

# Data Warehouse and Business Intelligence Project

Welcome to the **Data Warehouse and Business Intelligence Project** repository! 🚀

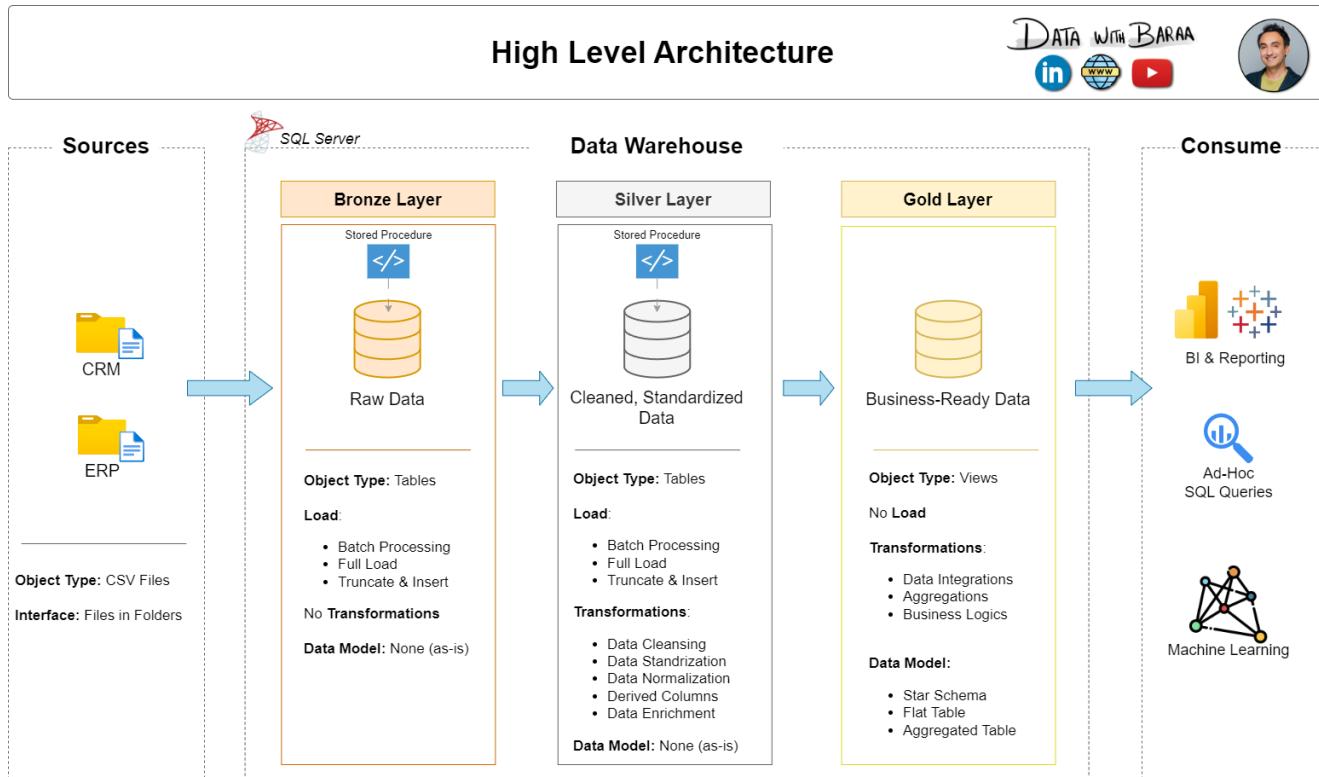
This project demonstrates a complete BI solution designed as part of my Final Year Project (PFA) at EMSI, developed with my teammate **Salma Ben Yamna**. It showcases the full pipeline from raw data ingestion to insightful analytics and visualizations, leveraging modern data engineering principles and visualization tools.

Data Warehouse source :



## >Data Architecture

Our data architecture follows the **Medallion Architecture** with three layers: **Bronze**, **Silver**, and **Gold**, ensuring efficient data processing and quality control.



- **Bronze Layer:** Raw sales data ingested as-is from CSV sources.
- **Silver Layer:** Data cleansing, standardization, and normalization performed to prepare data for analysis.
- **Gold Layer:** Business-ready data modeled into a star schema optimized for analytical queries and reporting.

## Project Purpose & Overview

The purpose of this project is to provide a data-driven Business Intelligence platform that offers **clear, actionable insights into sales performance across geographical regions and product segments**, enabling informed decision-making for companies.

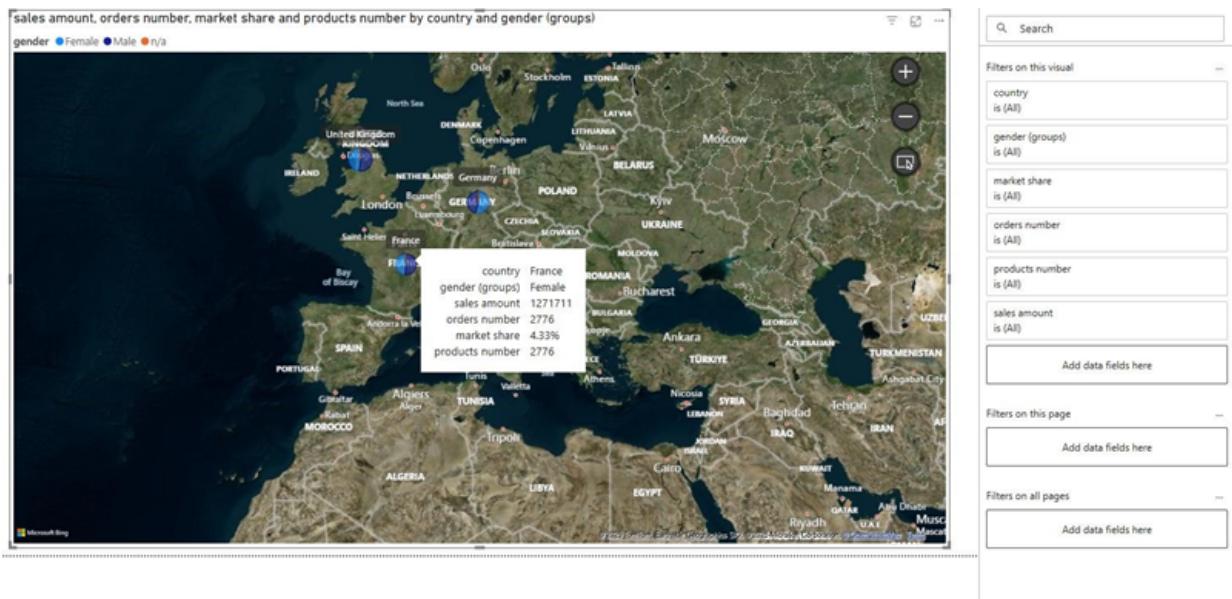
Key components:

- Structuring complex sales data for improved accessibility and analysis
- Applying Medallion Architecture for data reliability and scalability
- Building interactive dashboards for visualization of sales trends and customer segmentation

## 🔧 What We Built

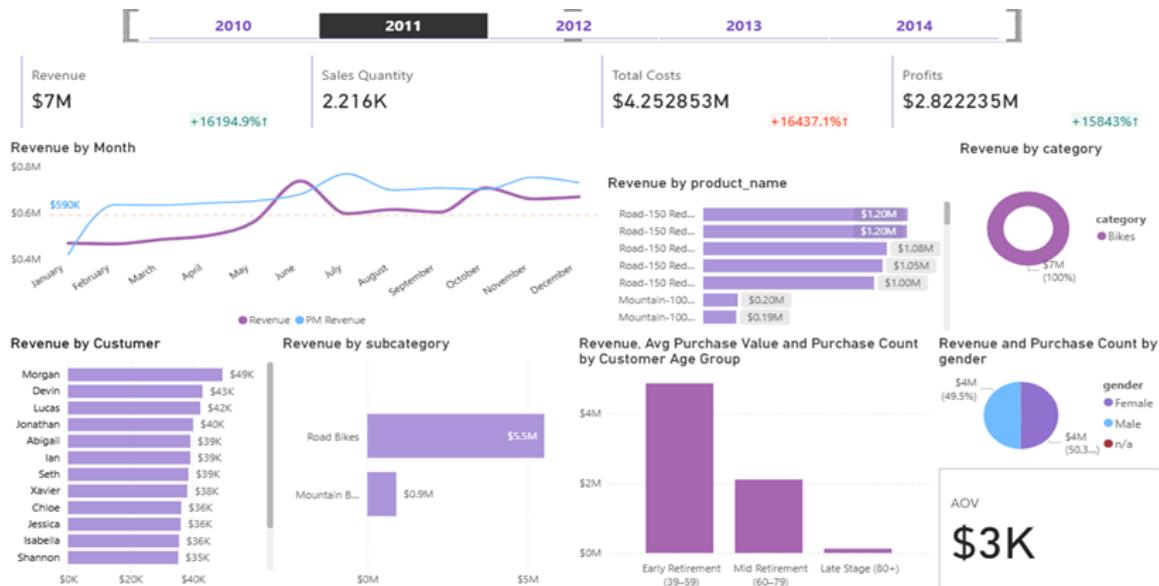
- **Medallion Architecture** implementation across Bronze, Silver, and Gold layers
- Data cleansing and transformation pipelines to standardize input data
- Star schema data modeling for efficient querying and reporting
- **Power BI Dashboards** for dynamic visualization including:

- **Geographical Sales Map:**



Visualizing sales distribution by country and gender.

- **Sales Analysis Dashboard with KPIs:**



Featuring dynamic KPIs such as total sales, growth rates, top-performing products, and customer segmentation metrics, providing a real-time pulse of business performance

## 📈 Key Learnings

- Hands-on experience with layered data architectures and ETL processes
- Advanced data modeling techniques in star schema design
- Practical skills in transforming raw data into business intelligence
- Effective storytelling through interactive dashboards using Power BI

## 🛠️ Tools & Technologies

- SQL Server for data storage and ETL operations
- Power BI for analytics and reporting
- Python and/or SQL scripts for data processing and transformation
- Medallion Architecture framework

## 📁 Repository Structure

```
sql-data-warehouse-project/
  └── datasets/ # Raw datasets used for the project (ERP and CRM data)
  └── docs/ # Project documentation and architecture details
    └── bronze/ # Bronze layer documentation
    └── silver/ # Silver layer documentation
    └── data_catalog/ # Data catalog and metadata
    └── naming_conventions/ # Naming standards and conventions
    └── report/ # Reporting documentation
    └── data_architecture.png # Architecture diagram
    └── data_flow.png # Data flow diagram
```

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|   └── data_integration.png # Data integration diagram  
|   └── data_model.png # Data model diagram  
|   └── data_layers.pdf # Detailed data layers documentation  
|   └── ETL.png # ETL process diagram  
|   └── Project_Notes_Sketches.pdf # Project planning and notes  
  
|  
└── scripts/ # SQL scripts for ETL and transformations  
    ├── bronze/ # Scripts for extracting and loading raw data  
    ├── silver/ # Scripts for cleaning and transforming data  
    └── gold/ # Scripts for creating analytical models  
  
└── image/  
  
└── README.md # Project overview and instructions  
└── LICENSE # License information for the repository  
└── .gitignore # Files and directories to be ignored by Git
```

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## 🔗 Stay Connected

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 [PORTFOLIO](#)

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Feel free to reach out if you want to explore the project further or discuss Business Intelligence solutions!