



SOIL COMPOSITION CONTROL

TEAM 4

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Domain Analysis

21% of Moldova's workforce is employed in agriculture

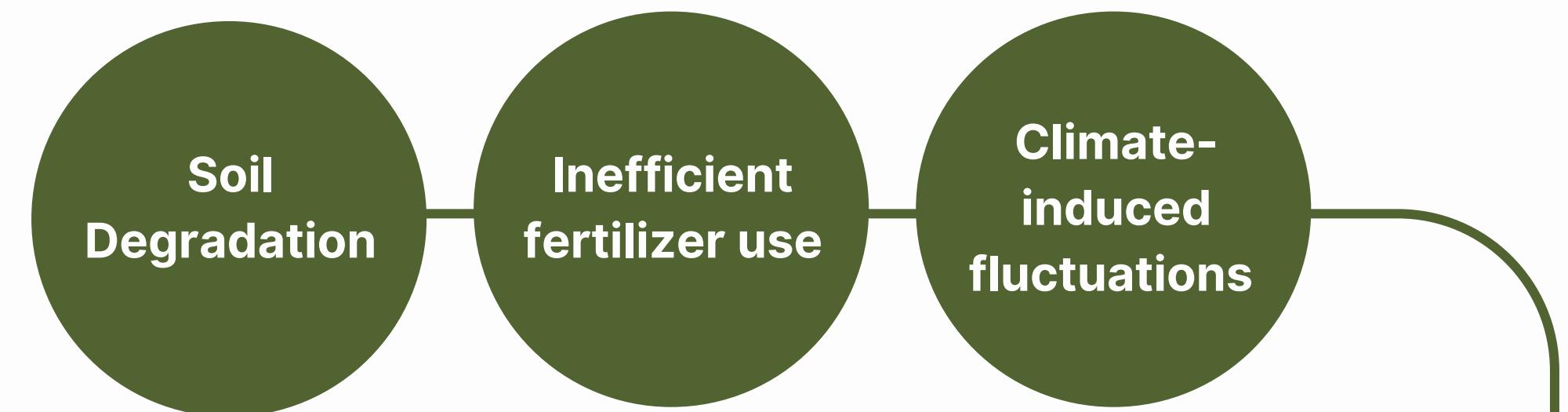
60.5% of Moldova's arable land area is affected by soil degradation





Problem Definition

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These issues combine to threaten agricultural productivity, national food security, and the long-term sustainability of farming in Moldova.

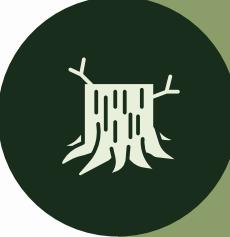
Solution



Functional IoT soil monitoring system with integrated sensors



Web application for user access



Cloud-based data visualization dashboard



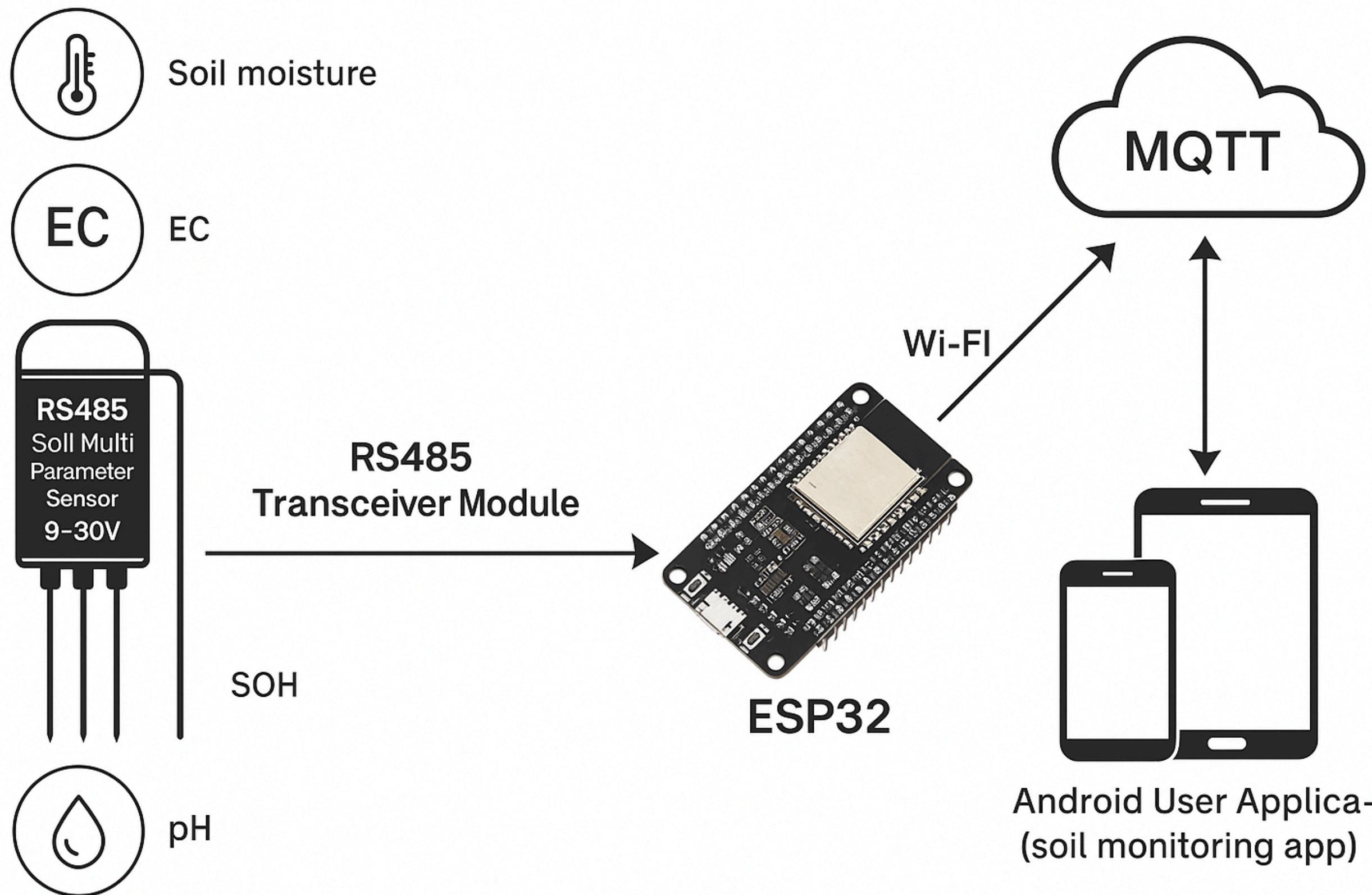
Secure data storage and analytics module



Hardware Components



The Soil Multi Parameter Sensor collects real-time soil data, the RS485 Transceiver Module transmits this data reliably over long distances to the ESP32, which processes and sends the information wirelessly for monitoring and automated soil management.

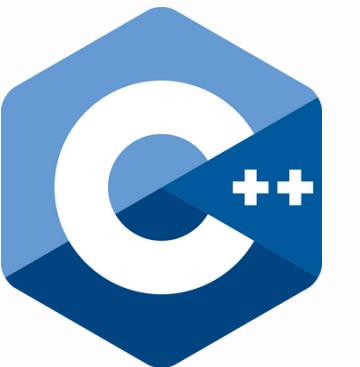


Used Tools

Backend



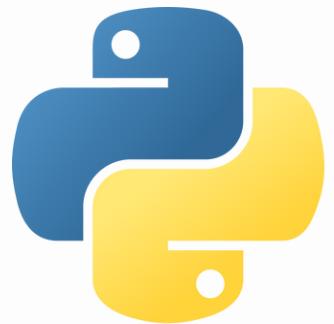
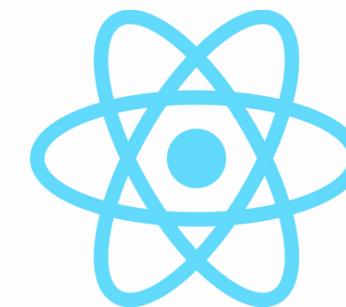
PostgreSQL



Cloud
Platform



Frontend



Frontend

Soil Moisture Dashboard

Select Sensor: sensor1 ▾

Moisture Readings

Last Hour:

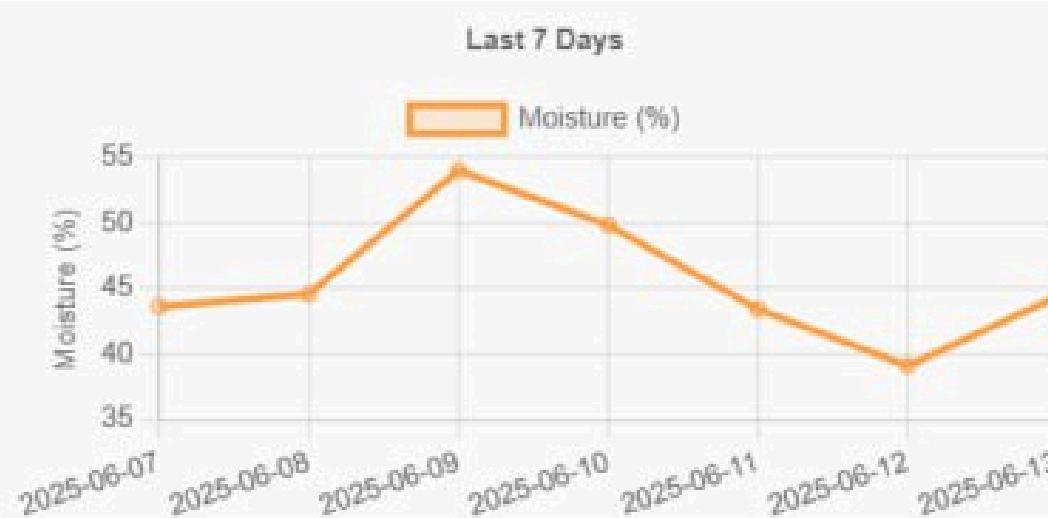
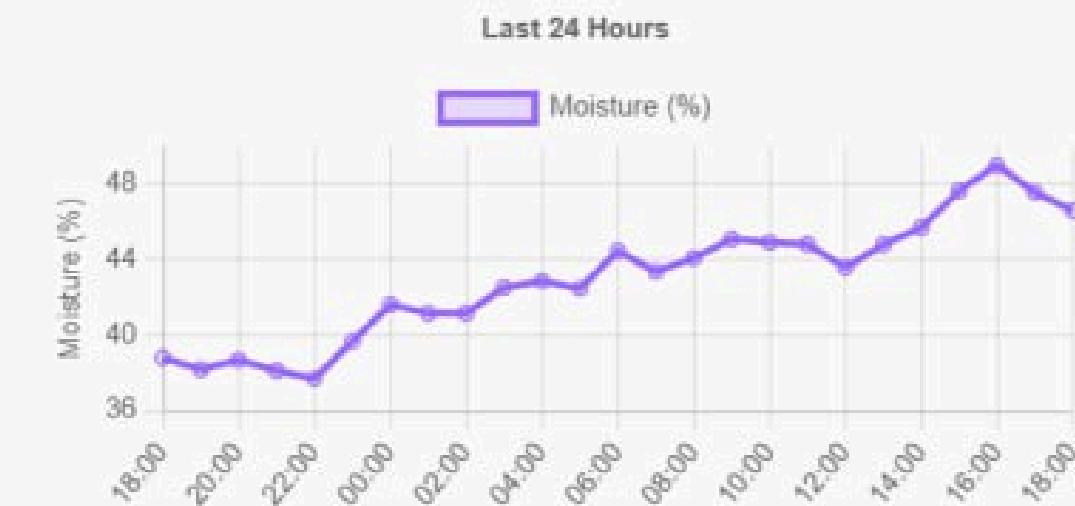
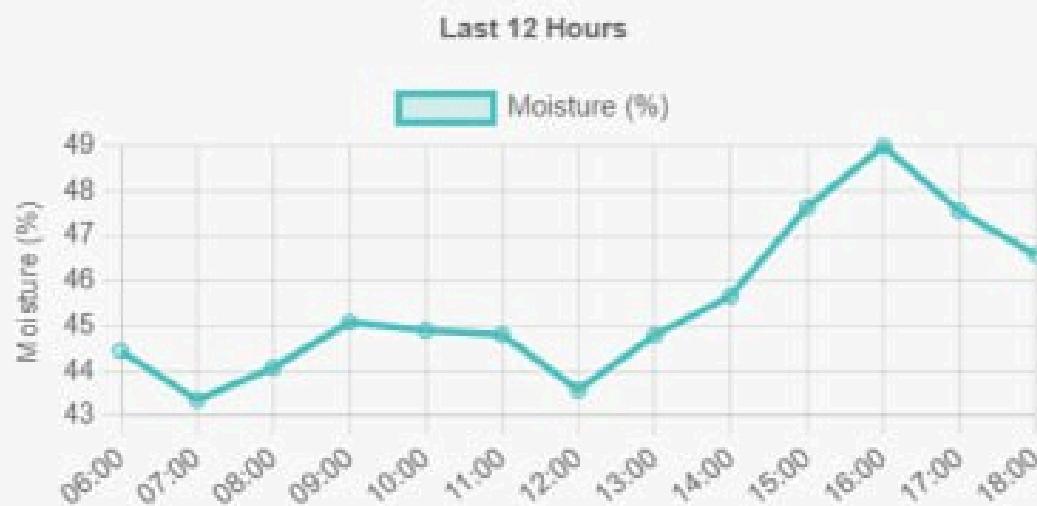
47.55%

Current:

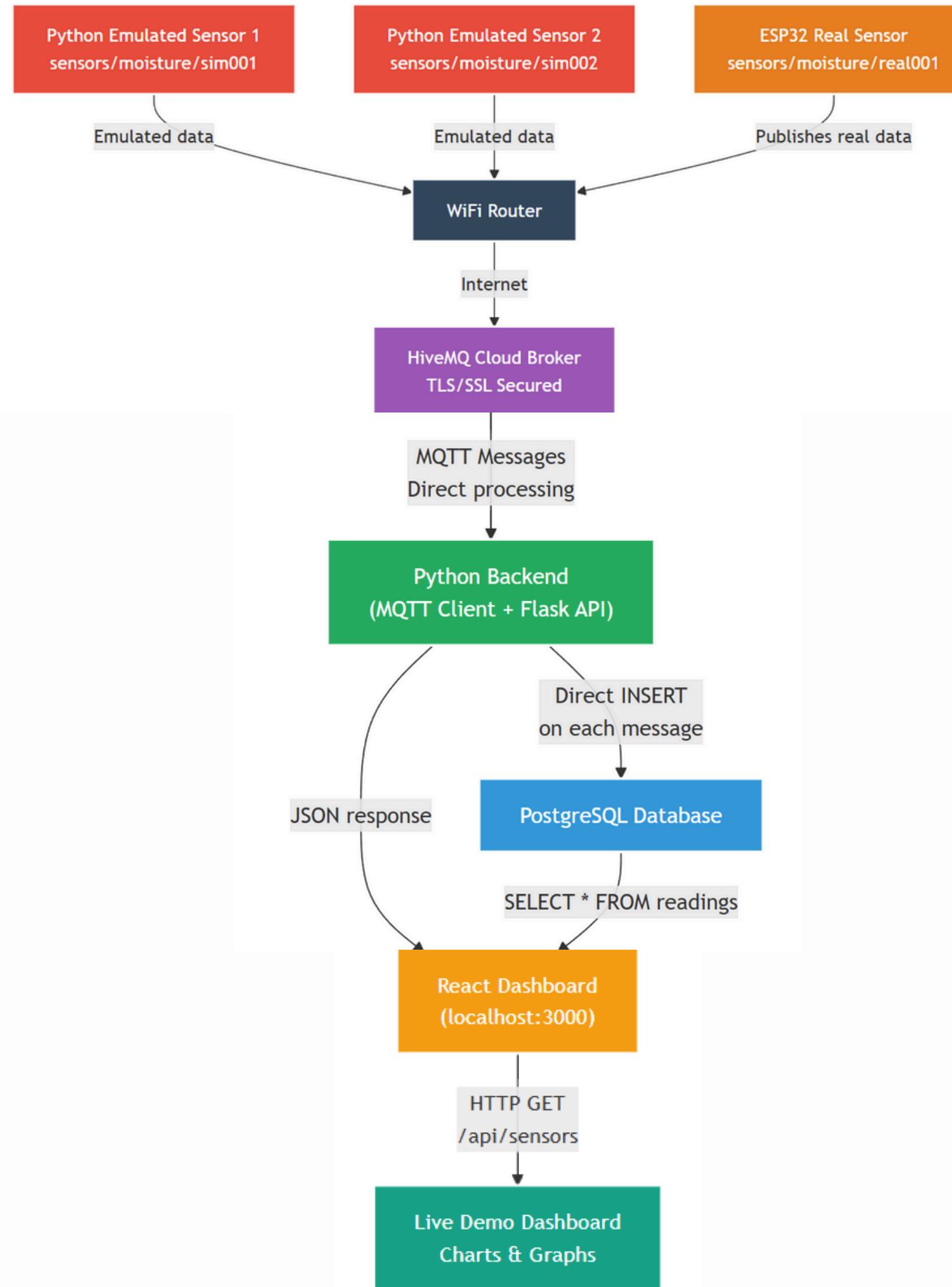
46.58%

Next Hour:

45.34%

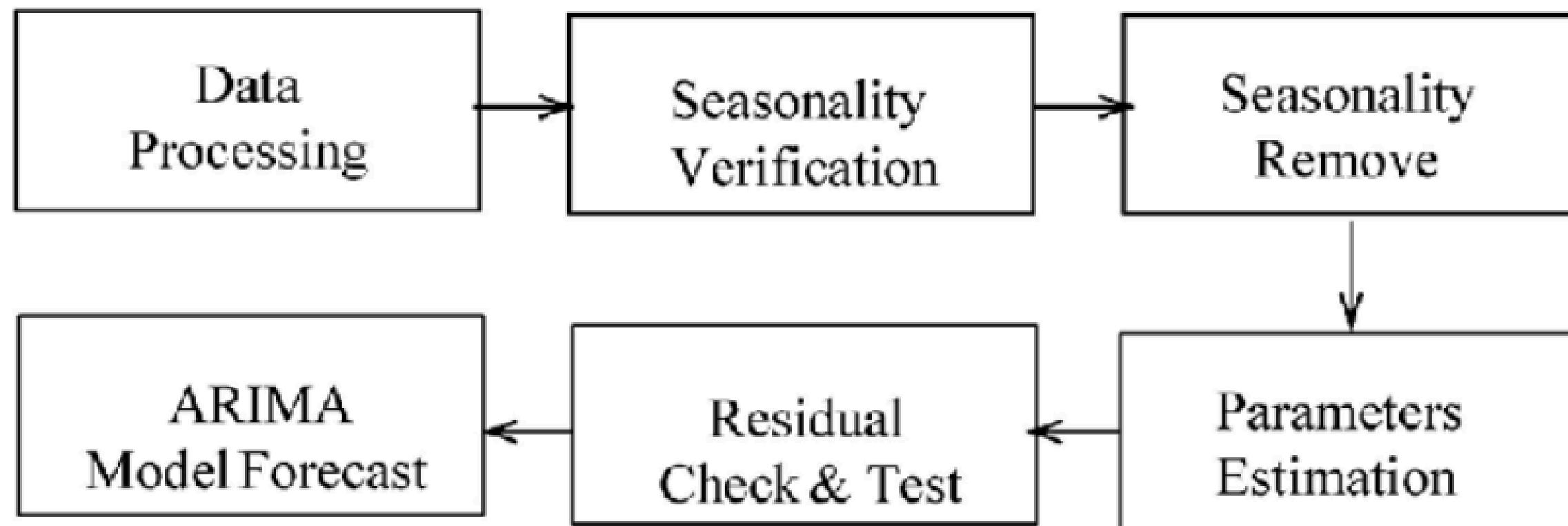


Data Flow



Predicting Model

ARIMA (AutoRegressive Integrated Moving Average) is a time series forecasting model that predicts future values based on past data trends



DEMO





**THANK
YOU!**