City-Scale Digital Twin: Real-Time Data Flow Activity Diagram

Start Data Simulation Service

A background worker service generates sensor data

Messaging & Simulation

Publish Data to MQTT Broker

Data is published every 30 seconds

Backend Ingestion

Backend Receives MQTT Message

Ingest Data into PostgreSQL DB

Via a background subscriber thread

Frontend Visualization

Frontend Polls Backend for Latest Data

Via GET API calls every 30 seconds

Backend Queries DB

Backend Responds with Data

Frontend Updates Map and Dashboards

Final Visualization State