Examples of benefit of higher data rate and POW

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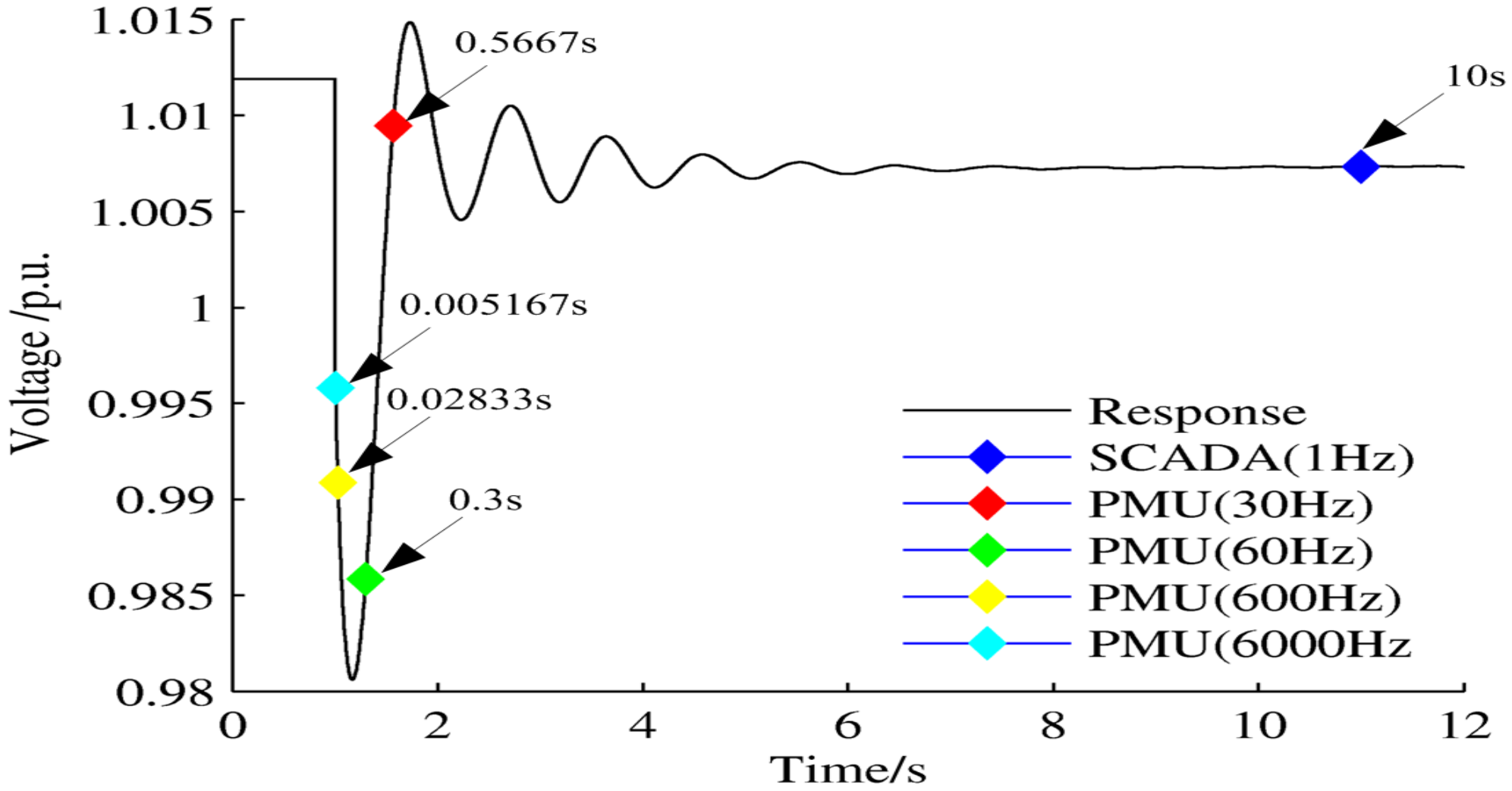
Transient Response Prediction Time Reduction with the Increase of Data Rate



Multimode Oscillation Detection Issues

POW with 40Hz+80Hz SSOs (mag:100 with four different phase) synthetic data
use POW and phasor data to detect the oscillation

	POW to detect oscillation directly						POW convert to phasor domain data to detect the oscillations								
Synthetic POW data	Mode 1 (40Hz)			Mode 2 (80Hz)			Mode 1 (20Hz)			Mode 2 (100Hz)			Mode 3 (140Hz)		
	Freq. (Hz)	Mag	Phase (˚)	Freq. (Hz)	Mag	Phase (˚)	Freq. (Hz)	Mag	Phase (˚)	Freq. (Hz)	Mag	Phase (˚)	Freq. (Hz)	Mag	Phase (˚)
40Hz(0˚) + 80Hz(0˚)	40.0009	100.0028	-0.003	80.0019	99.9944	-0.006	N/A	N/A	N/A	100.0023	0.001915	65.64	140.0032	0.00138	-35.64
40Hz(-30˚) + 80Hz(30˚)	40.0009	100.0028	-30.003	80.0019	99.9944	30.006	N/A	N/A	N/A	100.0023	0.001915	35.64	140.0032	0.00138	-5.64
40Hz(30˚) + 80Hz(30˚)	40.0009	100.0028	29.997	80.0019	99.9944	30.006	20.0005	0.0439	-119.43	100.0023	0.001915	95.64	140.0032	0.00138	-5.64
40Hz(0˚) + 80Hz(90˚)	40.0009	100.0028	-0.004	80.0019	99.9944	90.006	20.0005	0.0621	-74.43	100.0023	0.001915	65.64	140.0032	0.00138	54.36

- When there are two modes in POW (whose magnitudes are close to each other, frequency and phase angle are symmetric about 60Hz and 0˚), no obvious mode 1 oscillation can be detected in phasor domain data.
- Phasor domain data can be difficult to reflect the true oscillation modes in POW waveform.

New Grid Edge Monitor

- Continuous syn wave up to 36k samples/s
- Voltage and current waves
- 1440 pts/s phasor
- Harmonics, sag, flicker, SNR
- Ethernet or wireless
- GPS time synchronization