Laundry Project - Phase II (Reporting)

Project Overview

The **Project Phase II Reporting** project focuses on integrating key business metrics from the **Scorecard** into the **Scamper System** and visualizing reports using **Tableau**. The objective is to centralize data, automate reporting, and enhance decision-making through efficient data processing and visualization.

Problem Statement

Existing System Challenges:

- **Manual report extraction** from multiple sources, leading to inefficiencies.
- Dependency **on spreadsheets** for calculations, increasing the risk of errors.
- Lack of real-time reporting capabilities for **franchise P&L insights**, budget tracking, and forecasting.
- Limited ability to **generate ad-hoc reports** for operational monitoring and decision-making.

Proposed Solution:

- Establish a **centralized data warehouse** to store operational and financial data.
- Implement **ETL (Extract, Transform, Load) pipelines** to automate data ingestion.
- Utilize **Tableau** for real-time dashboarding and visualization.
- Enable **ad-hoc reporting** for business users to generate insights on demand.

Solution Approach

1. Data Warehouse Design & ETL Processing

- Data sourced from **Scamper System, CBS, and Marketing Data**.
- AWS **Data Pipeline & Kinesis Streams** for automated data ingestion.
- **Normalization & Schema Optimization** for efficient data storage.
- **SQL Joins & Query Optimization** for ad-hoc report generation.

2. Reporting & Visualization with Tableau

- Direct integration with the **Data Warehouse**.
- Creation of dashboards for key business metrics:
    - **Trips & Driver Schedules**
    - **Customer Orders & Transactions**
    - **Revenue & Franchise P&L Insights**

- o **Complaint & Customer Feedback Trends**
- Interactive filters and drill-down capabilities for business users.

3. Data Export & Automation

- **Segment Data Export:** Streaming real-time data into AWS **Redshift** or **RDS**.
- **CBS Data Export:** Uploading periodic reports to **AWS S3**, then processing into the warehouse.
- **Automation:** Cron jobs for **daily, weekly, and monthly** data refresh cycles.

Implementation Strategy

Agile Development Approach

- **Sprint-Based Execution:** Bi-weekly sprints for incremental feature releases.
- **Task Tracking:** Managed via **Jira & Confluence**.
- **Regular Checkpoints:** Weekly meetings & monthly controlled releases.
- **User Acceptance Testing (UAT):** Stakeholder feedback-driven iterations.

Project Phases

1. **Requirement Analysis & Data Mapping** – Define schema and validate data sources.
2. **ETL Pipeline & Data Integration** – Develop automated data ingestion workflows.
3. **Data Warehouse & Query Optimization** – Structure and index data for performance.
4. **Tableau Dashboard Development** – Create visualizations and configure user access.
5. **Go-Live & Monitoring** – Deploy reporting system and enable real-time tracking.

Operational Metrics Tracked

- **Trip Times:** Duration from start to completion.
- **Drive Times Between Trips:** Measure of efficiency between deliveries.
- **Customer No-Show Frequency:** Identifying trends in missed pickups.
- **Franchise Performance Metrics:** Revenue, cost, and profitability insights.
- **Customer & Driver Ratings:** Feedback-driven quality assessments.
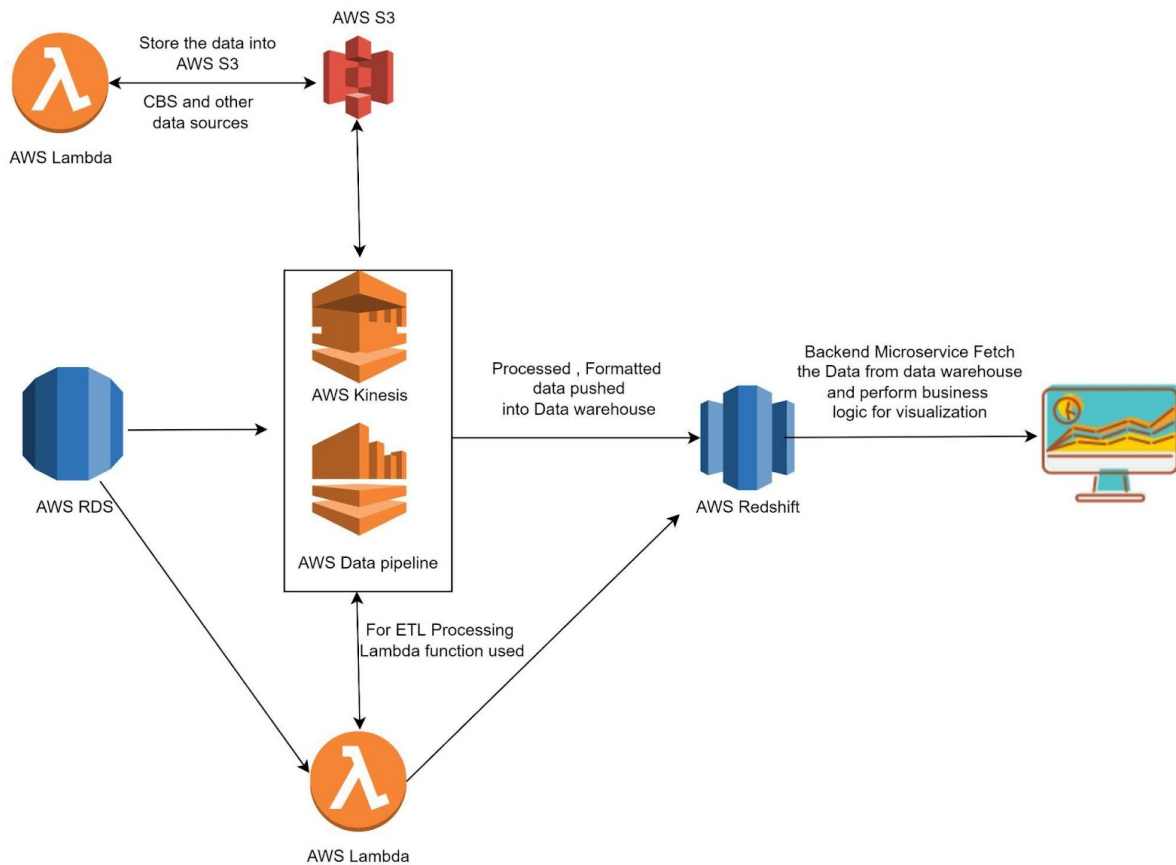

Infrastructure & Workflow

AWS Services Utilized:

- **AWS Data Pipeline:** ETL processing and automation.
- **AWS Kinesis & Lambda:** Streaming & real-time event handling.

- **AWS Redshift & S3:** Data storage and retrieval.
- **Tableau Licensing:** Cost estimation for business-wide reporting.

Workflow:

Risk Mitigation Strategies

- **Data Integrity Checks:** Implement validation scripts during ETL processing.
- **Security & Compliance:** Enforce GDPR-compliant data handling.
- **Performance Optimization:** Scalable AWS infrastructure to handle peak loads.
- **User Training & Support:** Provide detailed documentation for self-service reporting.

Conclusion

The **Phase II Reporting System** streamlines data management, enables real-time insights, and improves decision-making efficiency. With an optimized **data warehouse**, automated **ETL pipelines**, and **Tableau visualizations**, business users can now generate on-demand reports with **improved accuracy, speed, and scalability**.