

# Microsoft Fabric for Manufacturing – Medallion Architecture Pattern

## FabricStreamOps - Powered by Noventiq

### Business Challenges:

- Reporting bottlenecks across MES, ERP, CRM;
- Lack of real-time visibility on shop-floor events.

### Solution Highlights:

#### 1. Medallion Architecture:

- **Bronze:** Raw data ingestion into OneLake;
- **Silver:** Cleansing & enrichment;
- **Gold:** Curated analytics-ready datasets for Power BI.

#### 2. Real-Time Intelligence:

- Eventstreams for live data;
- Real-time dashboards & alerts.

### Outcomes:

- Reduced reporting lag from days to minutes;
- Instant alerts for machine failures, energy anomalies;
- Unified, governed analytics fabric for manufacturing.

### Technology Stack:

- Microsoft Fabric (Lakehouse, Eventstreams, Real-Time Analytics);
- OneLake, Power BI, Power Automate, Azure IoT (optional).

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# Phased Service Approach

## Phase 1: Discovery & Assessment

- Identify business pain points in production, quality, and asset monitoring;
- Inventory existing systems: MES, ERP, CRM, IoT sensors;
- Define use cases for structured reporting and real-time responsiveness;
- Assess data readiness and licensing for Fabric components.

## Phase 2: Fabric Lakehouse Setup with Medallion Architecture

- **Bronze Layer** : Ingest raw data from MES, ERP, CRM, IoT into OneLake;
- **Silver Layer** : Cleanse and enrich data using Lakehouse and Notebooks (deduplication, standardization, business logic);
- **Gold Layer** : Curated, analytics-ready data for Power BI dashboards using Direct Lake mode;
- Establish lineage and versioning for data governance.

## Phase 3: Real-Time Operational Intelligence

- Set up **Eventstreams** to ingest live shop-floor data (machine health, energy, safety);
- Apply **Real-Time Analytics** to process incoming data with low latency;
- Build **Power BI real-time dashboards** with alerts, KPI thresholds, and anomaly detection;
- Trigger automated workflows using Power Automate or Logic Apps.

## Phase 4: Deployment & Enablement

- Deploy the complete Medallion + Streaming architecture in Fabric;
- Train business and technical users on Power BI, OneLake, and real-time capabilities;
- Conduct governance configuration (RBAC, data access policies).

## Phase 5: Optimization & Scale-Up (Optional)

- Add predictive maintenance models;
- Enable digital twin integration;
- Scale to multi-plant rollout with regional data segmentation.



# Professional Services Deployment Scope

Phase	Scope of Work	Deliverables
Discovery & Assessment	Business use case mapping, system audit, Fabric fitment analysis	Use case report, integration blueprint
Lakehouse Setup	Configure Medallion architecture with ingestion pipelines	OneLake setup, notebooks, modelled datasets
Real-Time Setup	Eventstreams, real-time analytics config, Power BI dashboards	Streaming pipelines, live dashboards, alert rules
Enablement	Training sessions, user guide, adoption playbook	Training assets, RBAC config, PBI templates
Optional Enhancements	Predictive models, digital twin, multi-plant rollouts	Model integrations, scaled governance model

## Estimated Delivery Timeline

5 workdays	10-12 workdays	8-10 workdays	3 -5 workdays	2 -3 workdays
Discovery & Design	Lakehouse Setup	Real-Time Streaming Enablement	Testing & Deployment	Enablement & Handover

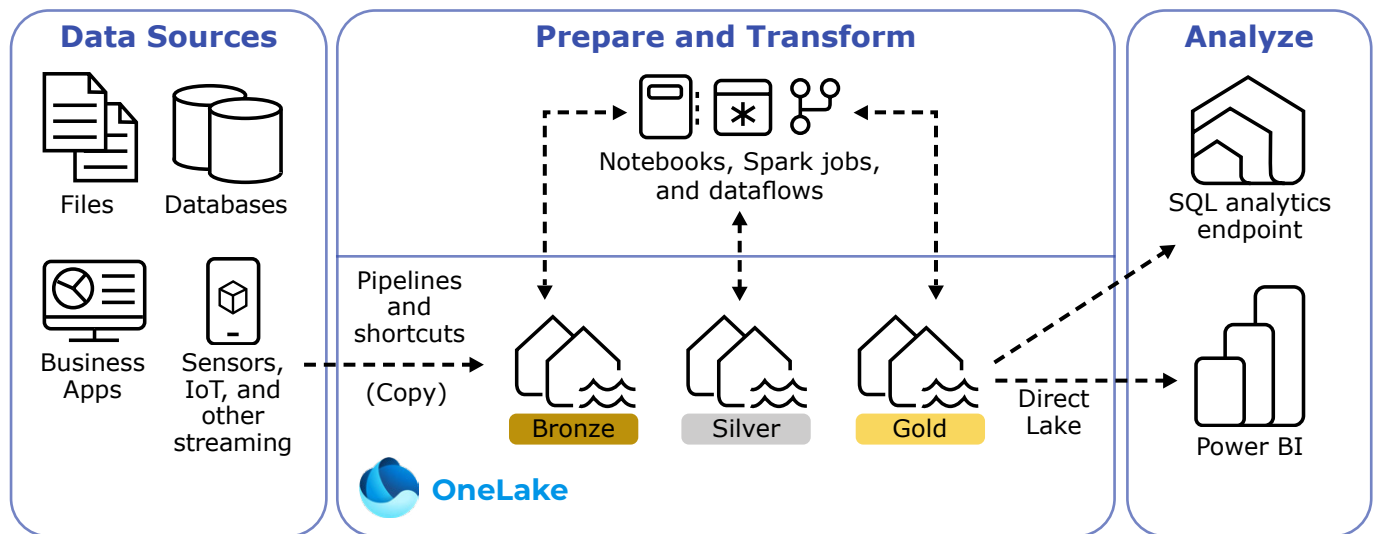
| **Total Timeline:** 4-5 weeks (20-25 business days)

## Estimated Cost (INR)

Component	Cost (INR)
Core Fabric Deployment (Medallion)	₹9,00,000 – ₹11,00,000
Real-Time Eventstreams + Analytics	₹2,00,000 – ₹3,00,000
Optional Enhancements	Priced based on scope

| **NOTE:** Final pricing depends on data complexity, number of systems, and plant scale.

## Fabric Medallion Architecture Using Lakehouse for Reporting Use Case



Feature	Regular Reporting	Real-Time Intelligence
Latency	Hours to days	Seconds
Use Cases	Monthly reports, trend analysis	Live monitoring, anomaly detection
Tools	Dataflows Gen2, Lakehouse, Notebooks	Eventstreams, Real-Time Analytics
Decision Impact	Strategic	Operational & Tactical
Examples	Production KPIs, quality trends	Machine failure alerts, energy spikes

## Fabric Medallion Real time Intelligence Architecture for Shop-Floor Use Case

