



SOICT

School of Information and Communication Technology

WeaHouse

A Weather Analytics & Forecast Pipeline

Harnessing Real-Time Data to Build Smarter
Weather Insights.

Group 7

Phan Minh Hòa	20225495
Nguyễn Hải Đăng	20225478
Nguyễn Hoàng Quân	20225519
Nguyễn Võ Ngọc Khuê	20225504
Nguyễn Tiến Đạt	20225481



Problem Statement

Weather conditions play a **critical role** in numerous sectors:

- Agriculture
- Transportation
- Energy
- Disaster management

Traditional weather monitoring systems often **struggle** with:

- Processing **large volumes** of sensor data in real-time
- Integrating **heterogeneous** data sources
- Delivering **timely, actionable insights** for decision-making

Key Questions to Answer

- What is the **current** weather condition in a **specific area** right now?
- How have weather **patterns** changed over time in **different regions**?
- Can we detect **unusual** or **extreme** weather events early?
- Can we **predict** short-term weather conditions for the next few hours?
- How can these insights **help** people and organizations make better decisions?



Scope

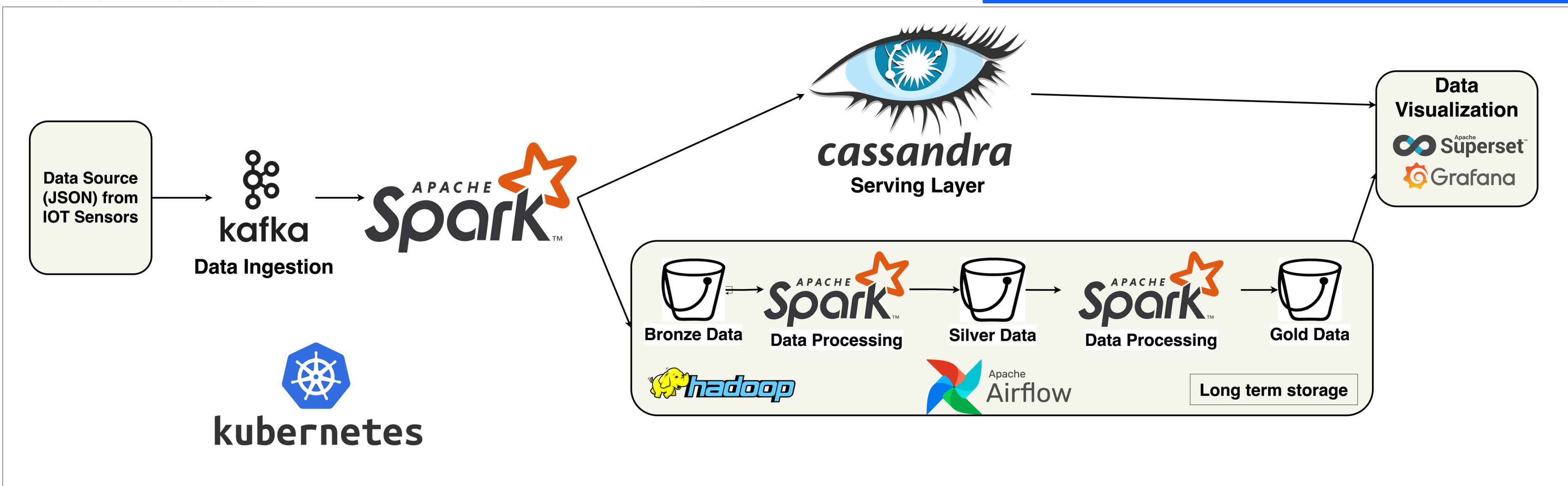
- ✓ Collect & process weather data from multiple simulated sensors
- ✓ Analyze and visualize key weather parameters
- ✓ Detect abnormal weather conditions
- ✓ Develop predictive models that forecast short-term weather patterns
- ✓ Provide a dashboard that enables exploring real-time and historical insights easily.

Objectives

The scope of WeaHouse includes the **end-to-end** design and implementation of a **Kappa Architecture**-based big data pipeline for weather analytics and forecasting.



Architecture & Design



Thank You