrade/development/add features/application support for PQVIEW® / PQWeb® based on users feedback.
- ***Transform PQ monitoring Data to Information.***
  - Adaptive trend analysis.
  - Implementing PQRCM algorithms for intelligent data analysis.
- ***Significantly expand EPRI PQDS simulation and engineering analysis capabilities.***
  - Continue support for existing PQDS modules.
  - Build next-generation platform based on flexible, user-defined system instead of fixed one-line diagram.
  - Leverage existing tools that have worldwide support for developing user-defined systems instead of spending significant resources in new development.
  - Engage industry experts in creating PQ-specific modules (DC arc furnace, AC arc furnace, ferroresonance, ASDs, DC drives, distributed generation) for members.
- ***Expand PQ software support to include PQ simulation and modeling support.***
  - A forum of industry/academic experts to provide guidance on modeling and simulation.
  - Hands-on workshop on modeling and simulation.
  - Library of modeling data and simulation.
  - Integrate modeling support with a world-wide audience with common interest in modeling and simulation.

Engaging Stakeholders

- Input of PQ software user group members
- Input of PQ target members.
- Industry experts.
- Experts in modeling and simulation.

Roadmap Planning

- Overall vision.
- Target focus area.
- Identify general topics within focus areas.
- Define high-level objective, goal, and value for individual topics.

Plan for Implementation

- Timeline.
- Resources.
- Funding sources.
- Flexibility to change.

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About EPRI

EPRI creates science and technology solutions for the global energy and energy services industry. U.S. electric utilities established the Electric Power Research Institute in 1973 as a nonprofit research consortium for the benefit of utility members, their customers, and society. Now known simply as EPRI, the company provides a wide range of innovative products and services to more than 1000 energy-related organizations in 40 countries. EPRI's multidisciplinary team of scientists and engineers draws on a worldwide network of technical and business expertise to help solve today's toughest energy and environmental problems.

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