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Business Case Presentation

Strategizing for our future direction

Team Members:

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Agenda

Topics Covered

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Project Overview

This Azure Data Engineering project automates the ingestion, processing, and analysis of financial transaction data to calculate the carbon footprint of consumer spending. Using Azure tools like Databricks, we categorize transactions, apply carbon intensity factors, and deliver insights that help businesses and consumers make informed, eco-friendly decisions.

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Rationale

The idea behind the project

- The business environment is shifting towards greater awareness and action on sustainability issues.
- Companies are expected to balance financial success with efforts to minimize their carbon footprint and environmental harm.
- Businesses that handle significant amounts of transaction data face unique challenges and opportunities in this context.
- Analyzing the environmental impact of consumer behavior can set companies apart from competitors.
- Utilizing Azure's advanced data processing tools and technologies.
- The project offers an efficient system to handle and analyze data automatically.
- This framework helps companies understand the carbon footprint of their operations and consumer activities.
- The project improves how easily data can be accessed and how efficiently it can be processed.

PROJECT
DETAILS

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1

Data Sources and Integration

- Access to financial transaction data in format of CSV stored in Azure Data Lake Storage Gen2 (ADLS Gen2).
- Integration with external data sources for carbon intensity factors and industry benchmarks.

2

Azure Infrastructure

- Provisioning of Azure Data Lake Storage Gen2 (ADLS Gen2) for storing raw, processed, and refined data.
- Setup of Azure Data Factory (ADF) pipelines for automated data ingestion, orchestration, and transformation.
- Deployment of Azure Databricks for scalable data processing and implementation of the Medallion Architecture (bronze, silver, gold).

3

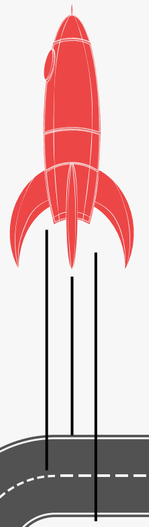
Data Processing and Transformation

- Implementation of data cleansing, categorization, and transformation processes using Azure Databricks.
- Application of carbon intensity multipliers to transaction data based on predefined categories.
- Automation of data workflows to ensure timely and accurate processing.

4

Analytics and Reporting

- Integration with Power BI for data visualization, enabling the creation of dashboards and reports that present carbon footprint insights.
- Configuration of reporting tools to support real-time data analysis and tracking of sustainability metrics.



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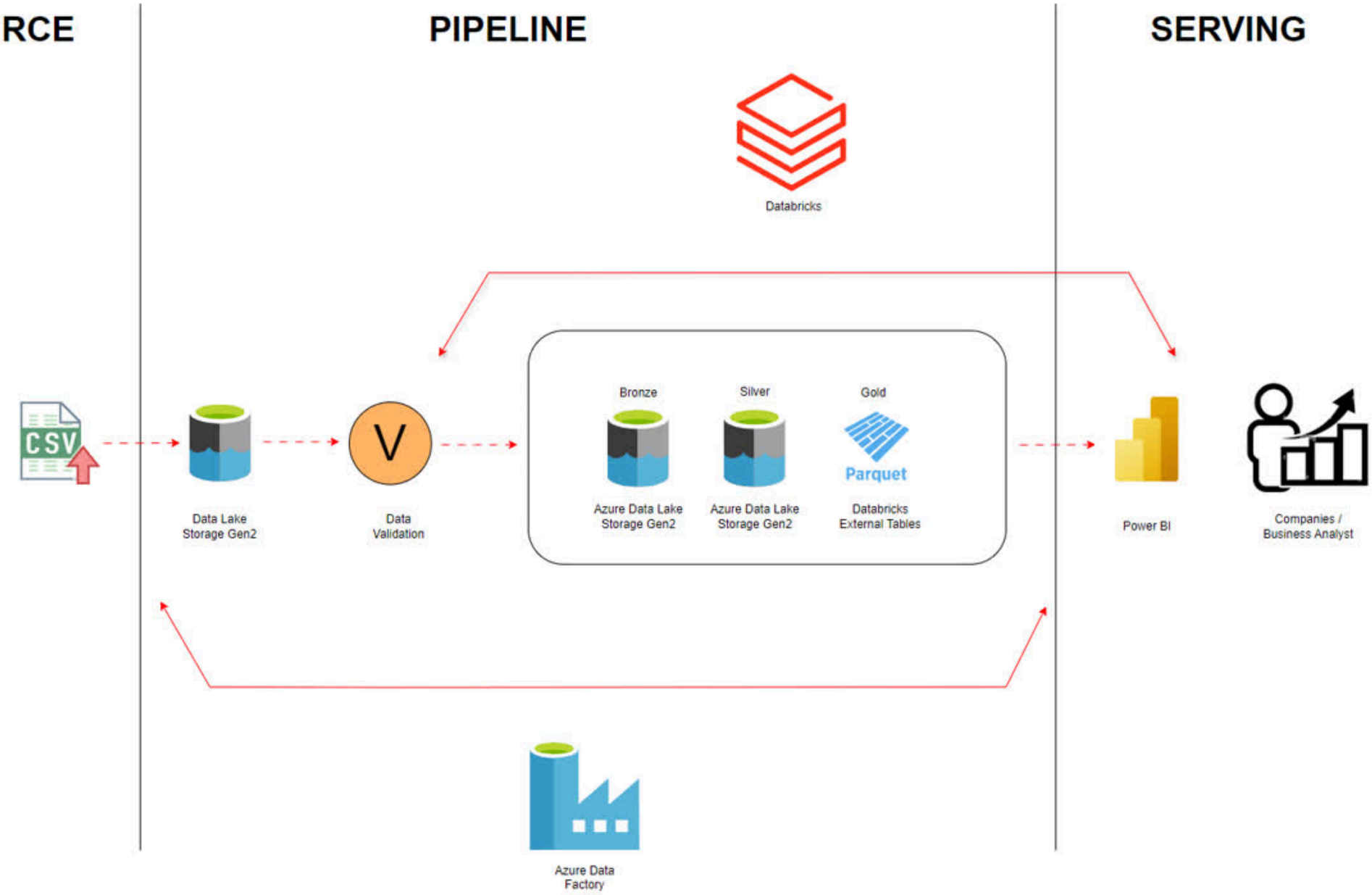
Architecture Overview



Analytics and Reporting

Loading data...

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Challenges and Lessons Learned

Challenges

01
Great Expectations

02
Simultaneous Uploads

03
Merging Staging Tables

Lessons

01
Activating the Unity Catalog

02
Creating pipelines to process real data

03
Agile Work

Resources

CO_2 Multipliers NL

Vadlapati, C., & Lanza, G. (2023). Netherlands Country Profile: Transaction to Carbon—Carbon Intensity Factors. Organization of Conscious Consumerism (OfCC). https://conscious-consumerism.com/

CO_2 Footprint Calculation Methodology

Lanza, G., Neupane, P., & Alvarez, A. (2023). Methodology II- EEIO Hybrid approach to estimate carbon intensity factors for household consumption categories (Version 2.0). Organization for Conscious Consumerism (OfCC). D for a drumroll

Categories for dtld_tx_tp column

[No author]. (n.d.). Categories for dtld_tx_tp column [Data file].

Dataset

transactions.csv

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thank you

for the future that we will produce green