

10 Ways to Pretend You're an Expert in Synchrophasors (And Maybe Fool Yourself!)

Co-hallucinating with ChatGPT 40

Kevin D. Jones, Ph.D.

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## News Article

How to Become a Synchrophasor Whisperer (Or at Least Sound Like One)

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What Synchrophasor Experts Won't Tell You: Its Mostly Guess Work

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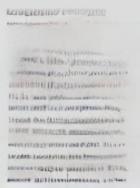
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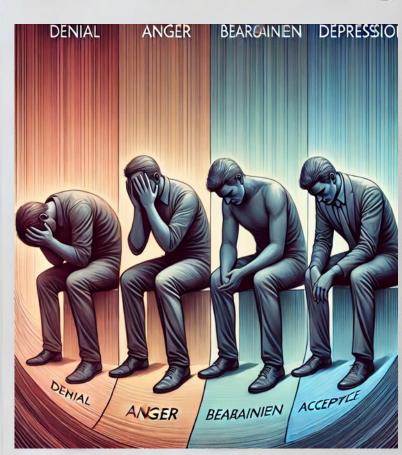
## News Article

The 5 Stages of Synchrophasor Acceptance— Which One Are You Stuck In?

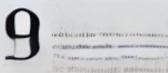


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## News Article

Why PMUs are the Grid's Answer to Middle Management

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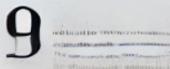
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## News Article

7 Mental Shifts So Obvious Even your SCADA Data Can See Them

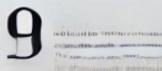
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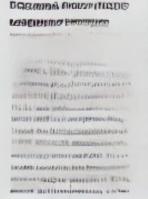
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## News Article

Waveform Warriors: 7 Mental Models to Restore Your Resilience



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## News Article

Synchrophasors and Coffee:

Keeping Experts Awake and Stressed in Equal Measure

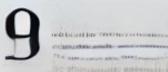
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## News Article

Grid Stability: Now with 100% More Data to Stress You Out



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## News Article

Learning Synchrophasors: Its like Learning to Ride A Bike, if the Bike Was On Fire

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Stop Resisting! 8 Ways Synchrophasors Are Dragging Utilities

Kicking and Screaming into the Future





#### Listicle Appendix

Stop the Synchro Struggle! 10 Mental Shifts You Need to Embrace the Inevitable 10 Synchrophasor Truth Bombs You're Probably Ignoring—But Shouldn't How to Become a Synchrophasor Whisperer (Or at Least Sound Like One) Why Synchrophasors Are the Future—And 7 Ways to Stop Pretending They Aren't The 5 Stages of Synchrophasor Acceptance—Which One Are You Stuck In? Phasors Gone Wild: 5 Data Surprises You'll Pretend to Understand What Synchrophasor Experts Won't Tell You: Its Mostly Guess Work You Can't Ignore This: 9 Synchrophasor Facts That Will Make Your Head Why Synchrophasors are the Grid's Answer to Middle Management Spin (In a Good Way) 7 Mental Shifts So Obvious Even your SCADA Data Can See Them Expert Mode Activated: Now What Do All These Waveforms Mean? Synchrophasors and Coffee: Keeping Experts Awake and Stressed in Equal Measure From Zero-to Synchrophasor Hero in 10 Easy (or Not-so-easy) Steps Waveform Warriors: 7 Mental Models to Restore Your Resilience 10 Shocking Synchrophasor Realizations That Will Make You Grid Stability: Now with 100% More Data to Stress You Out Rethink Everything (Seriously!) Learning Synchrophasors: Its like Riding A Bike, if the Bike Was On Fire From Analog to AI: 6 Mental Shifts That Will Make Synchrophasors Your New Best Friend Synchrophasor Savvy: 6 Expert Tips (Or Just Really Good Guesses) 10 Ways Synchrophasors Will Make You Question Everything You 10 Ways to Pretend You're an Expert in Synchrophasors (And Maybe Fool Yourself!) Thought You Knew About the Grid (And Maybe Life Itself) 7 Signs You're Stuck in the Past: Synchrophasor Realities You Need to Stop Resisting! 7 Ways Synchrophasors Are Here to Improve Your Embrace, Like Yesterday Life (And Maybe Your Sanity) Why Synchrophasor Data is the Frenemy You Didn't Know You Had 10 Times Experts Were Just as Confused by Synchrophasors as You Are





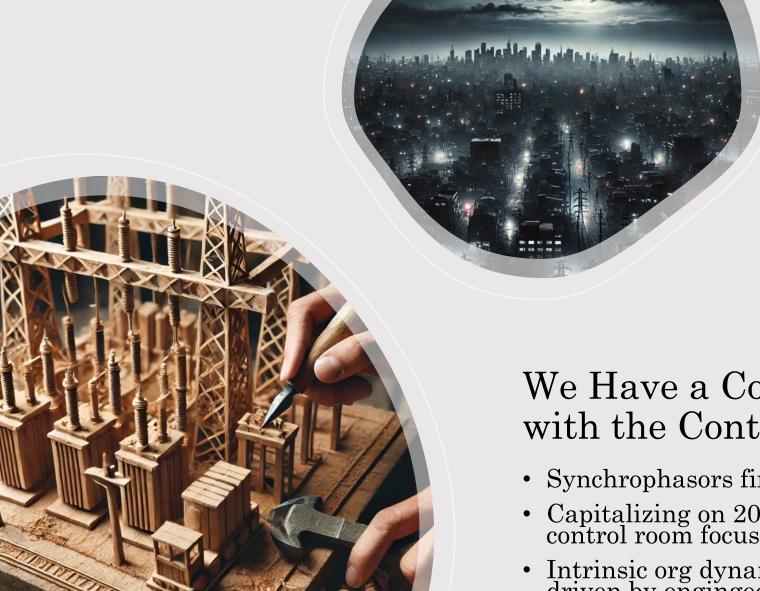
#### Synchrophasors: A Fundamental Shift

- Transmission is fundamental.
- Measurement is fundamental.
- New capability arises from seeing the previously unseeable.

# No remaining technological barriers

- No excuses
- No sensor limitations
- No comms limitations
- No ecosystem limitations







## We Have a Complex Relationship with the Control Room

- Synchrophasors first imaged as modeling/analysis tool
- Capitalizing on 2003 Blackout, investment catalyzed control room focus.
- Intrinsic org dynamics require faster innovation cycle driven by engingeering analysis
- Drives virtuous cycle that leads to control room

## Oscillations Are the "Killer App"

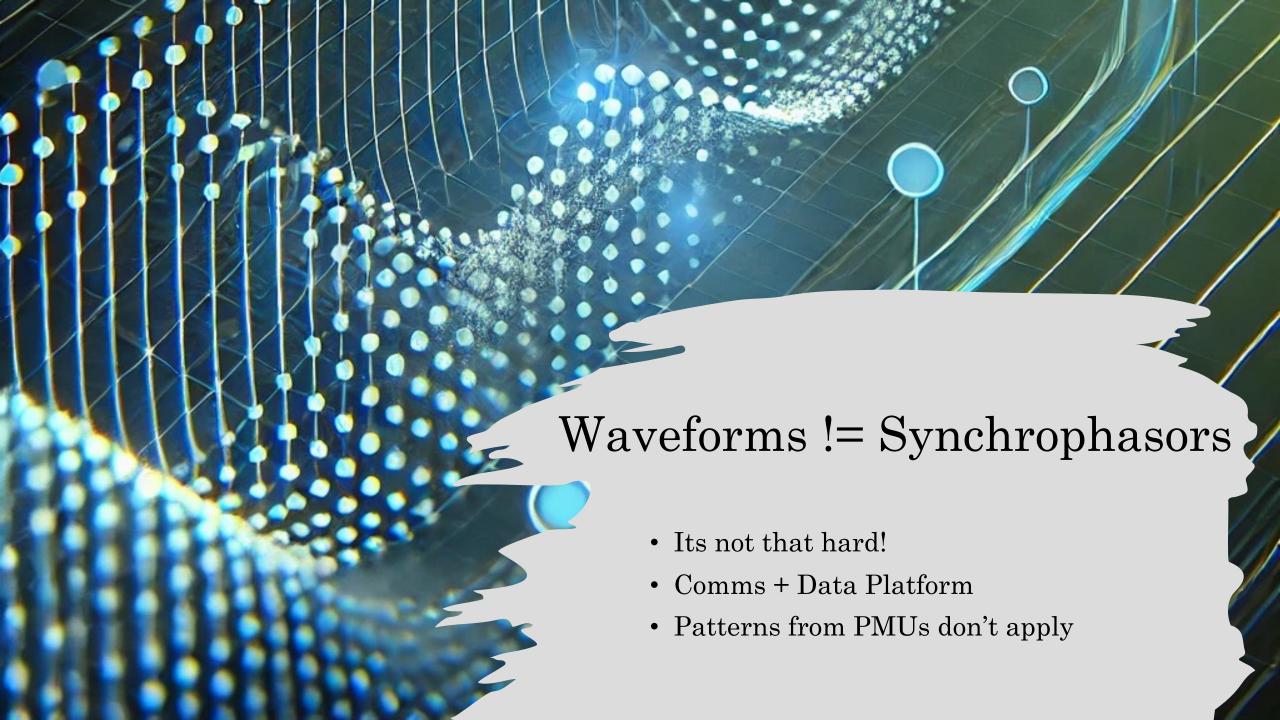
- Power Electronics are having their moment
  - Data Center Load
  - FACTS
  - IBRs
- Local oscillations lead to capital inefficiency





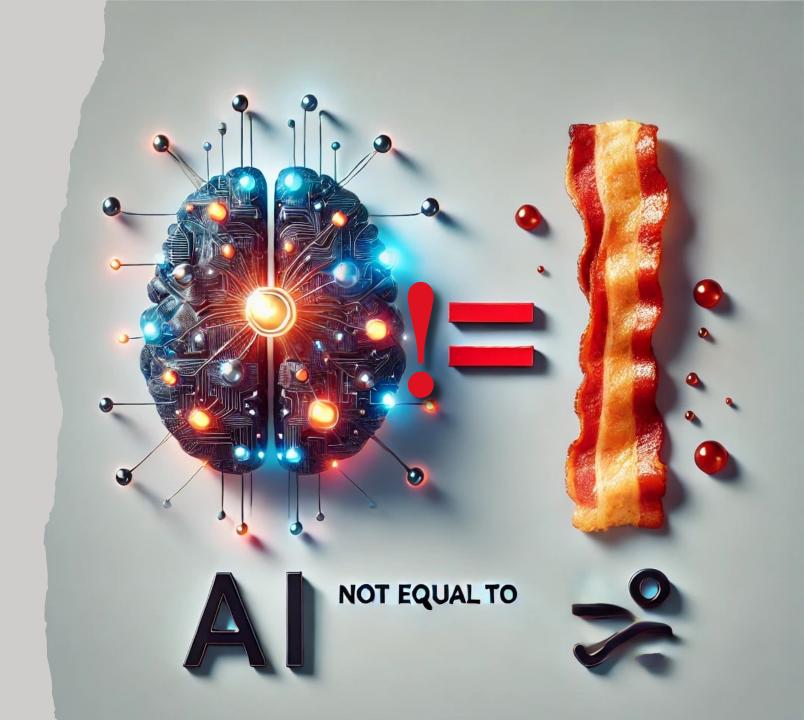
#### All Time vs Real-Time

- Not about volume
- Not about AI
- Ambient vs Events
- Chronic vs acute health
- Real-time is the Special Relativity to the All-Time General Relativity



#### AI != Bacon

- Artificial Intelligence doesn't make everything better
- Don't forget Maxell
- Shiny Object Syndrome
- K.I.S.S.
- First Principles & Fundamentals





### We Can Grow the Pie

- Neither the industry nor this space is a zero-sum game.
- More collaboration between vendors is needed.

#### Thank You!

Kevin D. Jones, Ph.D.

