Panel on Interoperability Standards

Testing and Verification of Interoperability in Synchrophasor Systems

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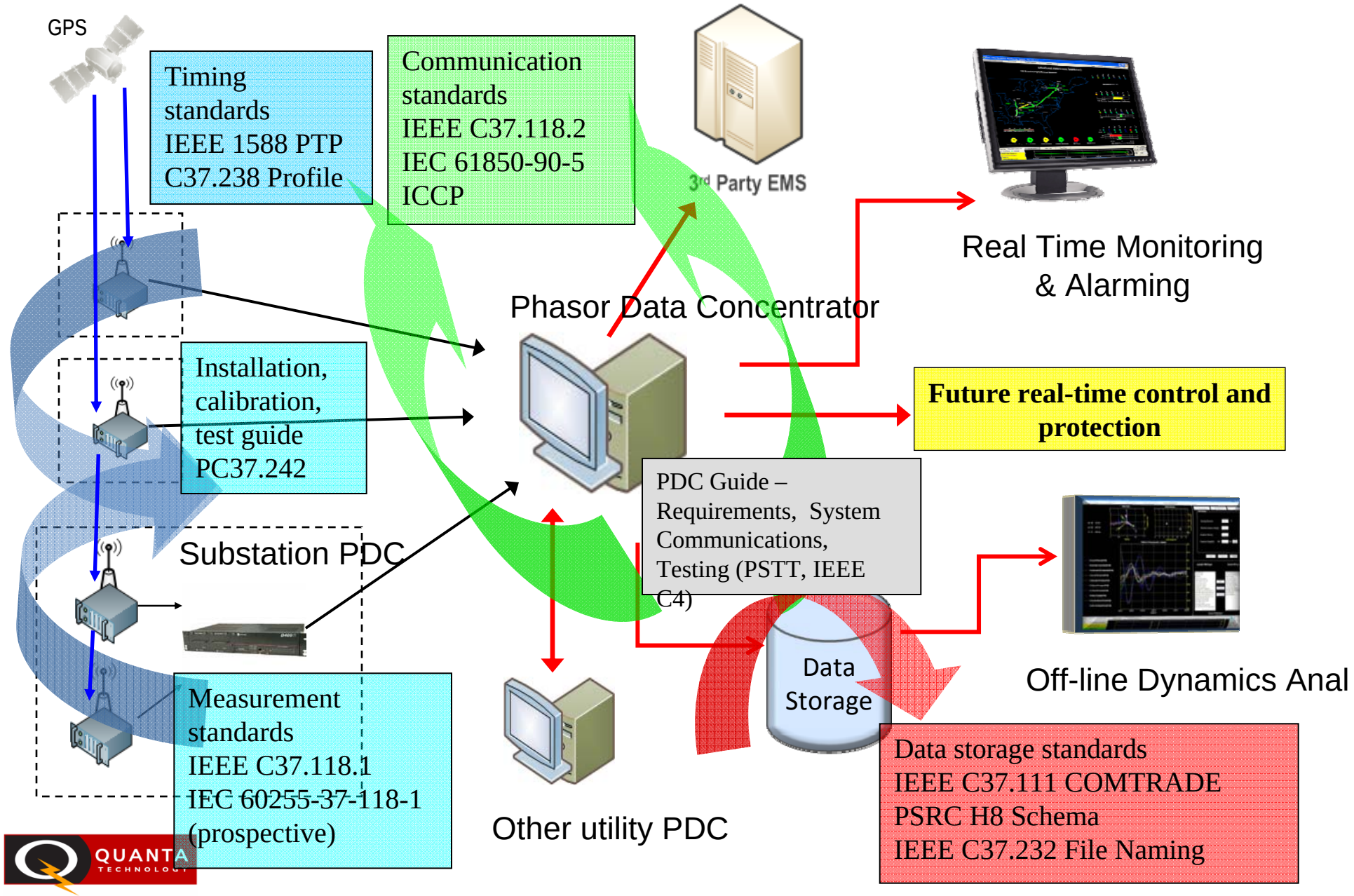
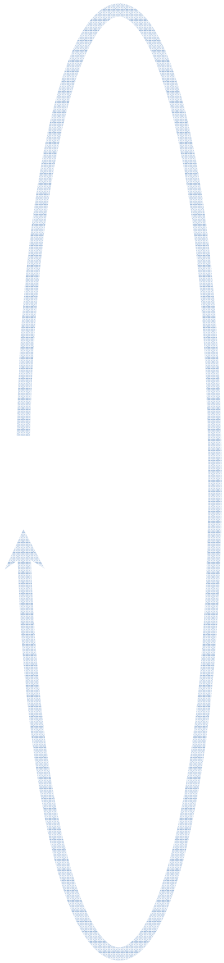
Phasor Measurement System



Interoperability

Enablers of Interoperability



- Standards – ultimately will help with consistency, but
  - There are options and interpretations
  - Even standards are not perfect! – Need to address gaps
- Implementation Agreements and Guides
  - Critical in getting one “common” way to make it work
  - Bridging the gaps and providing feedback into the standards
- Interoperability Testing
  - Keep the end goal / application in mind
  - Need standards-traceable testing tools and techniques
  - Need accredited labs for testing
- Solution Deployment
- Feedback Process – Refinement to Standards

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Related Synchrophasor Standards & Guides

- IEEE 1344-1995
- IEEE C37.118-2005
- Revision of C37.118 → C37.118.1/2
- IEEE 1588 timing profile C37.232 & COMTRADE
- Synchrophasor transport 61850-90-5
- IEEE PC37.242 – PMU Testing, Calibration, and Installation guides
- PDC Guide – IEEE PSRC C4 working group
- Data Storage Standards
- SCADA and ICCP standards

System Impacts

System considerations affecting interoperability requirements:

- Architecture and system design
  - Expected reliability and availability
  - Data concentration layers
- Applications being served
  - Performance requirements for various components
- Infrastructure issues
  - System size
  - Geography
  - Communication cost

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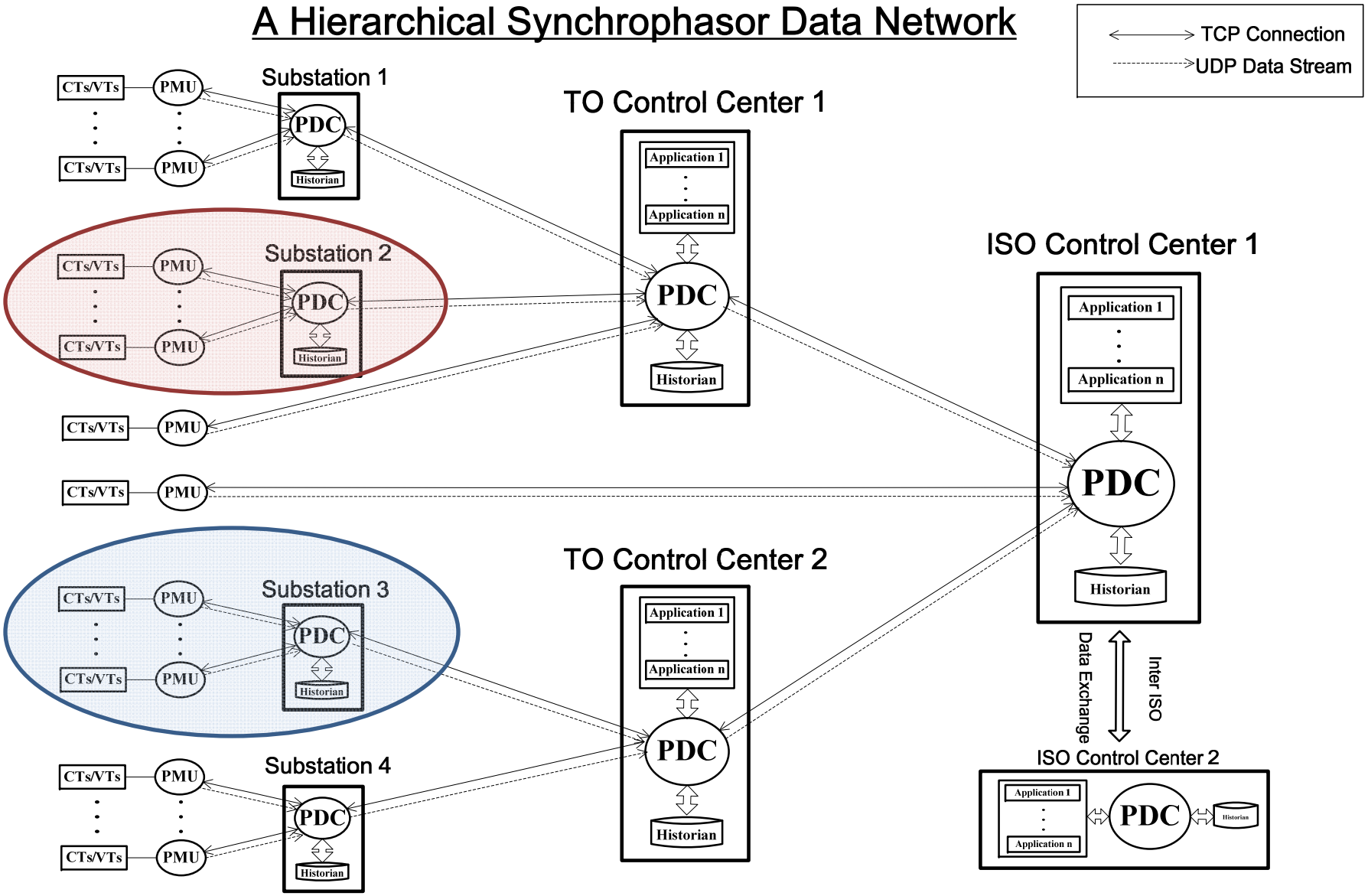
Sample System Architecture



Project-Focused Interoperability Testing

Proof of Concept (smaller scale) subsystem and interoperability testing

- Instrument transformer to PMU integration (and correction)
- PMU to substation PDC integration
- PDC to PDC integration / communication
- Real Time Digital Simulator (RTDS) or equivalent testing of subsystems (RTDS + PMU + PDC + applications)

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Questions?

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