

Roadmap for Real Time Control

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CERTS
CONSORTIUM FOR ELECTRIC RELIABILITY TECHNOLOGY SOLUTIONS

RTGRM Roadmap Status

- Activity builds from the real-time grid reliability and management (RTGRM) multiyear plan (2001)
- November 20, 2002 workshop in Portland, Oregon with participation from
 - CERTS performers,
 - ISOs,
 - Vendors
- Identified 12 major issues facing industry; recommendations for R&D agenda framed to be responsive within general RTGRM framework
- Draft report issued June 2003
- Progress delayed by August 14 blackout
- Outstanding items:
 - Develop final roadmap incorporating comments received

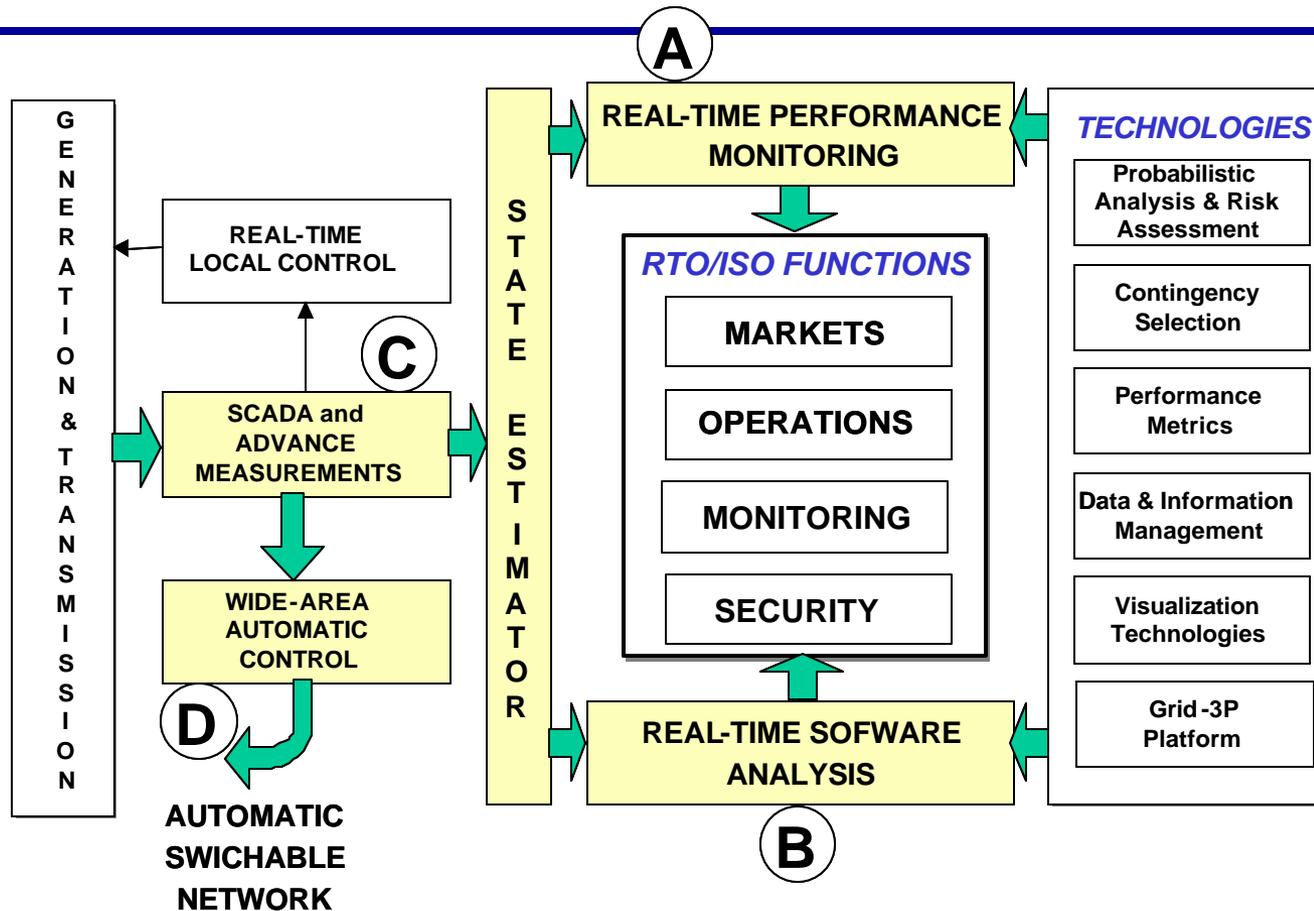


Roadmap Elements

- **Operational Decision Support Tools and Visualization**
- **System Security Management Tools**
- **Advanced Measurement and Monitoring Tools**
- **Real Time Control**



Roadmap Conceptual Framework



- A. Operational Decision Support Tools and Visualization**
- B. System Security Management Tools**
- C. Advanced Measurement and Monitoring Tools**
- D. Real Time Control**



Operational Decision Support Tools and Visualization

- State estimation technologies
- Probabilistic short- and long-term prediction and risk assessment
- Visualization including human factors
- Performance monitoring metrics



System Security Management Tools

- Security analysis with uncertainty
- Avoidance of cascading outages
- Dynamic security analysis (DSA)
- High-speed available transfer capability (ATC) analysis



Advanced Measurement and Monitoring Tools

- Accuracy of planning and operating models
- Quality of dynamic information technology
- Infrastructure for integration and management of multi-source data
- Supervisory coordination for protective relays



Real Time Control

- Frequency and voltage control
- Coordinating control with markets
- Soft-wired remedial action schemes
- Transient stability control



Research Activities Timeframe

CERTS RTGRM Research Roadmap	2004	2005	2006	2007	2008
Operational Decision Support Tools and Visualization					
State Estimation Technologies					
Probabilistic Short and Long Term Prediction and Risk Assessment					
Visualization Including Human Factors					
Performance Monitoring Metrics					
System Security Management Tools					
Security Analysis with Uncertainty					
Avoidance of Cascading Outages					
Dynamic Security Analysis					
High-Speed Available Transfer Capability (ATC) Analysis					
Advanced Measurement and Monitoring Tools					
Accuracy of planning and operating models					
Quality of dynamic information technology					
Infrastructure for integration and management of multi-source data					
Supervisory Coordination for Protective relays					
Real Time Control					
Frequency and Voltage Control					
Coordinating Control with Markets					
'Soft-Wired' Remedial Action Schemes					
Transient Stability Control					



Path Forward

- Incorporate lessons learned and recommendations associated with the August 14, 2003 blackout
- Integrate with other elements of the transmission reliability program
- Develop plan for integrating with other R&D programs
- Circulate revised roadmap for review
- Incorporate review comments

