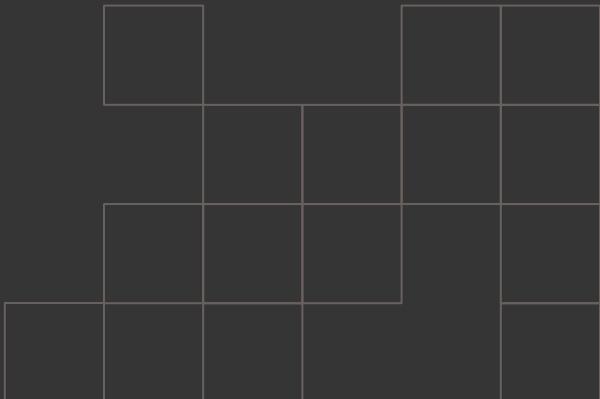


# Weekly Update: Ingestion

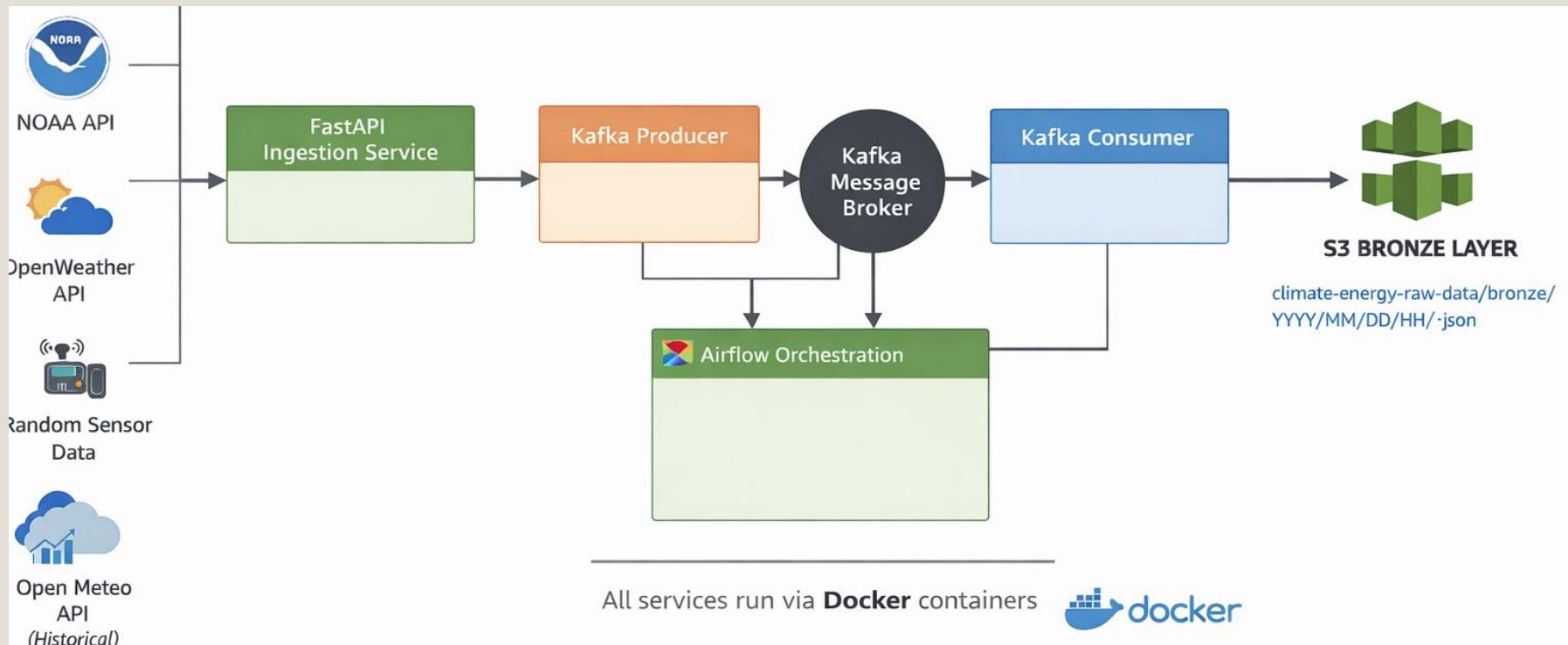
Chirayu Upadhyay



# Contents

1.  
Ingestion diagram
2.  
Screenshots for ingestion layer
3.  
API data snippets in json
4.  
Plan for next sprint : Transformation

# 1. Ingestion layer Diagram



# 2. Screenshots of Ingestion layer: Code

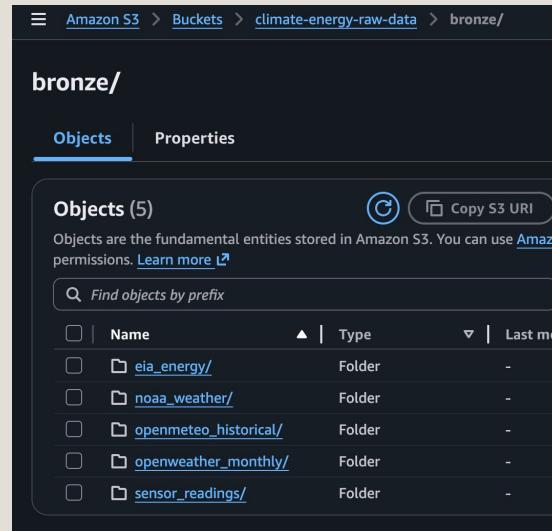
The terminal shows the project structure under 'EXPLORER' and a code editor window for 'main.py'. The code in 'main.py' includes imports from 'data\_clients' and 'producer.py', and defines an asynchronous function 'continuous\_producer' that fetches weather data and sends it to Kafka.

```
EXPLORER
...
CAPSTONE_PROJECT_DEBOOTCAMP
climate-energy-analytics
  docker
  api
    app
      __pycache__
      data_clients
      __pycache__
        eia_client_data.py
        noaa_client.py
        openmeteo_client.py
        openweathermaper_client.py
      data_simulator
      sensor_data.py
    kafka_streaming
      __pycache__
      producer.py
      main.py
      Dockerfile
      requirements.txt
$ wait_and_run_simulator.sh
source /Users/chiku/capstone_p...
```

```
main.py  $ delete_and_
climate-energy-analytics > docker
145     async def continuous_n
152         from data_clients.
153         async def produce(
154             for i in range(
155                 fetch_weather(
156                     await asyncio.
background_tasks.ac
158         return {"status":"
159
160         # POST endpoint to co
161         @app.post("/energy/eia
162         async def continuous_e
163             Continuously ingest
164             Params:
165             count: number of
166             delay: seconds be
167             .....
168             from data_clients.e
169             states = ["NY", "T
170             async def produce(
171                 await self.produc...
```

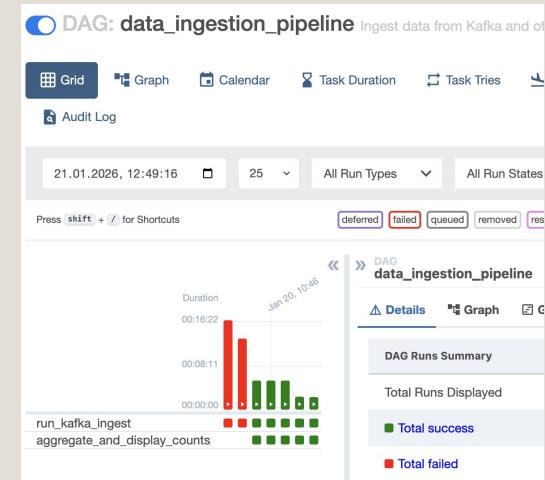
Project directory:

Shows the each client\_api files with Dockerfile



AWS S3 Bucket directory

Shows all the kafka topic folders are created inside the /bronze layer and data saved with the date, month, day, time partitioned folders



Airflow Dag

Shows the airflow dag for the ingestion and it depicts the failure and success runs

# 3. Api Data Snippets

```
"  
{"  
  "source": "sensor",  
  "topic": "sensor_readings",  
  "timestamp": "2026-01-20T12:41:24.044601",  
  "data":  
    {"meter_id": "SENS_4555",  
     "power_kw": 7.01,  
     "voltage": 230,  
     "location": "TX",  
     "timestamp": 1768912884,  
     "sensor_id": "SENSOR_051",  
     "temperature_c": 20.47,  
     "humidity_pct": 68.84  
    }"  
}
```

Sensor Readings data

```
"  
{"  
  "source": "eia",  
  "topic": "eia_energy",  
  "timestamp": "2026-01-15T16:14:36.149",  
  "data":  
    {"series_id": "EIA-TEST",  
     "period": "2026-01",  
     "state": "NY",  
     "sector": "residential",  
     "price": 0.12}  
}"  
}
```

eia\_energy api data

```
"  
{"  
  "source": "noaa",  
  "topic": "noaa_weather",  
  "timestamp": "2026-01-18T14:17:25.18",  
  "data":  
    {"date": "2024-12-30",  
     "datatype": "TMIN",  
     "station_id": "GHCND:USW0094728",  
     "value": 75.0}  
}"  
}
```

NOAA weather api data

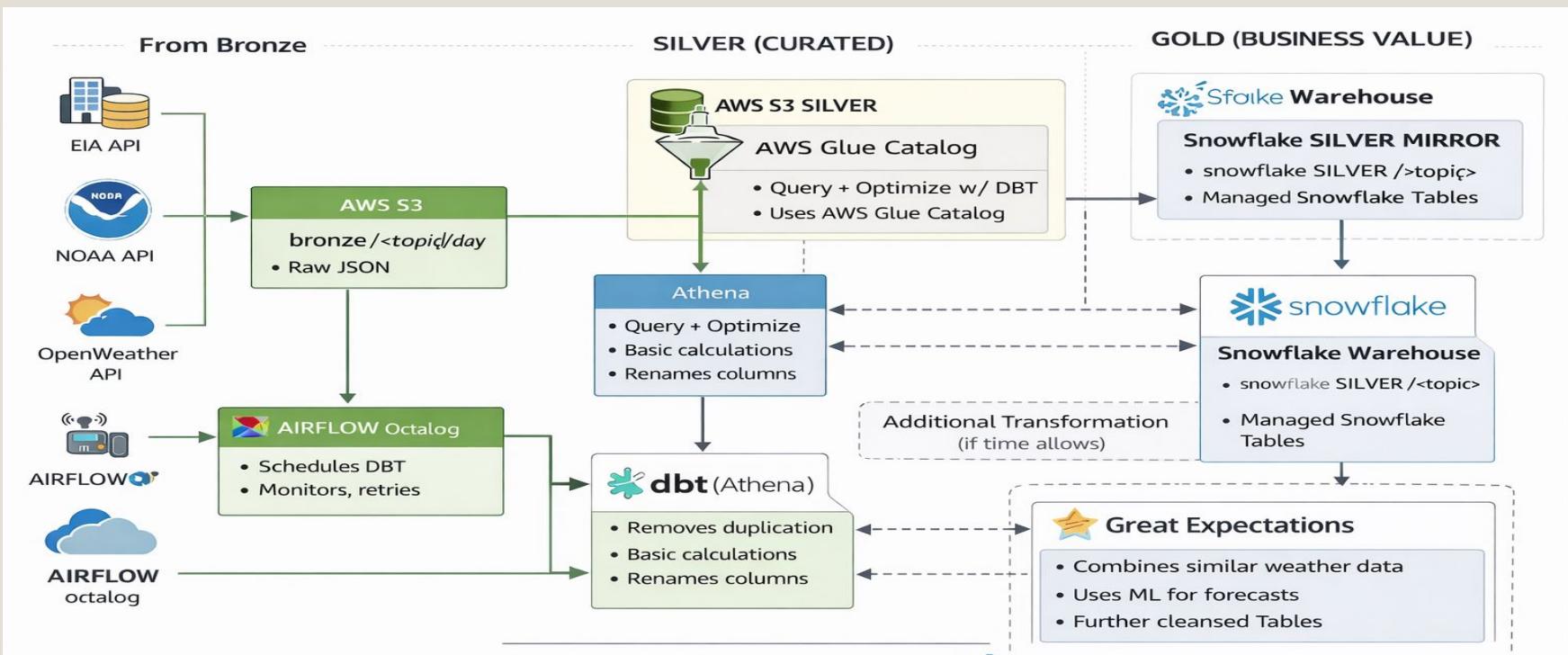
```
"  
{"  
  "source": "openweathermap",  
  "topic": "openweathermap_monthly",  
  "timestamp": "2026-01-17T14:28:10.304989",  
  "data":  
    {"city": "new york",  
     "dt": 1768499999,  
     "temperature_c": 22.5,  
     "feels_like_c": 21.0,  
     "humidity_pct": 60,  
     "wind_speed_mps": 3.2,  
     "visibility_m": 10000,  
     "weather_main": "Clear"}  
}"  
}
```

OpenWeather Api data

```
"  
{"  
  "source": "openmeteo",  
  "topic": "openmeteo_historical",  
  "timestamp": "2026-01-17T16:59:06.98300",  
  "data":  
    {"dt": "2025-08-25",  
     "temperature_c": 34.1,  
     "temperature_min_c": 19.9,  
     "precipitation_mm": 0.0,  
     "windspeed_max_mps": 12.9,  
     "city": "los angeles"}  
}"  
}
```

Open Meteo weather api data

# 4. Plan for next sprint: Transformation



Note: the dotted line connection will be optional (except GE that will be performed) but the ML thing in gold layer would be optional to perform



Thank you