

Modernizing Analytics with Microsoft Fabric:

Unlocking Power BI's Full Potential

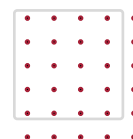


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Executive Summary

As organizations look to modernize their analytics platforms, the combination of Microsoft Power BI and Microsoft Fabric offers a powerful opportunity to simplify architectures, reduce cost, and enable real-time, scalable insights. For customers who have invested in star-schema data warehouses—especially those built on Snowflake or SQL Server—Fabric provides a unified platform that tightly integrates Power BI with storage, transformation, and governance layers.

People Tech Group has developed advanced migration solutions, including a proprietary T-SQL to PySpark migration framework, to support customers transitioning legacy data systems to Microsoft Fabric’s lake-first architecture.

1. Why Microsoft Fabric?

The Challenge



Many organizations have built data platforms using:

- Snowflake, Synapse, or SQL Server for storage
- SSIS and T-SQL for data transformation
- Power BI for reporting



While these architectures work, they involve:



Complex ETL pipelines and data movement
with scattered scheduling, limited observability, and high maintenance overhead.



Redundant storage for Power BI imports
along with high latency due to repeated data movement and lack of Direct Lake access.



Siloed governance, fragmented security and scattered metadata
across tools, making lineage and compliance difficult.



High operational and licensing costs
from tightly coupled compute/storage, inefficient scaling, and overlapping tools.

The Solution



OneLake as the universal storage layer



Lakehouse and Warehouse for compute



Data Factory for orchestration



Power BI deeply integrated for analytics



Purview for security and governance



2. Power BI and Fabric: A Tightly Integrated Future

2.1 DirectLake Mode: Performance Without Duplication

Power BI's new DirectLake mode allows reports to read delta-parquet files directly from OneLake—eliminating the need for import mode or DirectQuery workarounds.

- Near real-time performance
- No refresh scheduling
- Zeros data duplication



2.2 Semantic Models in Fabric

Semantic models (datasets) are now native to Fabric:

- Stored, versioned, and deployed in the same workspace
- Managed alongside Lakehouses and Warehouses
- Integrated with Git for CI/CD workflows



2.3 Governance, Lineage, and Security

Fabric natively integrates with Microsoft Purview:

- Full data lineage from source to report
- Centralized catalog and metadata management
- Enterprise-grade access controls via Azure AD



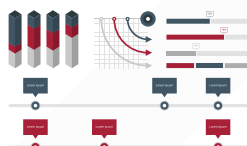
2.4 AI & Copilot Enhancements

Fabric enables Power BI Copilot to:

- Generate semantic models from raw tables
- Suggest DAX measures
- Build reports from natural language prompts



3. The Need for a Structured Migration Strategy



Assessment First

Migrating to Fabric isn't a lift-and-shift—it requires a strategic roadmap:

- Inventory of current T-SQL logic, SSIS packages, and Power BI datasets
- Understanding performance and refresh pain points
- Identifying critical data domains to pilot



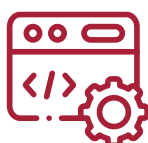
Component Mapping

Existing Stack -> Microsoft Fabric Equivalent

- SQL Server / Snowflake -> Fabric Warehouse / Lakehouse
- SSIS Pipelines -> Fabric Data Factory Pipelines
- Stored Procedures / T-SQL -> PySpark in Notebooks / T-SQL in Warehouse
- Power BI Premium -> Power BI in Fabric with DirectLake

4. People Tech Group: Accelerating Your Fabric Journey

People Tech Group has developed a T-SQL to PySpark Migration Framework that automates and optimizes the conversion of legacy SQL code into scalable PySpark logic for Fabric Lakehouses. Key features include:



- Syntax and pattern detection
- Automated translation of stored procedures and transformations
- Integration with Fabric Notebooks and Pipelines
- Support for incremental loads, joins, and complex transformations

Benefits:



Accelerates cloud migration timelines

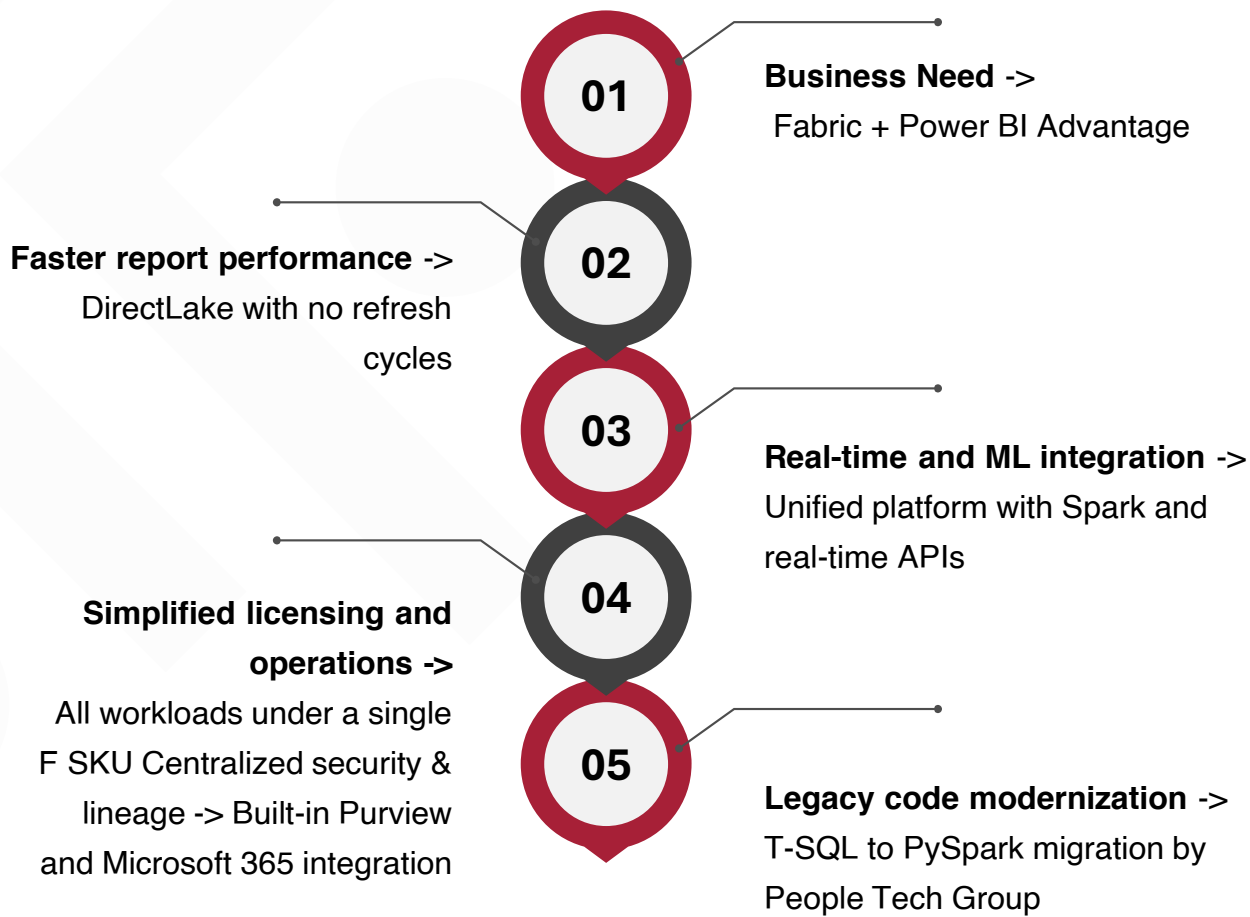


Reduces reliance on legacy SSIS and on-prem SQL logic



Optimized for Microsoft Fabric's Spark-native architecture

5. Value Drivers for Migration



Sample Code Conversion from T-SQL to PySpark

Scenario: Monthly Sales Report with Joins, Window Functions, and CTEs

T-SQL Code

```
WITH MonthlySales AS (  
    SELECT  
        s.SalespersonID,  
        s.Region,  
        MONTH(t.TransactionDate) AS SalesMonth,  
        YEAR(t.TransactionDate) AS SalesYear,  
        SUM(t.SalesAmount) AS MonthlyTotal  
    FROM  
        Sales.SalesTransactions t  
    INNER JOIN  
        Sales.Salespeople s ON t.SalespersonID = s.SalespersonID  
    WHERE  
        t.TransactionDate BETWEEN '2023-01-01' AND '2023-12-31'  
    GROUP BY  
        s.SalespersonID, s.Region, MONTH(t.TransactionDate), YEAR(t.TransactionDate)  
),  
RankedSales AS (  
    SELECT  
        *,  
        RANK() OVER (PARTITION BY Region, SalesYear, SalesMonth ORDER BY  
MonthlyTotal DESC) AS RankInRegion  
    FROM  
        MonthlySales  
)  
SELECT *  
FROM RankedSales  
WHERE RankInRegion <= 3  
ORDER BY SalesYear, SalesMonth, Region, RankInRegion;
```

Sample Code Conversion from T-SQL to PySpark

```
from pyspark.sql import SparkSession
from pyspark.sql.functions import month, year, sum, rank
from pyspark.sql.window import Window

# Initialize Spark session
spark = SparkSession.builder.getOrCreate()

# Load tables (assume delta format in Fabric Lakehouse)
transactions = spark.read.format("delta").table("Sales.SalesTransactions")
salespeople = spark.read.format("delta").table("Sales.Salespeople")

# Filter transaction date range
filtered = transactions.filter("TransactionDate BETWEEN '2023-01-01' AND '2023-12-31'")

# Join salespeople
joined = filtered.join(salespeople, on="SalespersonID", how="inner")

# Create derived columns and aggregate
monthly_sales = (
    joined
    .withColumn("SalesMonth", month("TransactionDate"))
    .withColumn("SalesYear", year("TransactionDate"))
    .groupBy("SalespersonID", "Region", "SalesMonth", "SalesYear")
    .agg(sum("SalesAmount").alias("MonthlyTotal"))
)

# Define window for ranking
window_spec = Window.partitionBy("Region", "SalesYear",
    "SalesMonth").orderBy(monthly_sales["MonthlyTotal"].desc())

# Apply rank function
ranked_sales = monthly_sales.withColumn("RankInRegion", rank().over(window_spec))

# Filter top 3 per region/month
top_sales = ranked_sales.filter("RankInRegion <= 3")

# Final sort
result = top_sales.orderBy("SalesYear", "SalesMonth", "Region", "RankInRegion")

# Optionally display or write
result.show()
```


6. Migration Notes

T-SQL Feature	PySpark Equivalent
CTEs	Layered DataFrame transformations
JOIN	.join()
MONTH(), YEAR()	month(), year() from pyspark.sql.functions
RANK() OVER (...)	rank().over(Window(...))
PARTITION BY, ORDER BY	Window.partitionBy().orderBy()
WHERE, GROUP BY	.filter(), .groupBy().agg()
Final SELECT/ORDER	.select(...), .orderBy(...)

7. Conclusion: Power BI's Next Evolution

For customers already using Power BI and a star-schema data model, Microsoft Fabric is more than a new platform—it's the next stage of analytics evolution. By combining performance, governance, and simplified operations, it unlocks a future-ready data environment.

People Tech Group is ready to partner with you through this transformation—modernizing your architecture and helping you fully realize the benefits of Fabric's deep Power BI integration.

Thank You !



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