Real-Time and Historical Air Traffic Data Pipeline

TEAM 11

PROJECT OVERVIEW

- Real-time and historical flight data processing
- Data collected from OpenSky Network API
- Batch and streaming data pipelines
- REST API for data access and validation
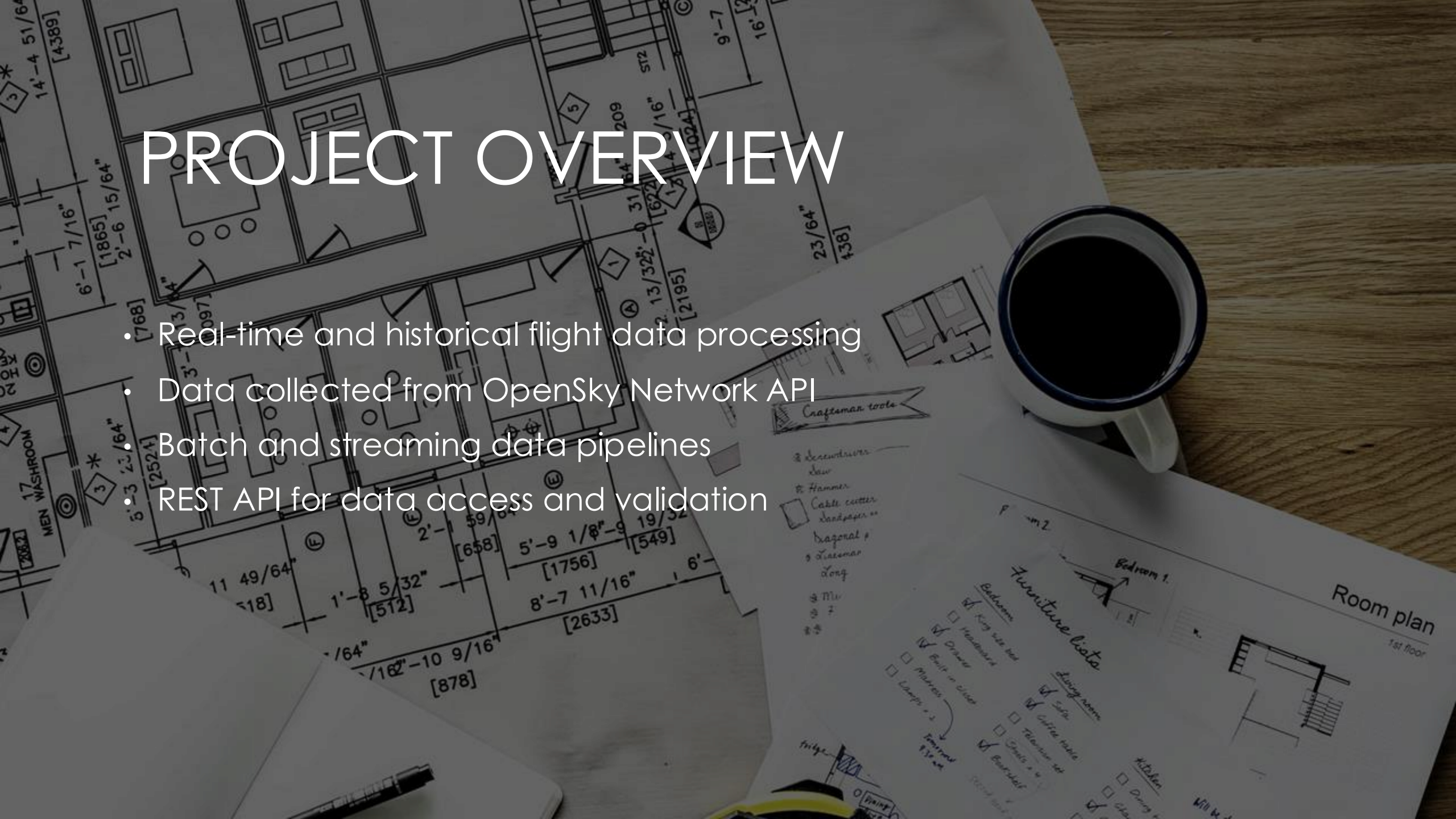
SYSTEM ARCHITECTURE OVERVIEW

Client–server architecture

Decoupled frontend and backend

Real-time and batch processing pipelines

REST API as communication layer

Python as main programming language

Pandas for data manipulation

Apache Spark for batch processing

FastAPI for REST API services

BACKEND TECHNOLOGIES

FRONTEND TECHNOLOGY STACK

React with TypeScript

Functional components and React Hooks

Recharts for data visualization

Contains a real-Time Update Mechanism (configurable refresh interval)

DEMO