
PingThings
THE GRID
IS TALKING.
ARE YOU
LISTENING?
NASPI Flash Talk
Grid Dynamics & the Memory Problem
Lisa Fennell | PingThings

The Grid has Changed

Exponential growth in the number of devices, sensors, and resulting time series data

Silicon-Controlled Generation & Storage

Digital, high-frequency, inverter-based resources

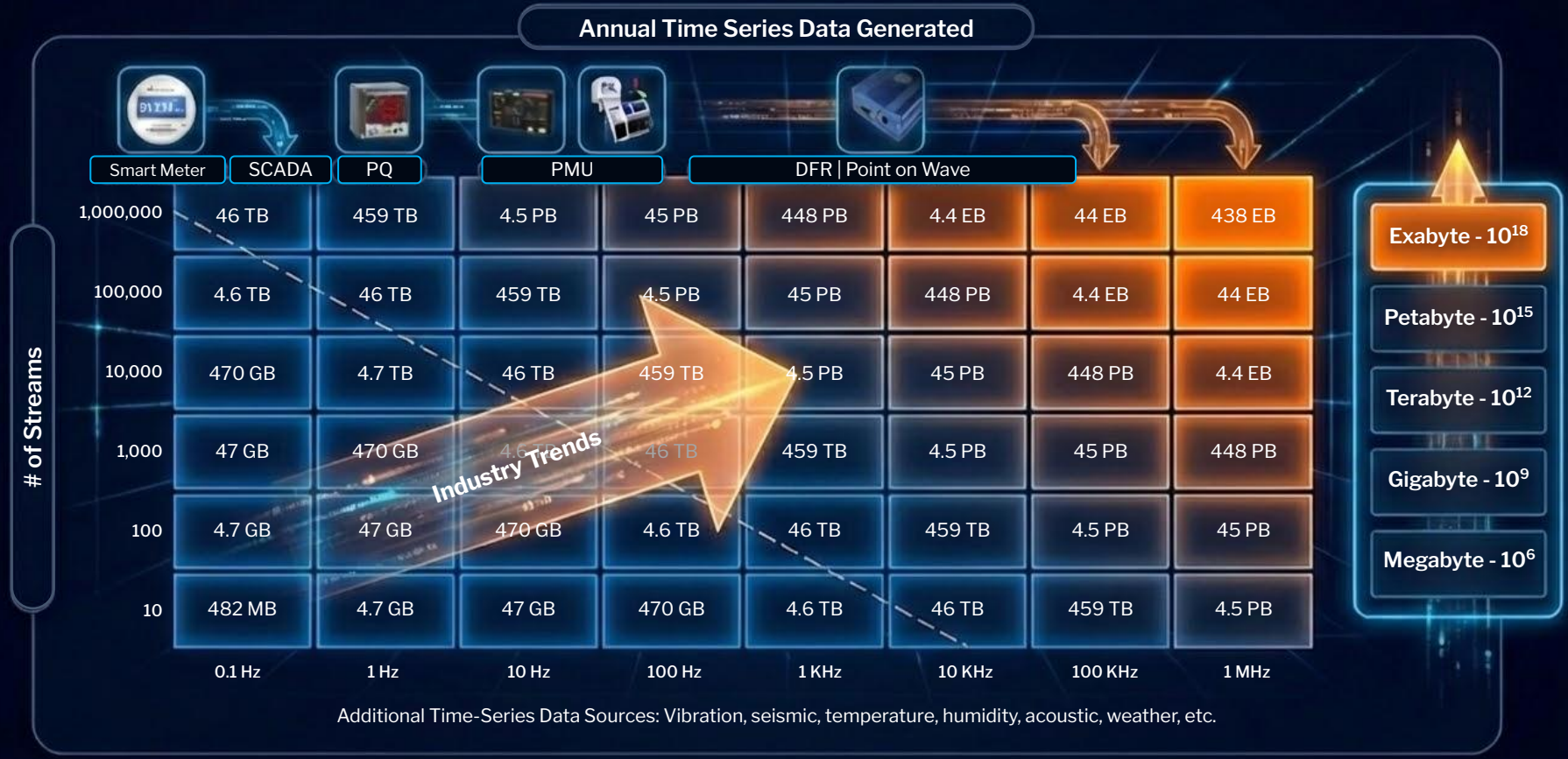
Legacy Transmission & Distribution Infrastructure

Analog, mechanical infrastructure requiring digitalization

Silicon-Driven Loads & Consumption

Digital, fast-changing, and high power demands.

Grid Data is Exploding – From Gigabytes to Exabytes



From Real Time to All Time Data

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Real Time Focus & Limitations

- Utilities focus on **real-time data** — the last few minutes
- But real-time **shrinks big data into small insight**
- **Physics-based models** once provided enough prediction for reliability, but they can't manage today's renewable and digital complexity alone.

The Value of All-Time Intelligence

- The world now runs on **all data**, including history and context
- *(imagine Amazon deleting your purchase history).*
- **The energy transition** demands data-driven learning, not just physics-based modeling.
- **PingThings enables real-time and all-time intelligence** — a grid that learns from every second of its past.

Edge and Centralized: Reflex and Reason

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- **Edge** for immediate, localized response
- **Centralization** for learning, optimization, and evolution
- The two are complementary, not competitive — **reflex and reason**
- Limiting data centralization restricts long-term learning

Centralized: System Intelligence

- Aggregates data across assets, time, and space.
- Learns patterns and relationships the edge can't see.
- Enables **long-term optimization and adaptation** across the grid.
- Example:
  - Brain learns not to touch hot objects

Edge: Immediate Reflexes

- Acts on local information when milliseconds matter
- Example: detecting and de-energizing a downed conductor
- Ideal for **time-critical, localized reactions** — not for system-wide optimization
- Example:
  - Local sensing detects hot pot
  - Local reflex arc pulls the hand away

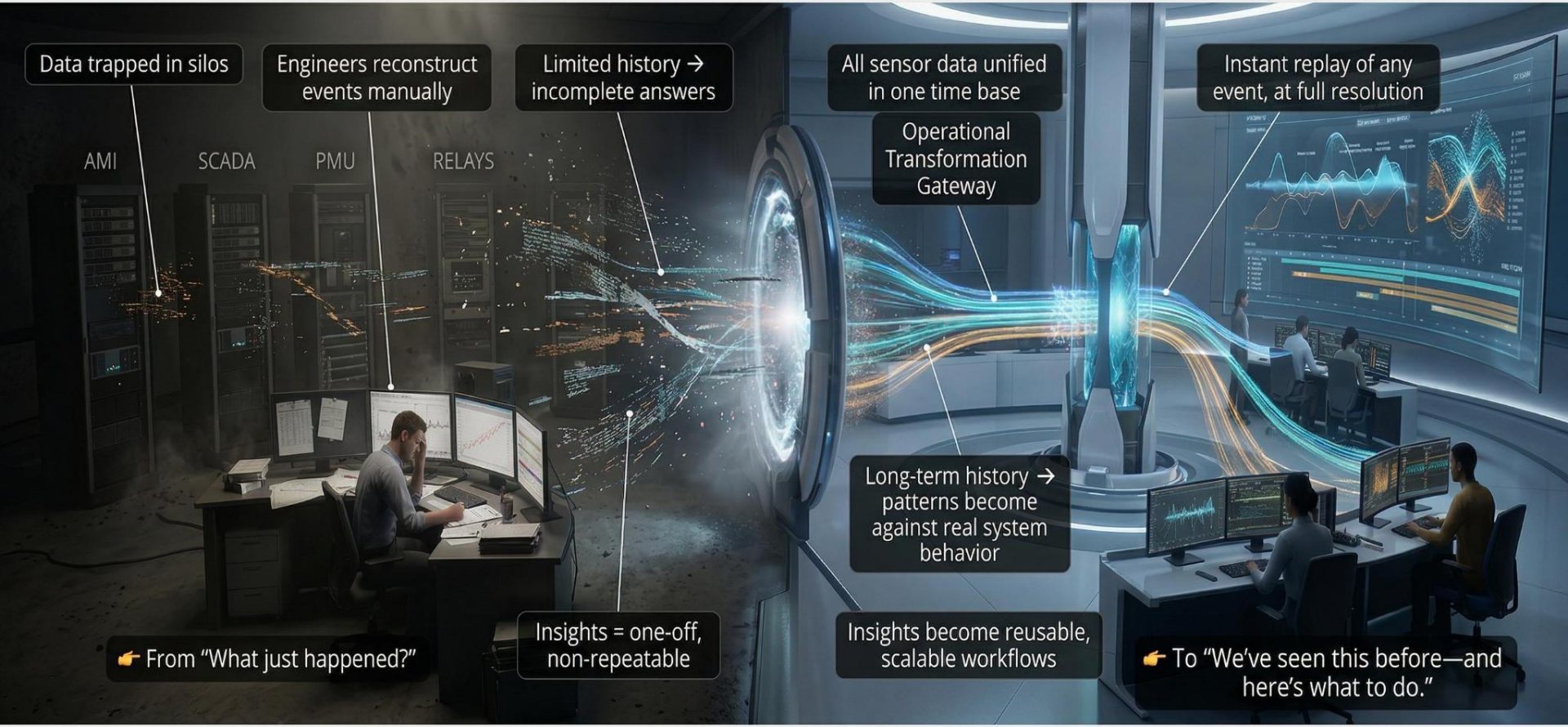
Speed Turns Data into Value

100 PMUs x 20 channels x 30 Hz = 1.9T data points per year*

Data must be accessible to create value

* Customer provided scenario

HOW IT CHANGES THE WAY WORK GETS DONE — From Reactive Investigation → Continuous Learning System



PredictiveGrid doesn't replace your systems. It makes them finally work together.

Continue the Conversation

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Scan for talk, resources, and to connect on LinkedIn