PLAN FOR THE FUTURE

Mother Nature Earth Team

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"PLEDGE TO PROGRESS
Sustainability Hackathon
sponsored by Microsoft"
Prototype Round

PROJECT FLOW

6 ENERGY DEMAND PREDICTION

Used historical and real-time data to develop predictive models like LSTM, Linear regression and light bgm model that forecast energy demand for vehicle charging. Azure Machine Learning helped create accurate demand prediction models based on factors like traffic patterns, weather conditions, and historical usage.

7 ENERGY MANAGEMENT ALGORITHMS

Develop energy management algorithms that optimize the energy distribution and charging schedules based on demand predictions and available solar energy.Used function app for this from azure and set energy consumption as a threshold.

8 VEHICLE-TO-GRID INTEGRATION

Implement Vehicle-to-Grid (V2G) technology, which allows electric vehicles to discharge excess energy back into the grid when not in use. This feature helps stabilize the grid and provide additional power during peak demand periods.

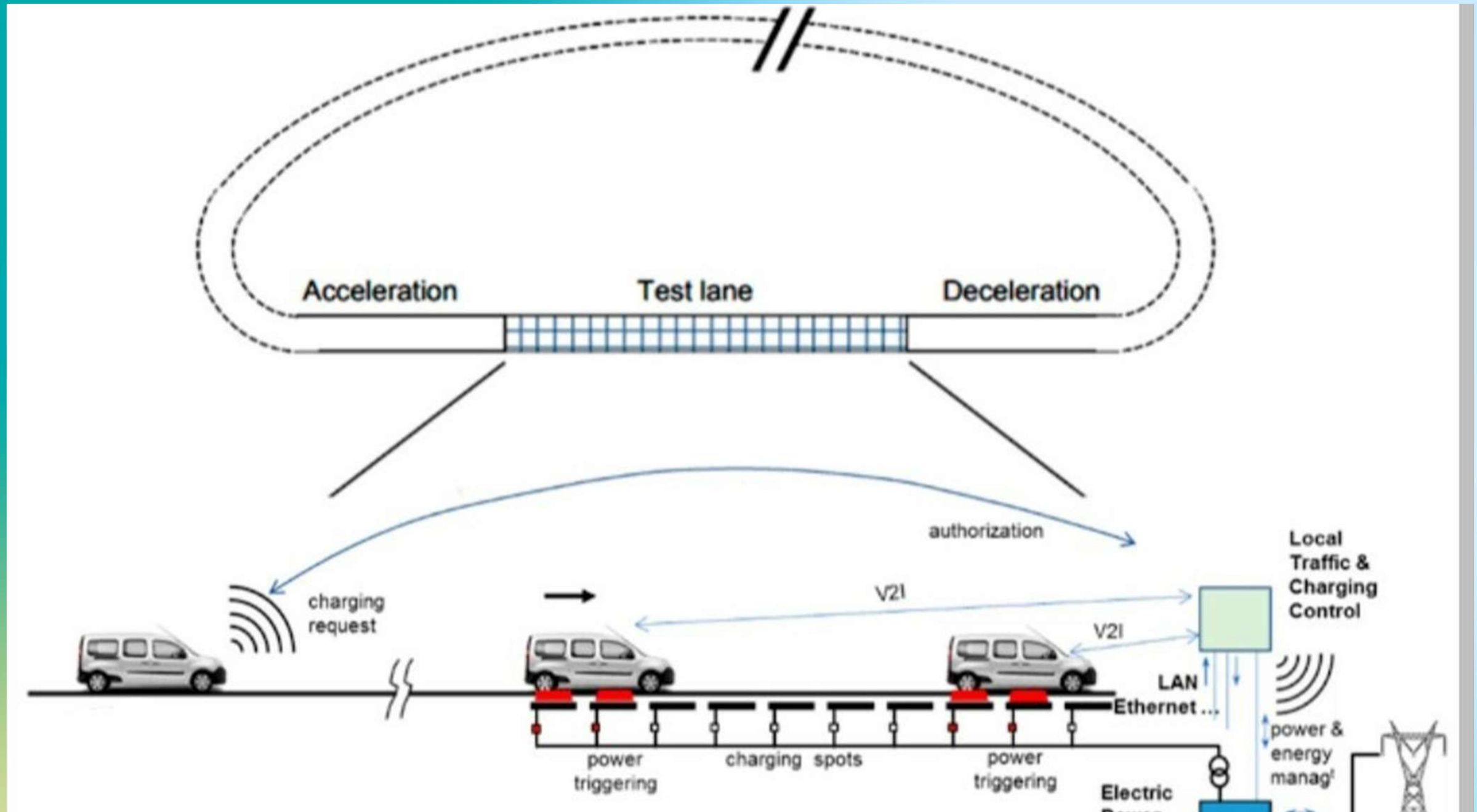
9 INTEGRATION WITH MICROSOFT SMART ENERGY MANAGEMENT

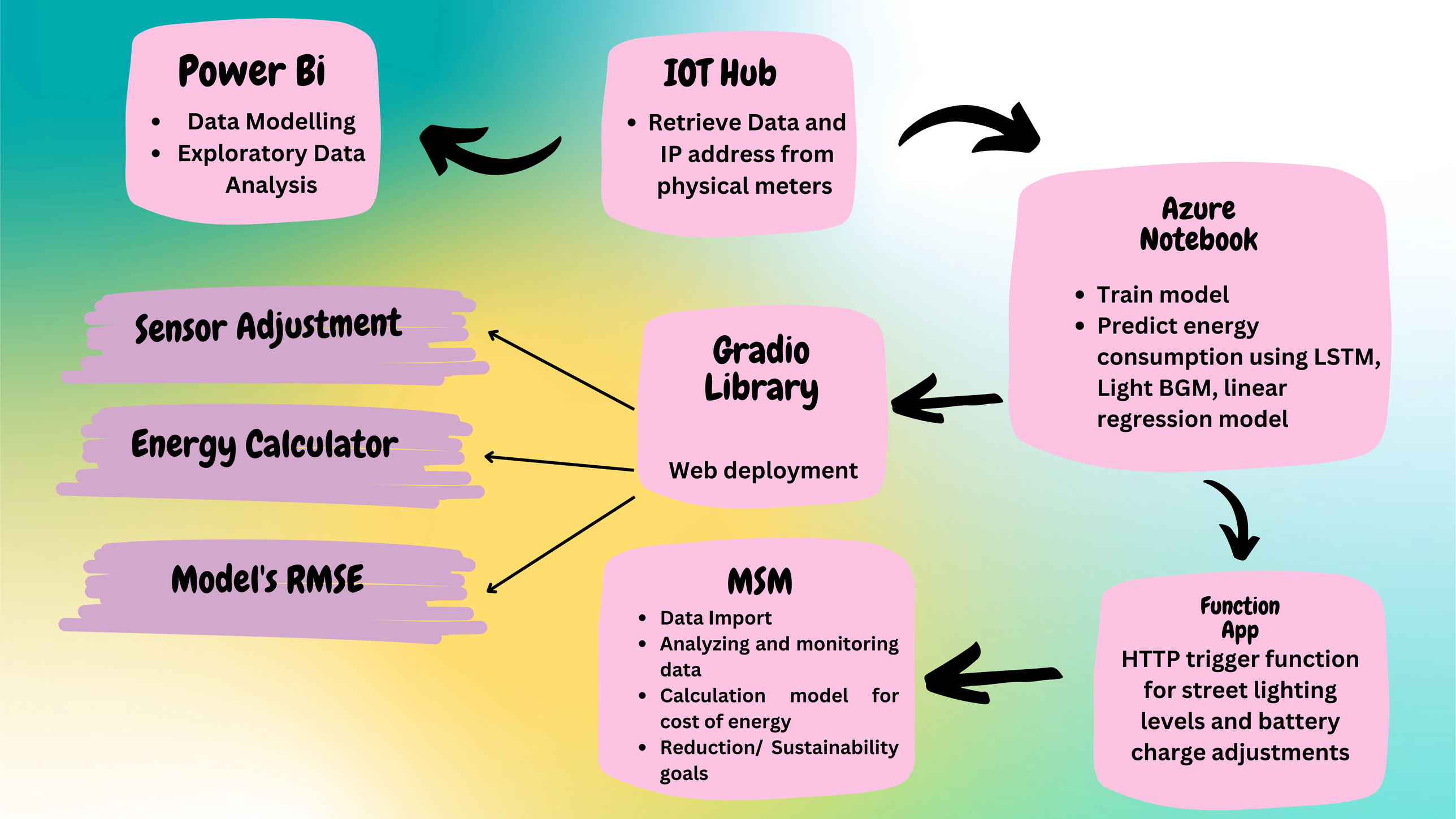
Utilize Microsoft Smart Energy Management (MSM) solutions to integrate with the energy management system. MSM offers additional features like for calculating cost of energy consumed, real-time monitoring, and energy optimization algorithms and reduction/sustainability goals.

10 FEEDBACK AND ITERATION

Continuously monitor the system's performance and gather feedback to refine the algorithms and improve energy management efficiency. Use the insights gained from data analysis to optimize charging schedules, maximize solar energy utilization, and enhance overall energy management.

Architecture Diagram




Power Bi
Data Modelling
Exploratory Data Analysis
IOT Hub
Retrieve Data and IP address from physical meters
Azure Notebook
Train model
Predict energy consumption using LSTM, Light BGM, linear regression model
Sensor Adjustment
Energy Calculator
Model's RMSE
Gradio Library
Web deployment
MSM
Data Import
Analyzing and monitoring data
Calculation model for cost of energy
Reduction/ Sustainability goals
Function App
HTTP trigger function for street lighting levels and battery charge adjustments

Sustainability Aspect of IP addresses

- Scalable IP Address Management
- Dynamic Allocation and Reallocation
- Automation and Orchestration
- Integration with Microsoft Sustainability Manager

Include Microsoft cloud for sustainability

- Microsoft Azure architechture
- Microsoft Sustainability Manager
- Power BI

Novelty of the idea – Innovation Quotient

- Integration of Solar Power and Electric Roads
- Decentralized Charging Infrastructure
- Dynamic Charging Capability
- Smart Grid Integration and Energy Management
- Sustainability Monitoring and Reporting


Have a Great Day!!
Mother Nature Earth
Team


Thank you for
joining us today!