Engineering Analysis Task Team

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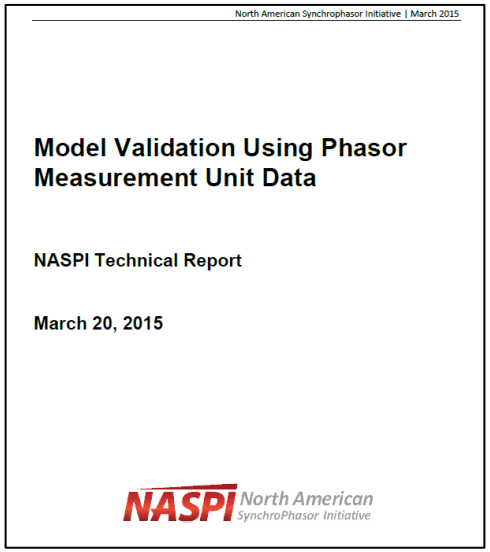
Shaun Murphy (PJM) – Co-Lead

NASPI Virtual Meeting

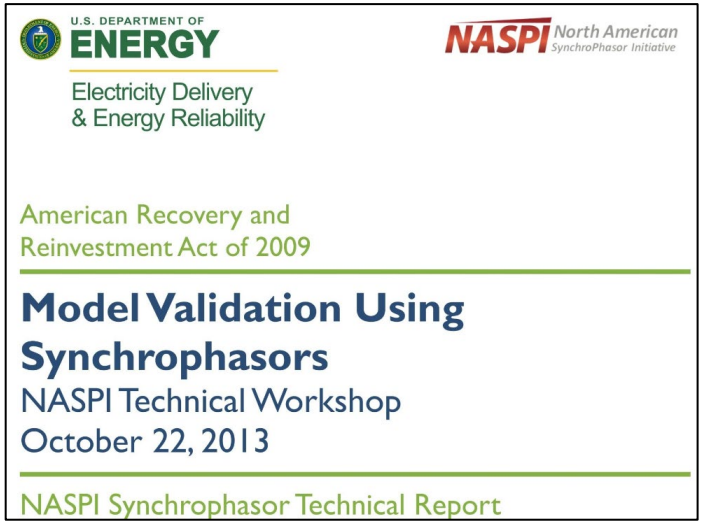
April 14 2021

Advanced Model Validation & Calibration

- New EATT White Paper
- Lead: Honggang Wang (GE)



Objective: Document industry advancements in model validation and calibration



Outline

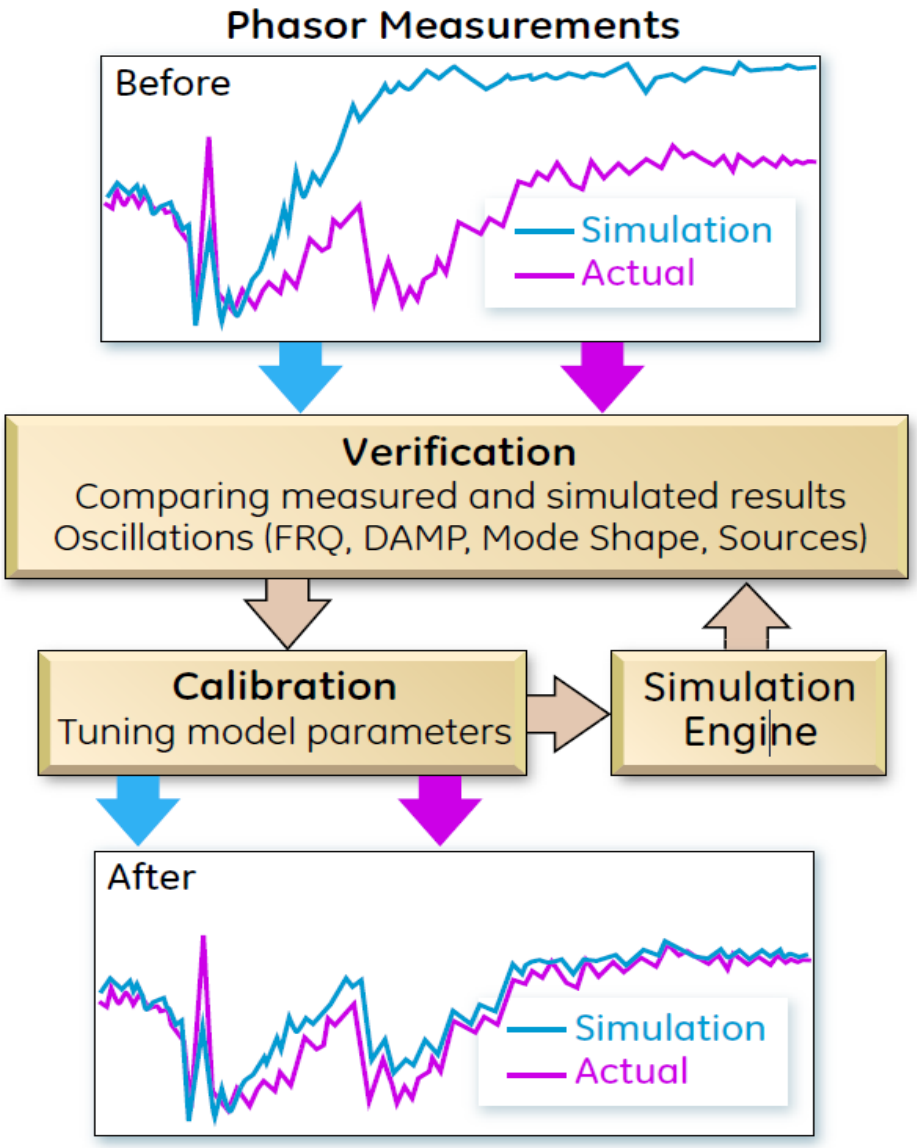
White Paper Link

MVC Motivation

- System reliability studies
  - Planning
  - Operations

NERC Standards	Validation Focus	Validation Method	Entities	Interval
MOD-026-1	Validate generator voltage and reactive power response	Staged test (for GO) and POI disturbance-based model validation (for TP)	TP, GO	Every 10 year or significant change to the plant that modify its response capability
MOD-027-1	Validate generator frequency and active power response	Staged test (for GO) and POI disturbance-based model validation (for TP)	TP, GO	Every 10 year or significant change to the plant that modify its response capability
MOD-032-1	Interconnected transmission system model	NA	PC, TP, BA, GO, LSE, RP, TO, TSP	Every 13 calendar months
MOD-033-1	Interconnected transmission system model	disturbance based model validation (for PC)	PC, RC, TO	Every 24 calendar months

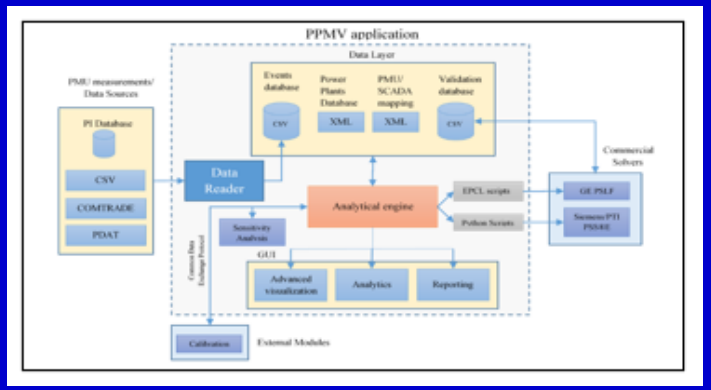
MVC Process


Phasor Measurements
Before
Simulation
Actual
Verification
Comparing measured and simulated results
Oscillations (FRQ, DAMP, Mode Shape, Sources)
Calibration
Tuning model parameters
Simulation Engine
After
Simulation
Actual

MVC Tools

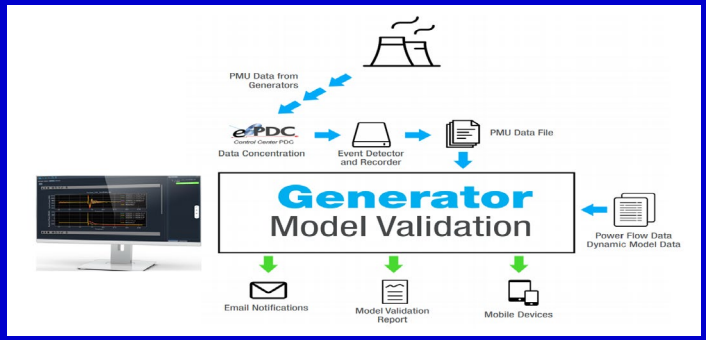
PNNL/BPA

Power Plant Model Validation (PPMV)



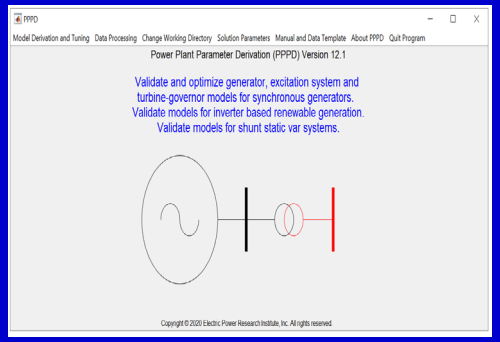
Electric Power Group

Generator Model Validation (GMV)



EPRI

Power Plant Parameter Derivation (PPPD)



GE

PhasorAnalytics Dynamic Model Validation & Calibration

MathWorks

Power Plant Model Validation Simscape Design Solution