

Bombas Inc.

AIR QUALITY
SURVEILLANCE WITH
SPARK STREAMING

MBD - STREAM PROCESSING & REAL-TIME ANALYTICS

Discussion Today

THINGS WE'LL TALK ABOUT

Organization & Mission
Motivation

Project Pipeline
Obstacles & Limitations

Technical Video
Live Demo of Dashboard

Future Outlook



Bombas Inc.

**A MESSAGE FROM
THE CREATORS**

***The Earth is what we all have in
common.***

AIR QUALITY SURVEILLANCE | 2021

ASIAN CITIES TODAY



ASIAN CITIES IN 2035

What is this about?

**INSPIRED BY THE
"CLEAN AIR INITIATIVE"**

*"A goal specified by **the UN** seeks to drastically improve the poor air quality, from which over 90% of today's children suffer. They are pressing governments for international air quality standards to commit with concrete plans and funds.*

Climate finance is an upcoming investment area that is providing promising opportunities to invest into climate-resilient health systems, air quality monitoring and policy implementation."



"Project Earth"

PROJECT DELIVERABLES

REAL-TIME INFORMATION OF POLLUTION
LEVELS

ACCESSIBLE AND TRANSPARENT
DASHBOARD

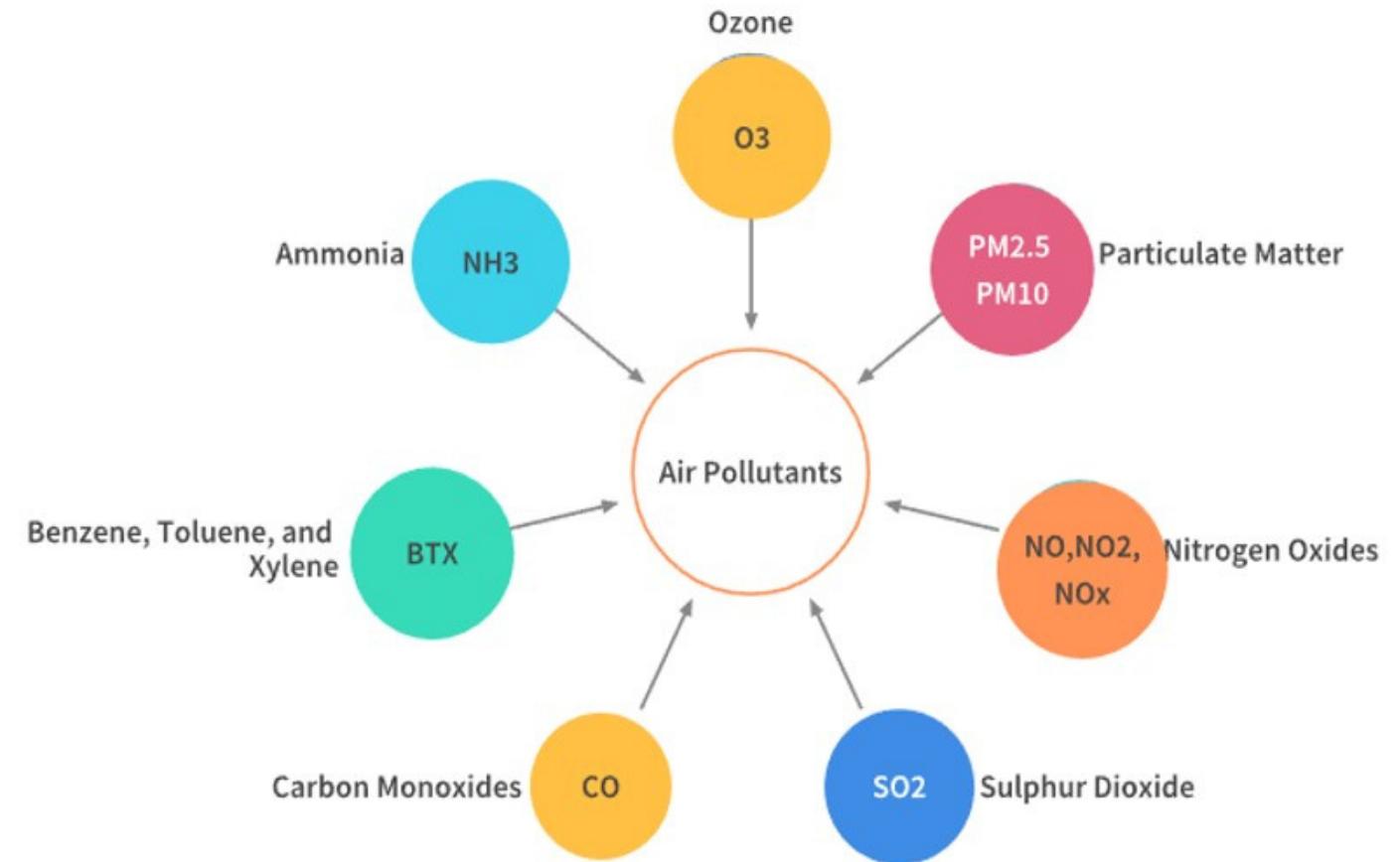
INSTANT NOTIFICATIONS OF
EMERGENCIES

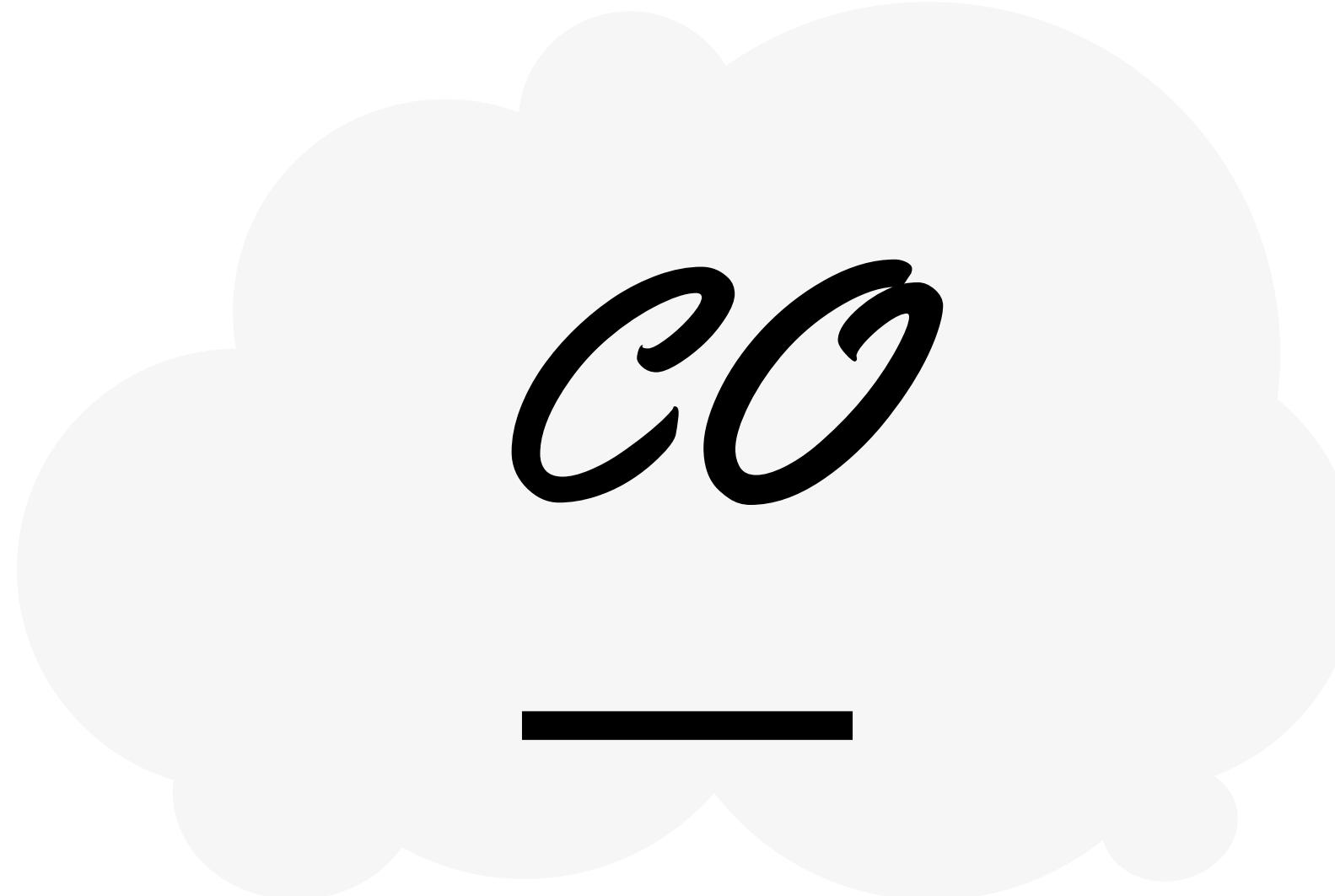
Key Metrics

AQI

SO₂
NO₂
O₃
CO

*COLLECTED BY SENSORS FROM
OUR DATA COLLECTION STATIONS





CO

CARBON MONOXIDE

HIGHLY TOXIC GAS THAT
WILL KILL YOU

Architecture

Current vs. Ideal

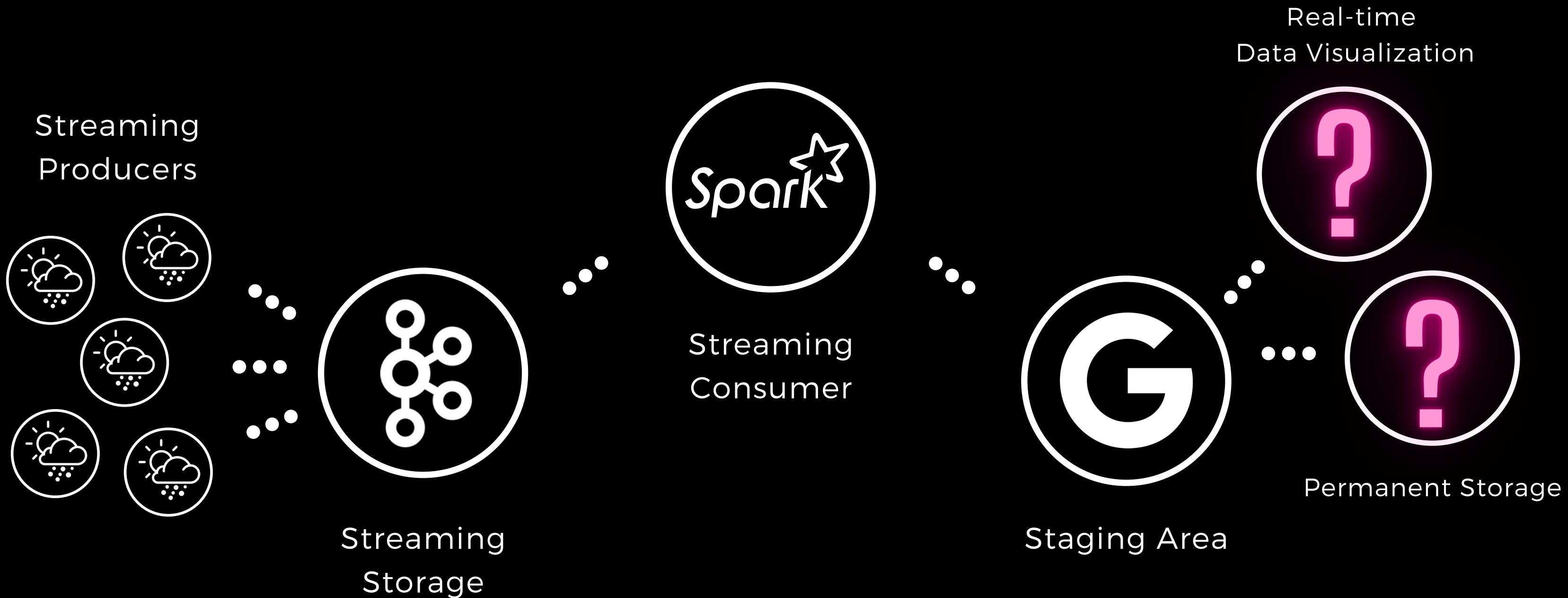
Limitations

Desired Functionalities

Implementation

IDEAL Pipeline Architecture

FROM DATA GENERATION TO DASHBOARD



Limitations

SIMULATED DATA*

Sensor data from 20 Seoul stations.
Dataflow: [0.5 - 2.5] s/event

LIBRARY INCOMPATIBILITIES**

Bug of PowerBI Streaming Dataset API
with Python 2.x

DASHBOARD LIMITATION

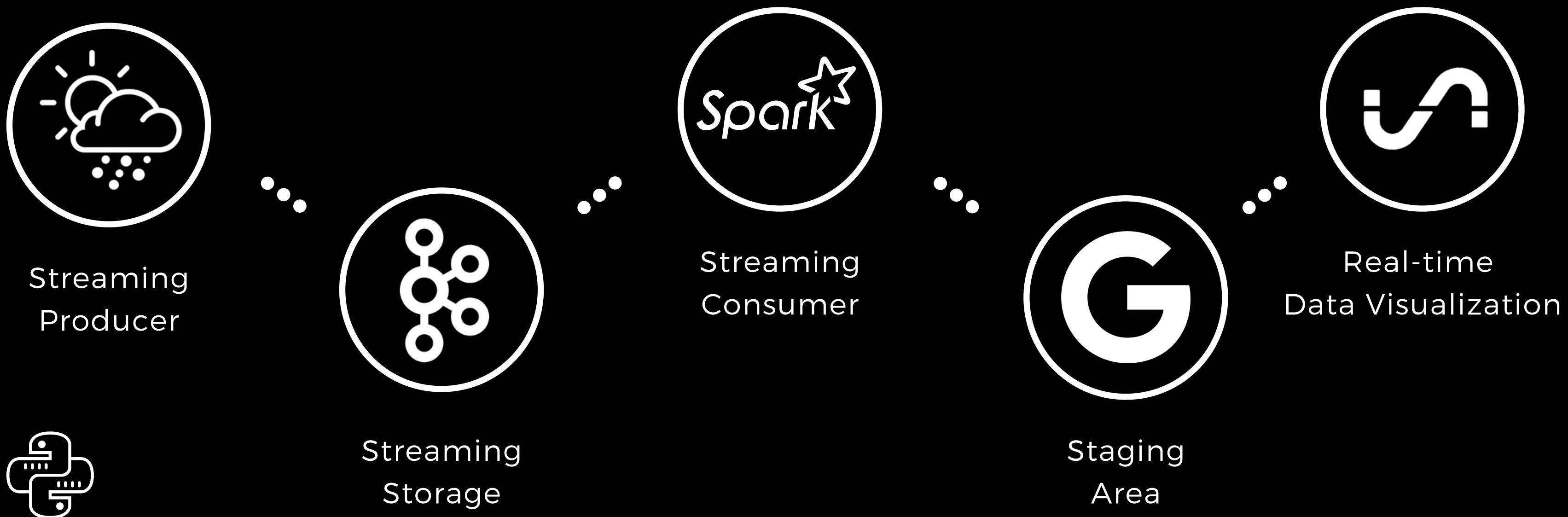
Tableau: Incompatibility with Streaming

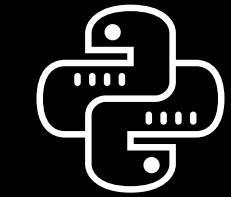
Power BI: Bug + Automated scheduling in
Pro version

InitialState: ReadAPI 10 events/second

CURRENT Pipeline Architecture

FROM DATA GENERATION TO DASHBOARD



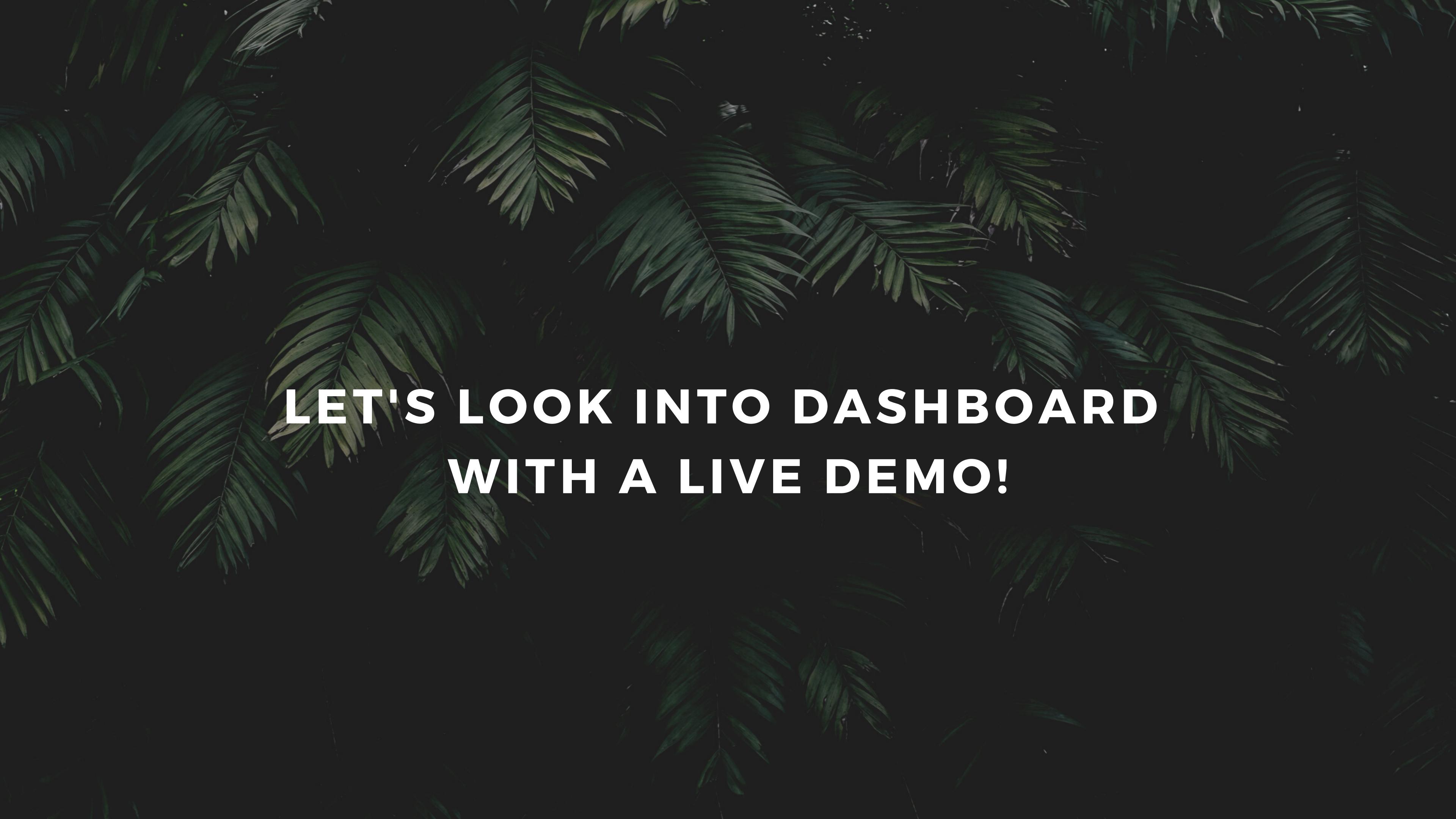


Code Deep-Dive



Video Presentation

[francisco.mansilla@ip-172-31-36-119 ~]\$ python trial_working.py

A dark, moody background featuring a dense arrangement of tropical leaves, such as palm fronds and monstera leaves, creating a lush, jungle-like atmosphere.

**LET'S LOOK INTO DASHBOARD
WITH A LIVE DEMO!**

Future Outlook

GO ONLINE

Turn on all sensors and start real-time data collection and ingestion

PERMANENT TOOLS

Storage:
Google Cloud,
AWS, Azure

Visualization:
PowerBI, Tableau,
InitialState

ADDITIONAL METRICS

For enhanced insight, some additional metrics will be calculated and implemented

FORM ALLIANCES

Currently in talks with other Asian countries to implement this system together

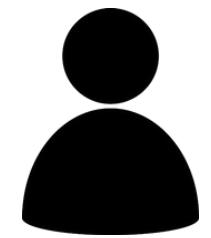


Contact Us

LAS BOMBAS

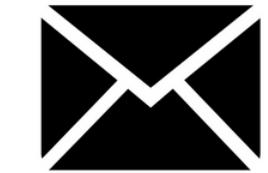
PHONE NUMBER

+34 101 122 221



MAILING ADDRESS

2 C/ de Maria de Molina, Madrid,
Madrid, ESpain 28006



EMAIL ADDRESS

enquiries@lasbombas.com

