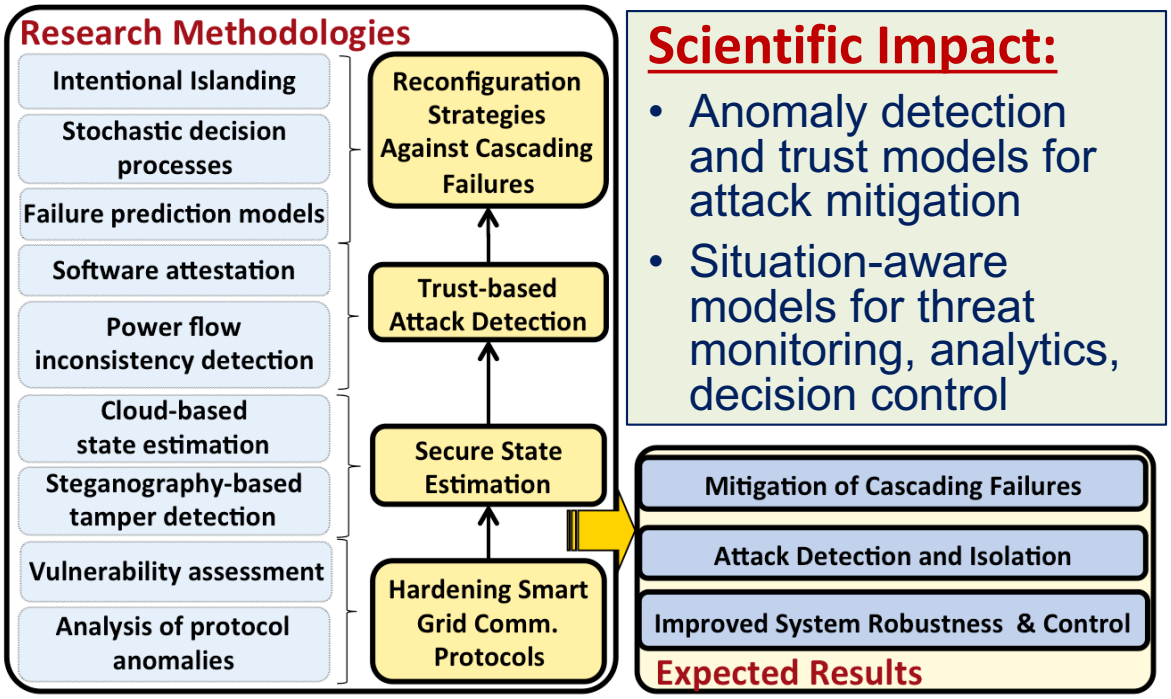
NSF CPS - Breakthrough: Securing Smart Grid by Understanding Communications Infrastructure Dependencies (PI: Sajal K. Das)

Objectives:

- Characterize inter-dependence between electrical grid and communication systems
- Make Smart Grid protocols and state estimation more robust
- Detect impacts (failures and attacks) and prevent cascades
- Build models for attack mitigation
- Validate with micro-grid test-bed

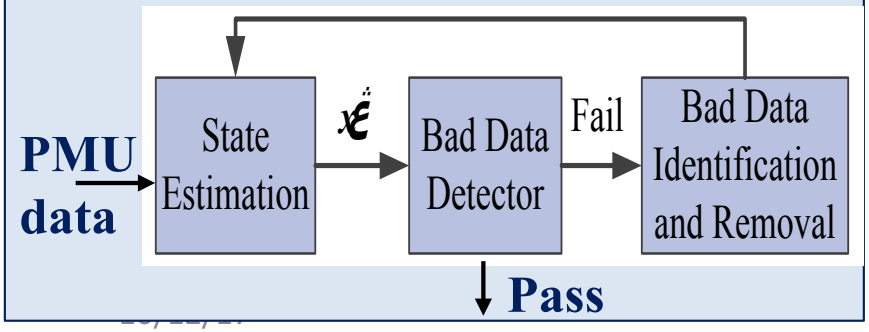


Scientific Impact:

- Anomaly detection and trust models for attack mitigation
- Situation-aware models for threat monitoring, analytics, decision control

Challenges: Inter-dependence, IoT Robustness, Cyber-Physical, Big Data

- Integrity mechanism for protection and state estimation



Broader Impacts:

- Influencing the standards
- Multi-disciplinary training in CPS security
- Experiential learning in real micro-grid facility.
- Outreach and research demo
- Generalization to other CPS

Missouri S&T Micro-rid

S. Tan, D. De, W. Song and S. K. Das, "Security Advances in Smart Grid: A Data Driven Approach," *IEEE Communications Surveys and Tutorials*, 2017.