Escaping Point-on-Wave Ground Hog Day with the National Infrastructure and Software-defined Sensors

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Groundhog Day?

PMU

- Invented in the 1970's
- Commercialized in 1980's
- Embedded in hardware 2000's
- Searching for use cases 2010's

What will happen with Point on Wave?

Bottlenecks – The Vicious Cycle

1. Availability of data
2. Suboptimal tools
3. No people
4. Lack of obvious business justification

Utilities have the data, but not the technology nor the AI talent

The talent doesn't have the data or non-standard tooling

What is the Ideal Solution?

- Available data
  - Real world
  - Easily accessible
- Common, state of the art platform
- Robust community
  - Incentivized
  - Cross discipline and cross pollinated

ARPA-E Announces Next OPEN+ Cohort: Data-Driven Grid

ARPA-E announced $15 million in funding for four projects in the next cohort of the agency's OPEN+ program, Data-Driven Grid.

OPEN+ consists of a selection of topical mini-programs, or "cohorts," inspired by the high quality of applications we received for our OPEN 2018 solicitation. Click to learn more about OPEN+.

Nuclear Materials – Methane Conversion – Concrete – Sensors for Bioenergy and Agriculture – Energy-Water Technologies – Kilovolt Devices – Data-Driven Grid

U.S. DEPARTMENT OF ENERGY

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CHANGING WHAT'S POSSIBLE

PingThings

A NATIONAL INFRASTRUCTURE FOR ARTIFICIAL INTELLIGENCE ON THE GRID

3 years, $6.25M

Are you ready to change the world?

ARPA-E awardees are developing high risk, high-impact technologies that, if successful, will help solve our nation's most pressing energy challenges
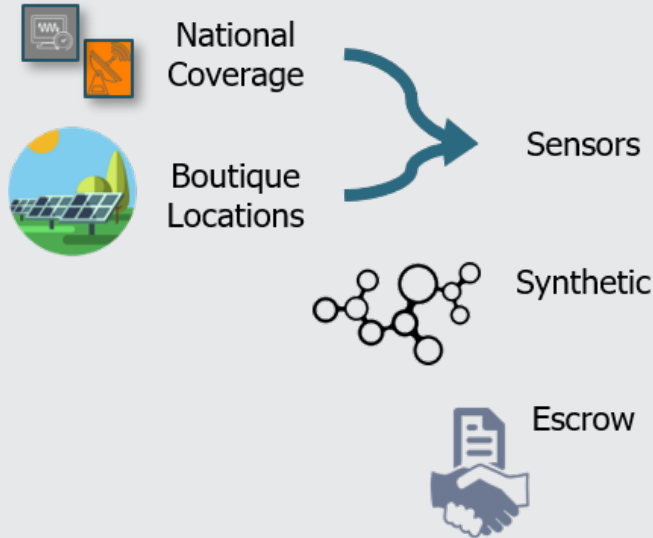
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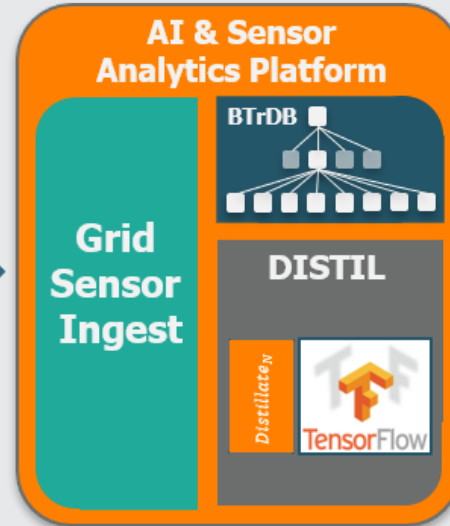
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ARPA-E Open 2018 Project Overview

The overarching objective is to remove any and all obstacles to the rapid development, adoption, and deployment of new use cases based on analytics, machine learning (ML), and artificial intelligence (AI) for sensor data measuring the electric grid.
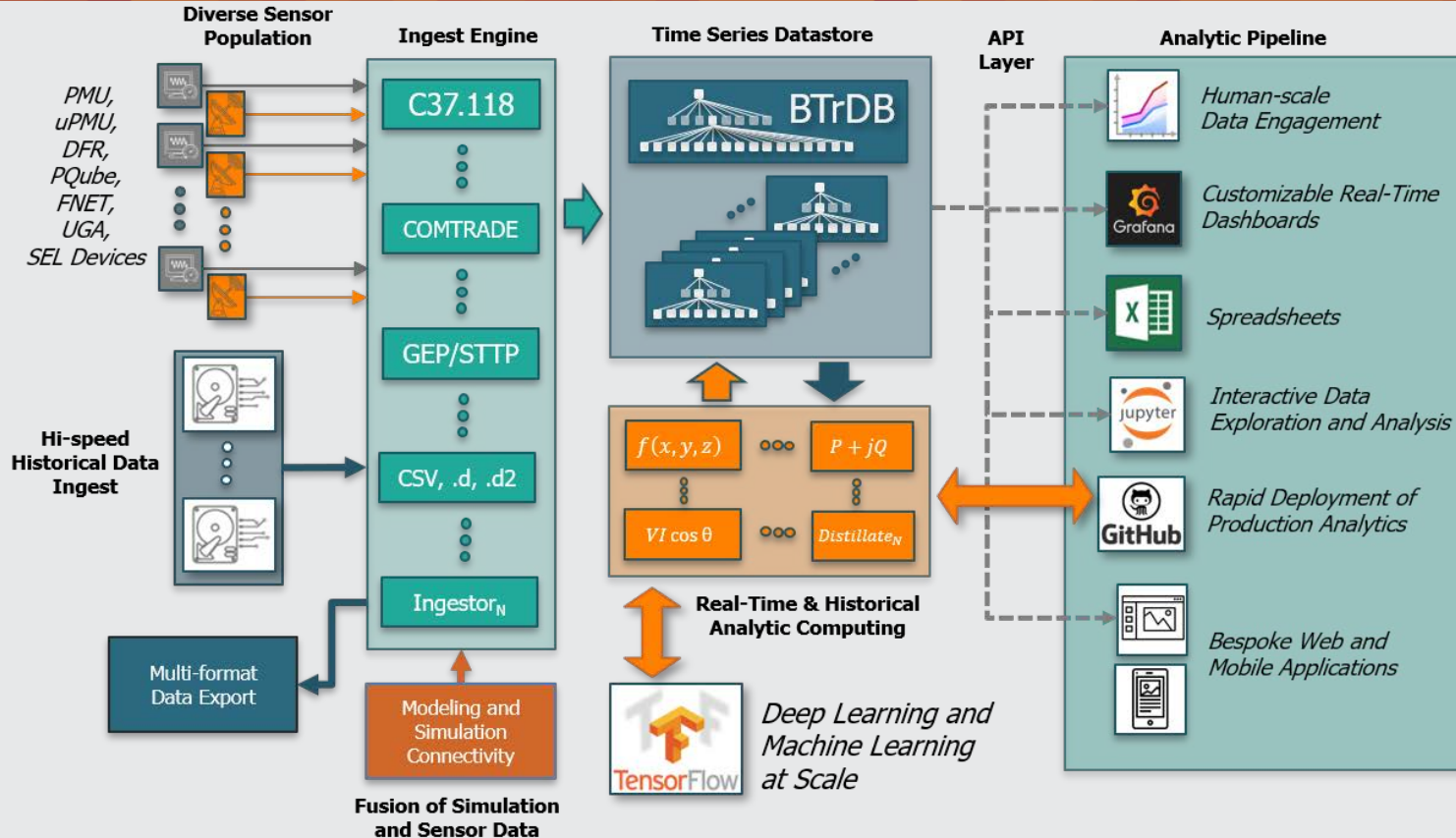
(1) Get the Data

1. *in vivo* – grid sensors deployed in the real world
   - Wide Area
   - Boutique

2. *in vitro* – grid sensors evaluated in controlled environments

3. *in silico* – simulated sensor data from advanced grid models

<u>Data Escrow Service</u> – secure data exchange between utilities and other organizations to make collaboration easier.
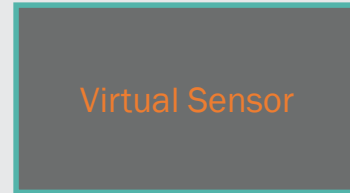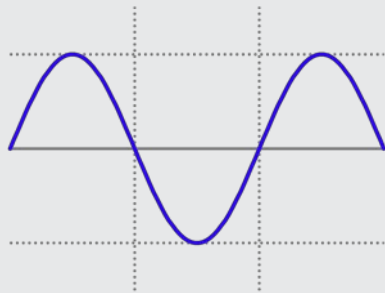
(2) The Platform

(3) Build the Community

- Utilities
- Universities
- Industry
- Consulting groups
- Research organizations

- Workshops
- Contests
- Competitions
- Challenges
- Content

Software defined Sensors via POW

- 64 – 2048 samples per cycle
- Ground truth for what is happening on the grid
- "universal" measurement

Virtual Sensor

Phasor Measurements

Power Quality

Insert New Idea Here

The Team

PingThings **+** **+** Subject Matter Experts

Want to Get Involved?

Calls to Action

- What sensors should be used?

- What data sets should be created?

- What should be monitored?

- What question should the data science competitions answer?

- Do you have simulated data that you would like to contribute?

- Do you want access to the data?

Questions?

Come to our "unbooth"
during the reception
to tell us your thoughts.

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