

Transforming Energy Optimization Through Data Visualization

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Introduction

EnergyLB is a company that performs data analysis on energy usage and engineers solutions in order to help their clients reduce consumption without a loss in productivity. Currently, data processing including analysis and visualization is performed manually, taking up to three weeks to deliver insights to the client. Reducing this turnaround time would greatly increase client satisfaction while increasing productivity.

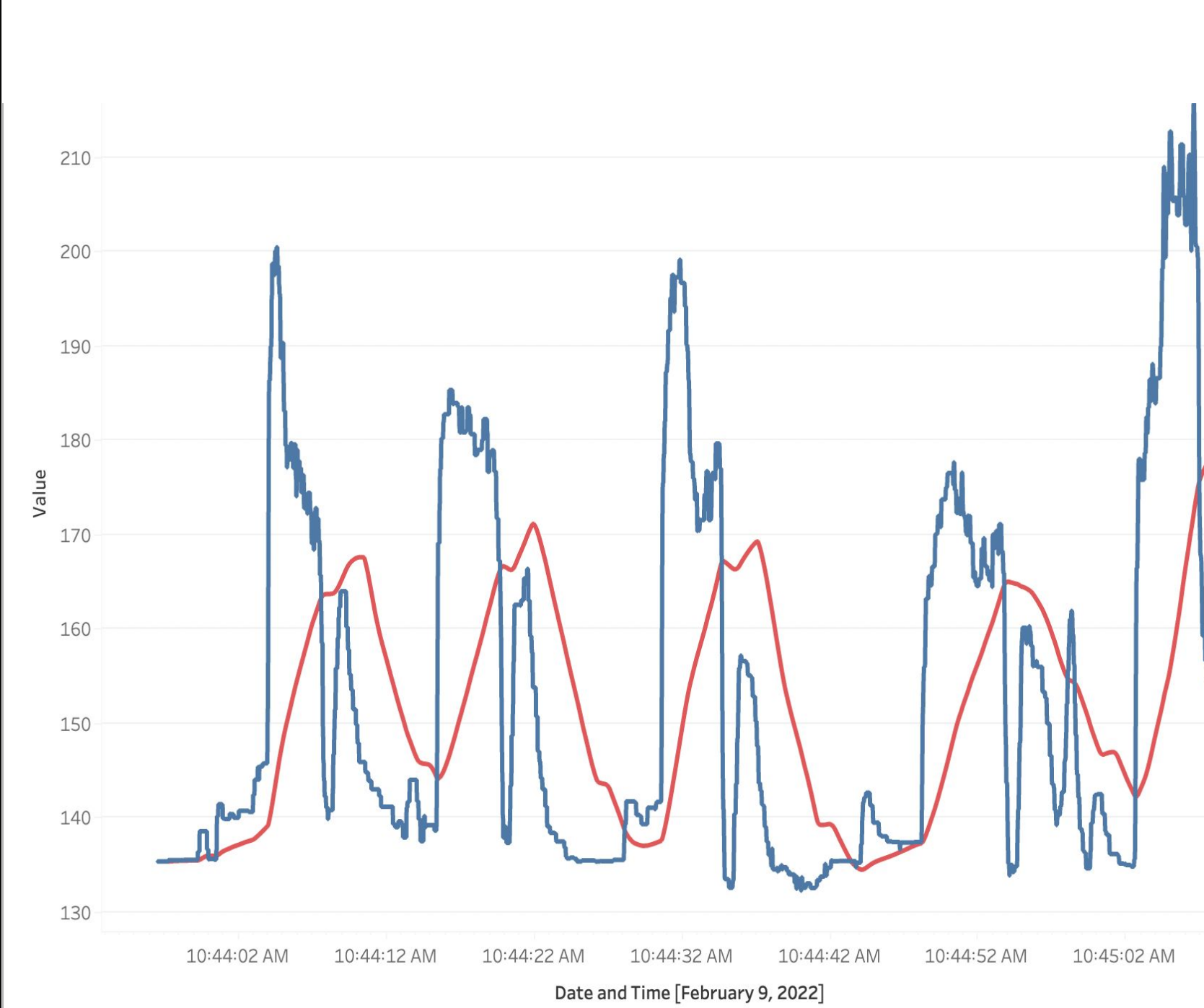
Objectives

- Reduce time to produce data visualizations from 3+ weeks to only a few minutes.
- Implement tools to more efficiently scan data sets for errors, such as missing or malformed data.
- Integrate a platform to easily perform more advanced statistical analyses.

References

EnergyLB: <https://energylb.com/>
Tableau: <https://www.tableau.com/>

Filtered Moving Averages Example



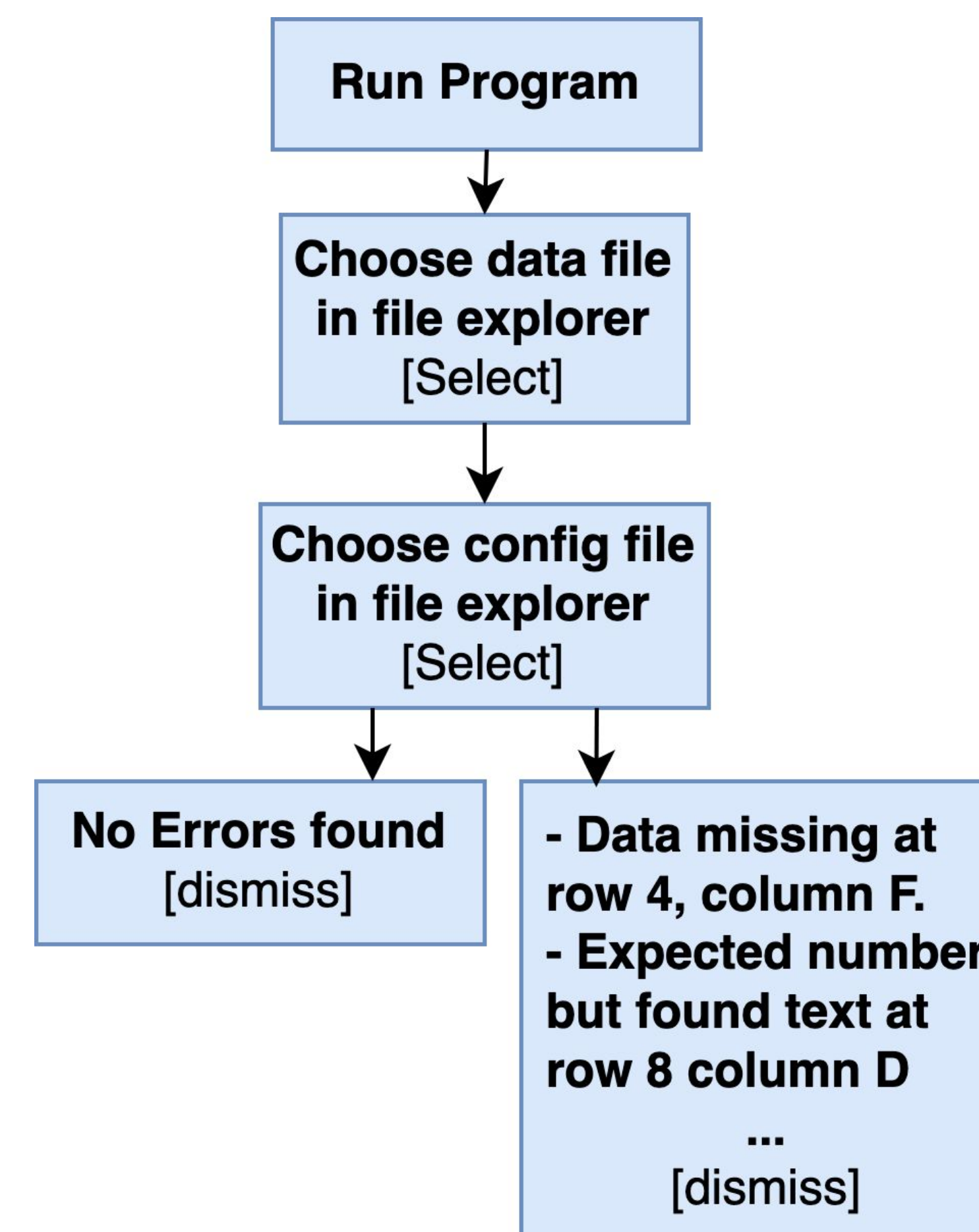
Design

The project has two distinct components.. The first is creating a validator program to scan a dataset for potentially invalid values. The second is providing tools to perform the company's desired calculations and integrate with a data processing software called Tableau

The validator takes an excel spreadsheet and a .json configuration file specifying the expected content of each data column, then outputs a list of data cells differing from expectations.

To facilitate the creation of more complex visualizations, we implemented scripts to perform several analytical calculations automatically, and deployed these to a TabPy server so their results could integrate with Tableau. Basic visualizations can be created natively in Tableau

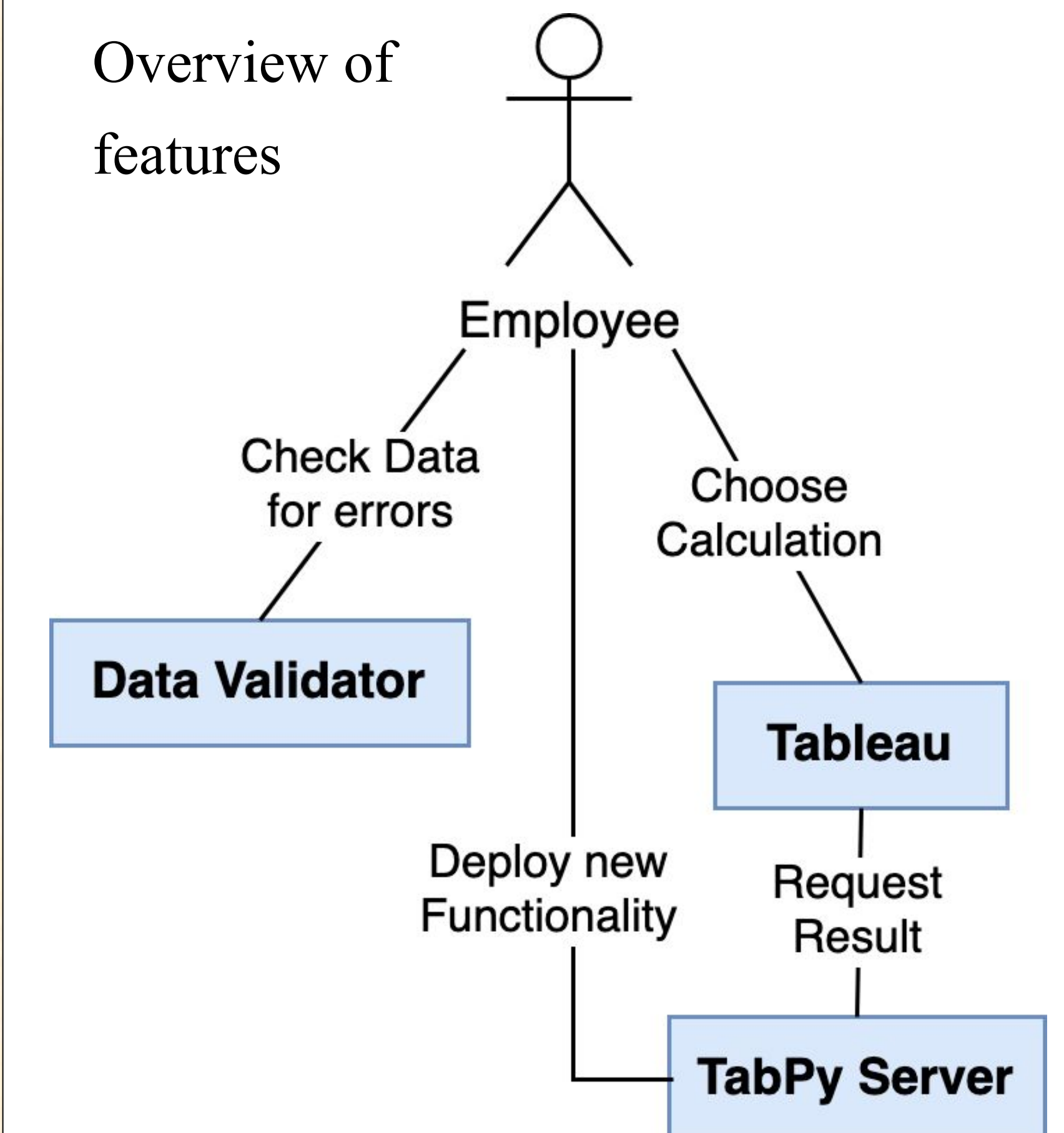
Basic Data Validator Usage



Results

- Basic data validation, including checks for missing data and incorrect data types has been created.
- Initial set of basic statistical analyses has been handled by Tableau.
- More advanced analytical capabilities are implemented in Python, including moving averages with resmoothing and functionality to calculate running energy usage, energy cost, and peak energy usage.

Overview of features



Conclusions

- Our team successfully reduced the time required for the client to process information to under ten minutes
- The introduction of advanced data analysis tools gives the client greater flexibility while working with the data.

Contacts

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