

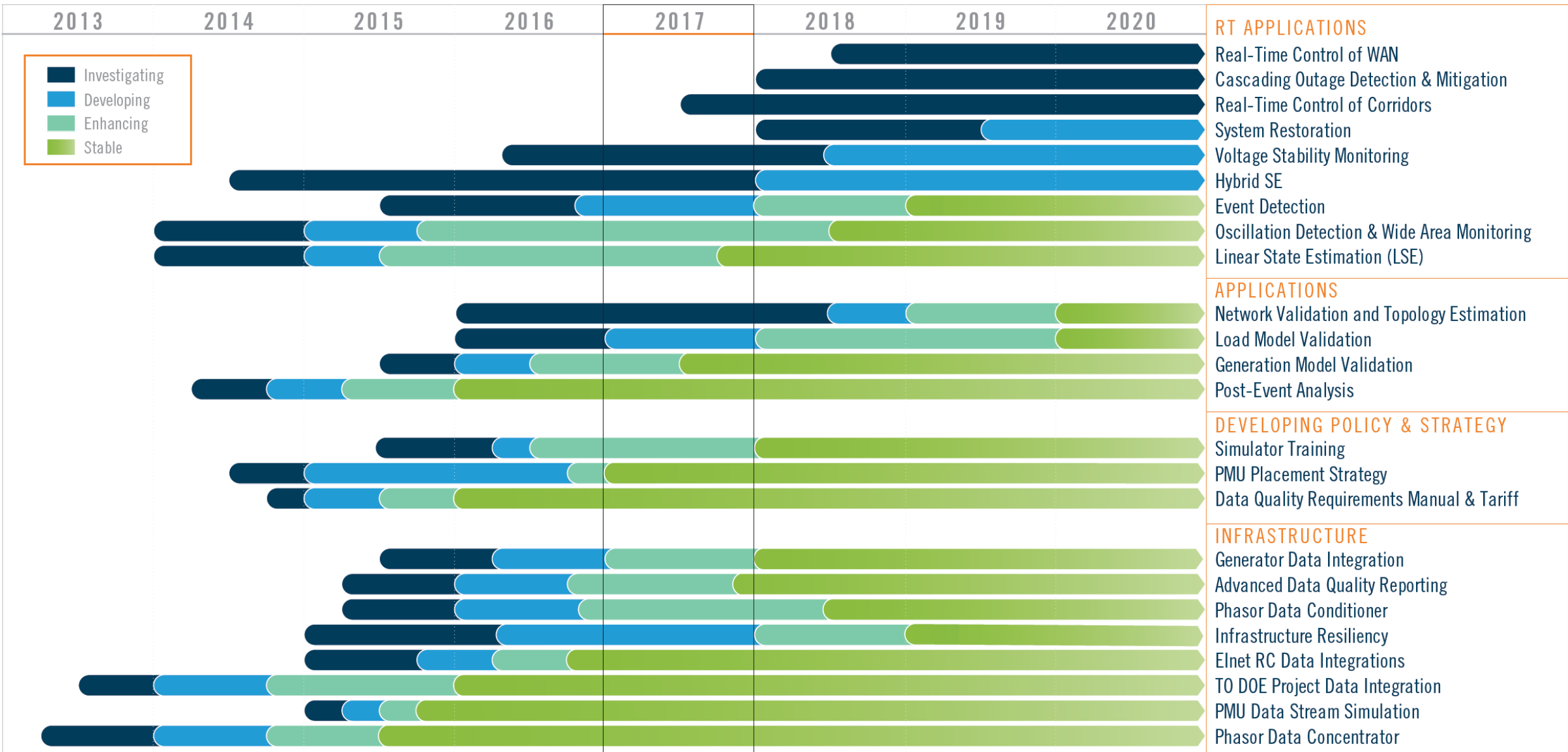


2017 PJM Synchronphasor Update

September 2017, OC
Ryan Nice



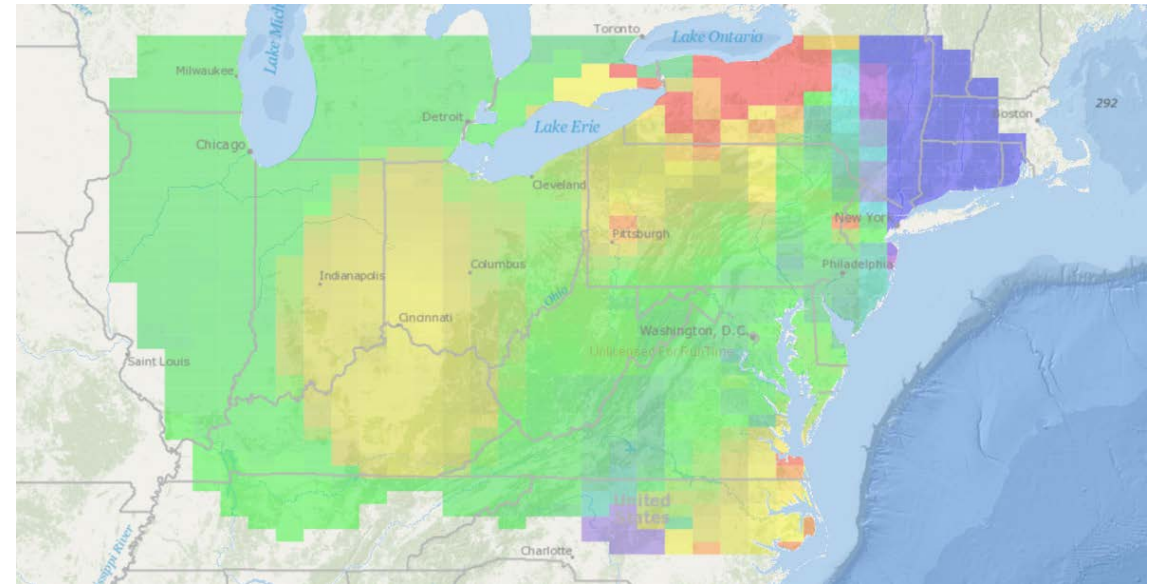
PJM SYNCHROPHASOR ROADMAP



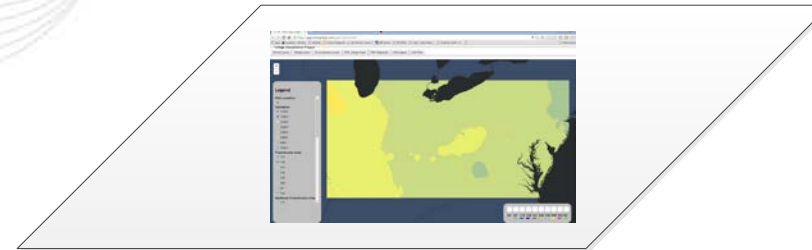
Bullet points from March 2017 OC:

- Control room integration and training.
- LSE and HSE continued development.
- Testing of new oscillation detection algorithm.
- PMU placement strategy rollout.

- Heat map integration with DIMA (voltage magnitude, voltage angle, frequency)



- Training for oscillation detection and response with RTDMS tool, trends and alarms



Heat Maps
Platform: GIS/DIMA, RTDMS
State: Mid Development, 2017 Target

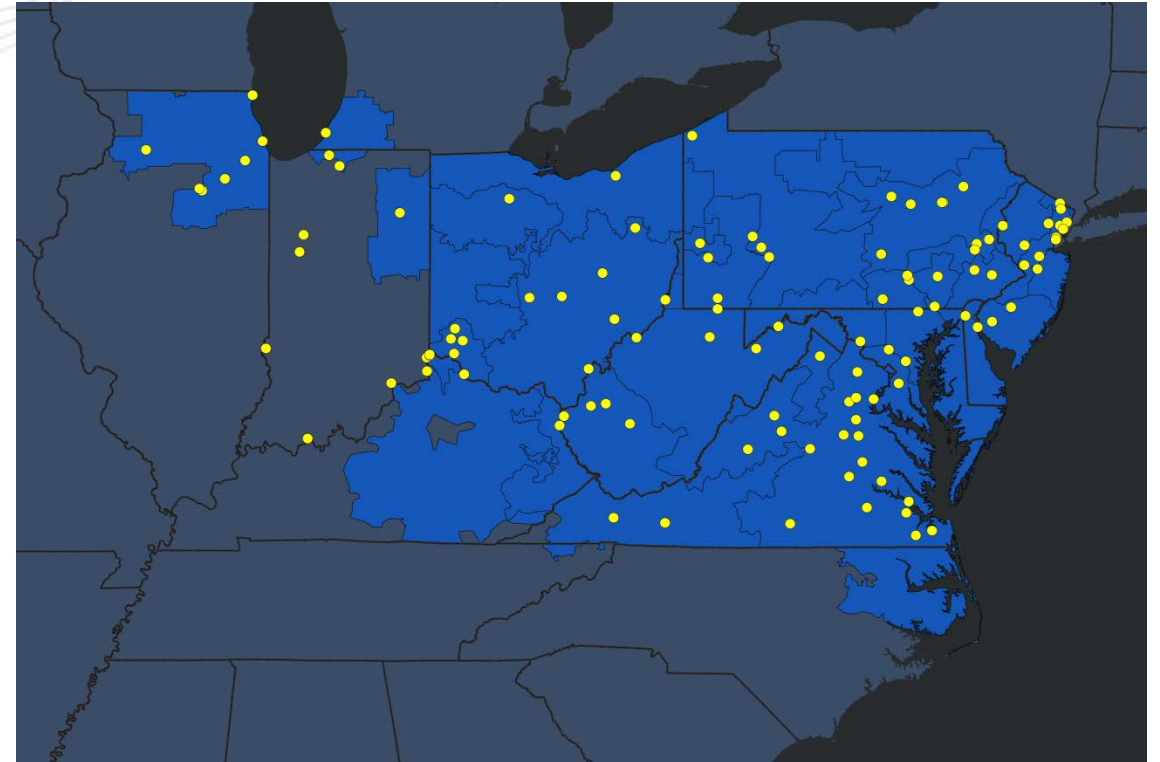


PMU Map
Platform: GIS/DIMA
State: Mid Development, 2017 Target

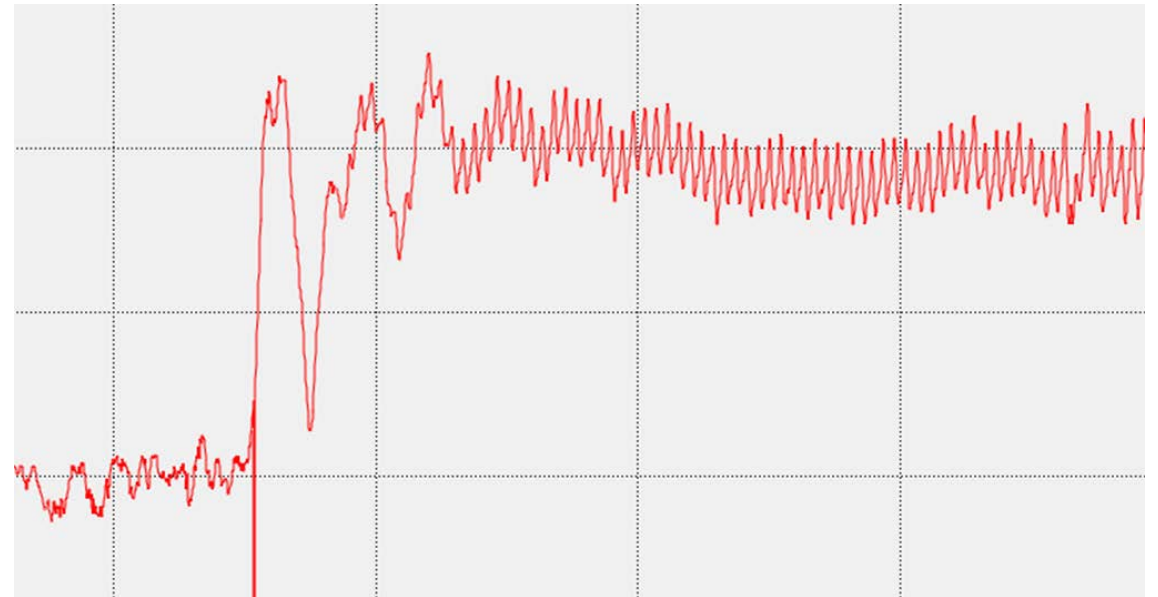


Polar Chart and Trends
Platform: RTDMS
State: Near Production Ready

- Funded 2017-2018 in-depth demonstration project of EPG eLSE for production-ready and integrated LSE



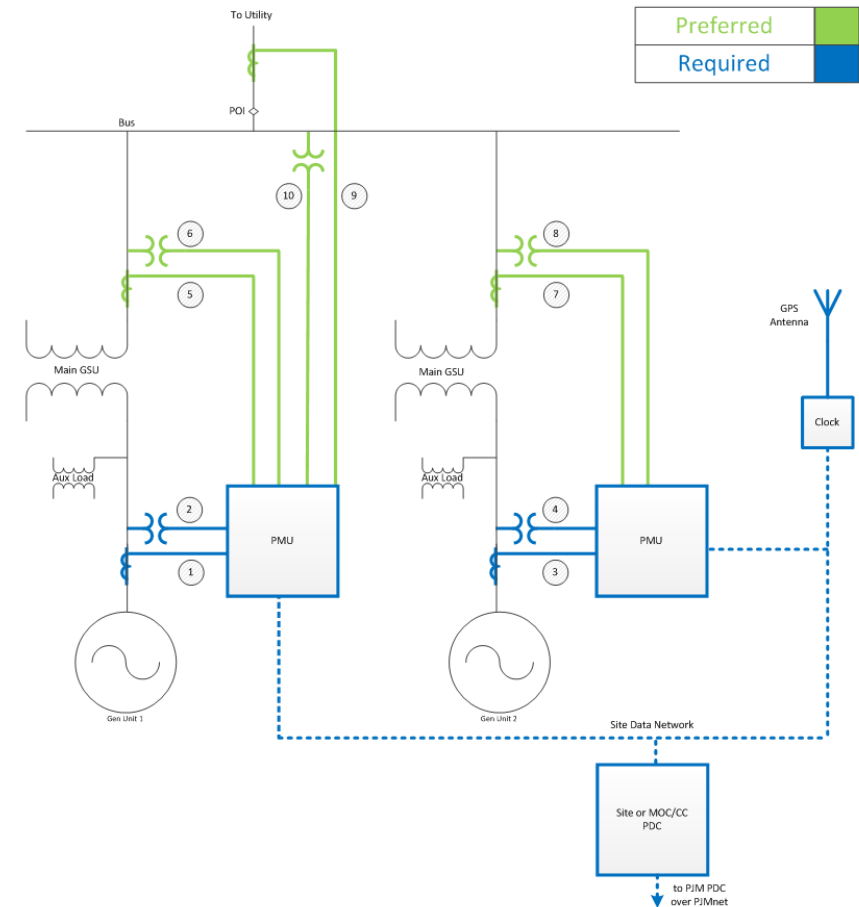
- New algorithm fundamentally works and is a notable improvement in the technology. Performance and scaling problems persist.



- Generation projects, synchronous and non-synchronous, are currently installing PMUs

<http://www.pjm.com/markets-and-operations/ops-analysis/synchrophasor-technology.aspx>

Example One-Line Drawing and Point List, Generation



- Go/no-go on LSE purchase and final installation
- Productionalize and train for PMU map and heat maps
- Tune and configure phasor architecture for grid resiliency applications
- Re-focus on under utilized aspects of the technology; islanding detection, fast and thorough post-event reports, etc.