# Leveraging Microsoft Fabric for Our Future Enterprise Data Platform

## 1. Executive Summary

- Brief overview of the current data platform (T-SQL, IDMC, SQL Server Managed Instance on Azure).  
- Strategic vision for leveraging Microsoft Fabric to support analysis, reporting, and operational needs.  
- Goals: Simplify the tech landscape, enhance scalability, and phase out Cognos in favor of Power BI.

## 2. Current Challenges and Objectives

### 2.1 Challenges

- Complex workflows with redundant and duplicate data processing.  
- Fragmented tools for analytics, reporting, and operational use.  
- Dependence on Cognos, limiting scalability and modern visualization capabilities.

### 2.2 Objectives

- Unify data processing, storage, and analytics under one platform.  
- Optimize data workflows with layers like bronze, silver, and gold.  
- Enable advanced analytics and AI/ML capabilities alongside T-SQL workloads.  
- Provide consistent, high-quality data for business decisions.

## 3. Microsoft Fabric: Overview and Features

### 3.1 What is Microsoft Fabric?

- Integrated platform for data engineering, data science, real-time analytics, and business intelligence.  
- Built on Azure, providing robust integration with existing Azure services.

### 3.2 Key Features

- \*\*Data Virtualization:\*\* Allows querying data without physically moving it.  
- \*\*Integration with Azure Services:\*\* Enhances productivity with Azure Synapse, Data Factory, and others.  
- \*\*Real-Time Analytics:\*\* Real-time processing capabilities for immediate insights.  
- \*\*Centralized OneLake Storage:\*\* Central hub for storing and sharing data across teams.  
- \*\*Advanced AI Integration:\*\* Support for AI/ML models via Spark and Azure Machine Learning.  
- \*\*Power BI Integration:\*\* Enables advanced reporting, embedded analytics, and AI-driven insights.  
- \*\*Microsoft Purview Integration:\*\* Facilitates governance with data discovery, lineage tracking, and compliance tools.

## 4. Proposed Architecture

### 4.1 Data Ingestion

- Utilize Fabric’s integration capabilities to process data through IDMC as the ETL tool.  
- Real-time and batch processing support.

### 4.2 Data Staging Layers

- \*\*Bronze Layer:\*\* Store raw ingested data for traceability.  
- \*\*Silver Layer:\*\* Clean and standardize data; remove duplicates and apply validations.  
- \*\*Gold Layer:\*\* Curated datasets ready for reporting, AI/ML, and analytics.

### 4.3 Reference and Master Data Lakehouse

- Implement a dedicated lakehouse for reference and master data with its own bronze, silver, and gold layers.  
- Use shortcuts to share curated data with other lakehouses, ensuring consistency.

### 4.4 Environment Segregation

- Separate environments for DEV, QA, and PROD to ensure quality.  
- Leverage shortcuts for sharing consistent master data across environments.

### 4.5 Power BI Best Practices

- \*\*Model Optimization:\*\* Use star schemas and incremental refresh for performance.  
- \*\*Governance:\*\* Implement row-level security (RLS) and shared datasets.  
- \*\*Performance Monitoring:\*\* Utilize usage metrics and query diagnostics.  
- \*\*Collaboration:\*\* Use shared workspaces for collaborative development.

## 5. Benefits of Microsoft Fabric

- \*\*Operational Efficiency:\*\* Simplifies workflows and reduces redundancy.  
- \*\*Enhanced Analytics:\*\* Power BI and Spark provide actionable insights.  
- \*\*Governance and Security:\*\* Microsoft Purview ensures compliance and data integrity.

## 6. Conclusion and Next Steps

- Microsoft Fabric addresses current challenges and aligns with future goals.  
- Immediate next steps: finalize the roadmap, secure buy-in, and begin pilots.