



# Smart Meter Data

NSF Smart Grid Big Data Analytics Spoke

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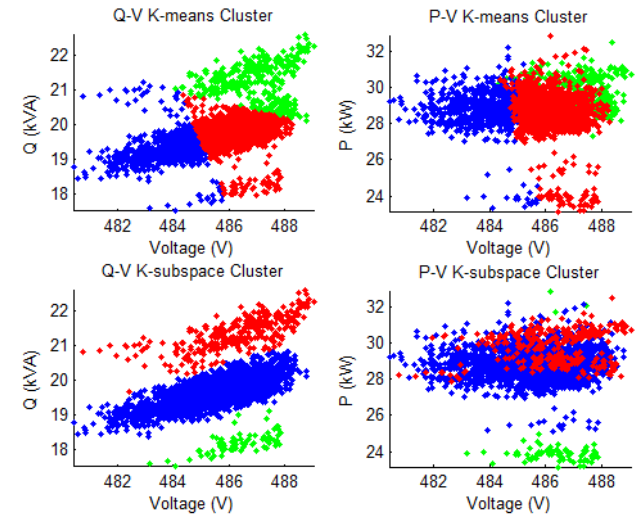
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# Context

- Currently close to 50% penetration of customer smart meters in the U.S.
- Typically hourly or 15 minute readings.
- Smart meters can read voltage, current, active and reactive power, and energy.
- However, cost of communications limits current data streams.
  - Meters are mostly programmed for billing purposes.
  - In some cases, voltages and currents are available.
- There is significant value on smart meter data that can be exploited.

# Applications

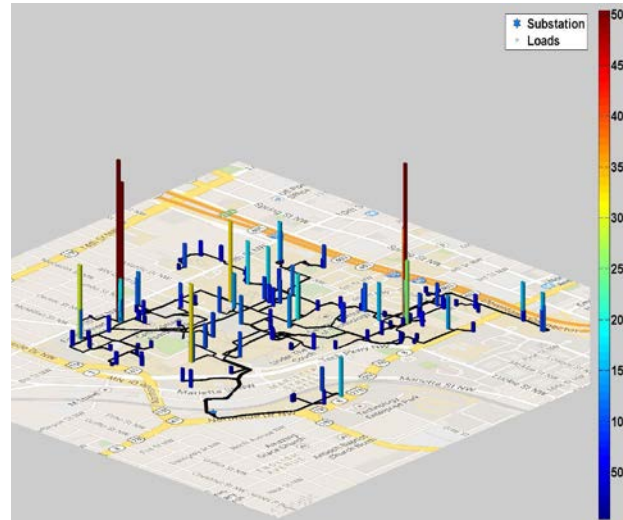
- Forecasting
- Load Modeling
- Distribution Parametric Estimation
- Distribution Model Calibration
- Secondary Topology Identification



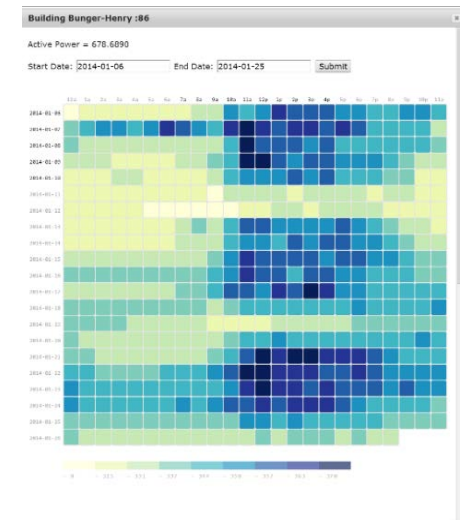
## Load Modeling



Web-based Dashboard



Parametric State Estimation



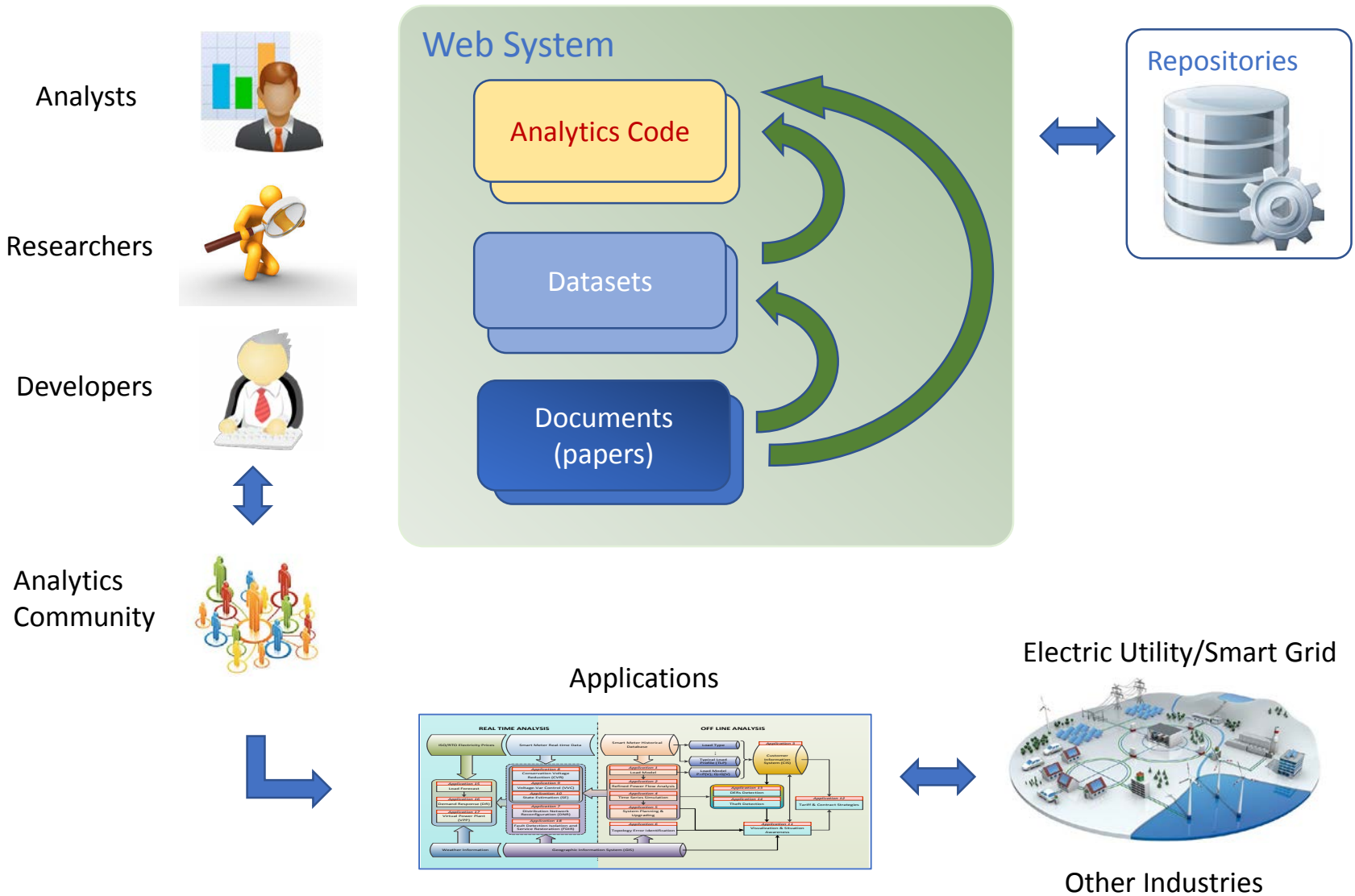
Energy Time-series



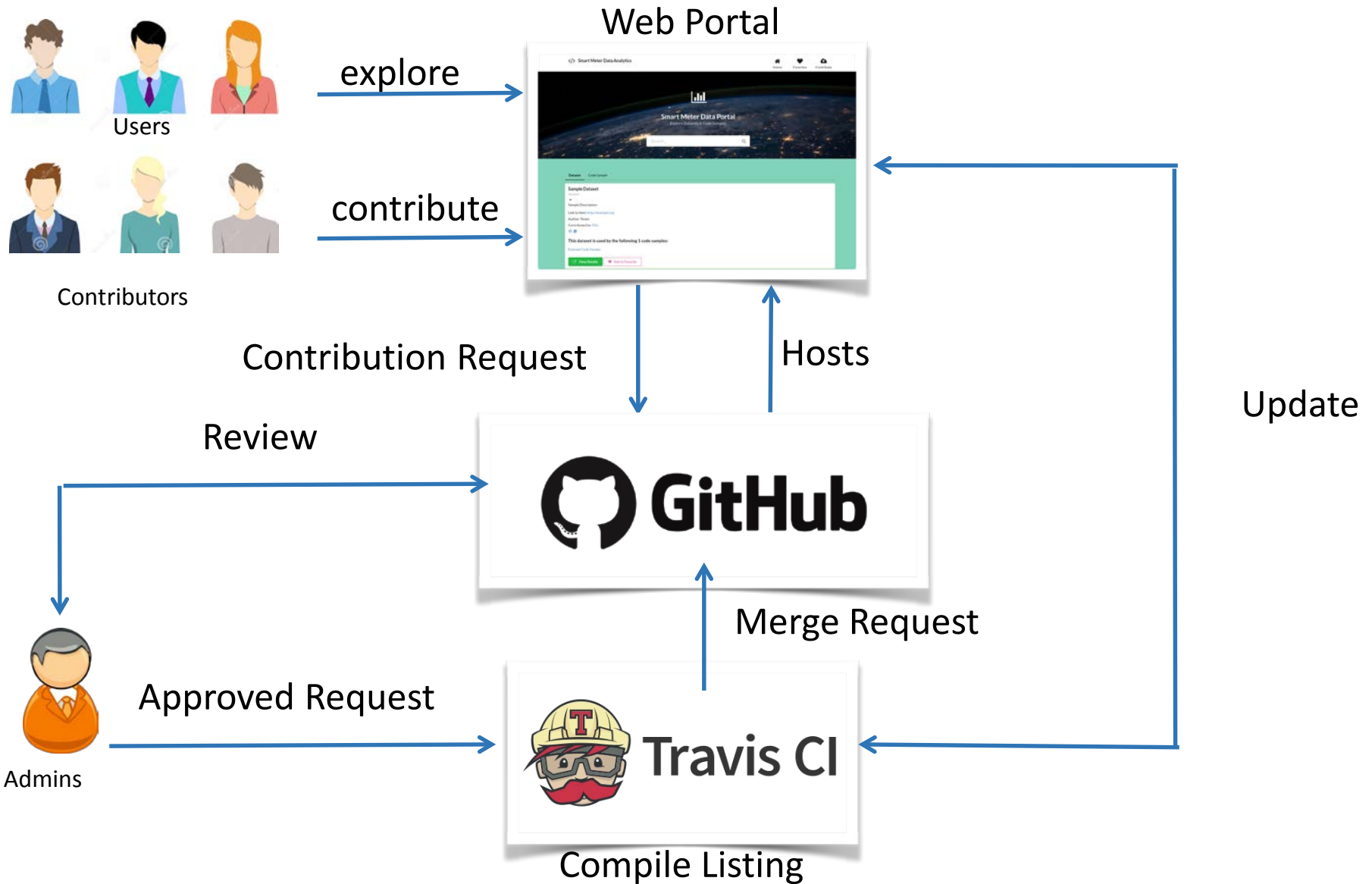
# Data Sharing

- One can learn a lot from a customer and populations based on smart meter data.
  - Significant security and privacy issues.
  - Difficult to obtain smart meter data
- Ongoing efforts to make samples of smart meter data available.
- Difficulty to reproduce results from papers.
- Reinventing.

# Smart Meter Data Analytics Portal



# Smart Meter Data Analytics Portal



# Smart Meter Data Panel

## *Moderator:*

Dr. Soorya Kuloor

Practice Director, Distribution Operations, Landis+Gyr

## *Panelists*

Gary Hayes,

Senior VP, CIO for Technology Ops, CenterPoint Energy

Ed Beroset

Principal Technical Leader, EPRI

Dr. Norayr Matevosyan,

Principal Data Scientist, ComEd