

Crafting a clear and comprehensive Request for Proposal (RFP) for manufacturing data engineering services can be a daunting task. Manufacturing environments are notoriously complex, with disconnected data sources across ERP, MES, and IoT systems, and increasing pressure to integrate IT and OT for Industry 4.0 initiatives. Selecting the right partner and technology stack—whether it's Azure, AWS, Databricks, Snowflake, or newer entrants like Microsoft Fabric—requires an RFP that reflects your unique challenges, addresses security and compliance, and smartly guides vendors to present realistic, transparent pricing and solutions.

Why Manufacturing Data Engineering RFPs Are Different

In manufacturing, data isn't just about volume; it's about diversity and timeliness. Data streams from PLCs and IoT sensors, transactional systems like ERP, and production execution tools such as MES each come with their own format, latency, and quality issues. An effective RFP must recognize these nuances, ensuring vendors understand challenges like batch and streaming [RAG chatbot manufacturing](#) data ingestion, IT/OT integration, security compliance, and ultimately, how their solutions will enable tangible improvements like predictive maintenance and downtime reduction.

Common Pitfall: Missing Pricing Transparency

One glaring mistake we've seen often in RFP responses is the absence of clear pricing data for source ingestion, processing, storage, and analytics. Without transparent pricing models grounded in actual data volumes and complexity, "AI transformation" or "real-time everything" promises become hand-wavy, costly risks. Your RFP should explicitly request detailed cost breakdowns tied to streaming and batch workloads, storage tiers, and governance licensing.

Key Sections to Include in Your Manufacturing Data Engineering RFP

1. Project Overview and Objectives

Set the stage by describing your manufacturing environment — how many plants, typical data sources (ERP, MES, PLC/IoT), and the business drivers behind the data engineering initiative. Highlight goals such as:



- Integrating disconnected data silos
- Enabling IT/OT data harmonization
- Supporting Industry 4.0 analytics and AI use cases
- Reducing unplanned downtime via predictive maintenance

2. **Data Sources and Volume Expectations**

Detail all relevant data systems, including:

- ERP systems (e.g., SAP, Oracle)
- Manufacturing Execution Systems (MES)
- OT sensors, PLC data streaming from the shop floor
- Cloud platforms currently in use or preferred (Azure, AWS)

Be explicit about approximate data volumes, daily batch loads, and stream rates where possible — this helps vendors propose architectures aligned with your scale.

3. **Technology Stack Preferences and Requirements**

Clarify your preferred or approved technology stacks. Common future-proof choices include:

- Cloud Platforms: **Azure** (often paired with Microsoft Fabric), **AWS**
- Data Lakehouse and Analytics: **Databricks**, **Snowflake**

Ask vendors to discuss how their proposed solutions leverage these platforms for scalability, real-time processing (streaming), and advanced analytics.

4. **Streaming and Batch Processing Requirements**

IT and OT data movement may require both batch and real-time ingestion pipelines. Make sure your RFP covers:

- Streaming capabilities (e.g., Kafka, Event Hubs) for PLC and sensor data
- Batch processing for ERP and MES data integration
- Latency requirements and data freshness SLAs
- Monitoring and observability tools for pipeline health

5. **Security and Compliance Expectations**

Manufacturing data often involves sensitive operational information and intellectual property. Logical and physical security is paramount. Specify your minimum security requirements:

- Compliance with **ISO 27001** for information security management
- Adherence to **SOC 2** standards if applicable
- Data governance policies, including data encryption, access controls, and audit logging
- Secure connectivity between OT and IT networks

6. **Vendor Experience and Case Studies**

Avoid vague “digital transformation” buzzwords. Instead, require detailed case studies with real metrics on:

- Successfully integrating ERP, MES, and IoT data
- Practical IT/OT convergence implementations
- Quantified improvements in production efficiency or downtime reduction
- Data lakehouse deployments on Azure or AWS

7. Pricing Model and Transparency

Explicitly request itemized pricing covering:

- Data ingestion costs per source and volume
- Storage costs including hot, warm, and cold data tiers
- Processing costs for batch and streaming workloads
- Ongoing operational and maintenance fees

Make it clear that incomplete pricing submissions will be disqualified to prevent surprises later.

Spotlight on Industry Leaders: STX Next, NTT DATA, and Addepto

When considering partners for your manufacturing data engineering needs, companies like STX Next, NTT DATA, and Addepto stand out given their proven track records in manufacturing and data integration projects.

- **STX Next** specializes in agile software development and data platform engineering, offering tailored solutions that emphasize integration between legacy manufacturing systems and modern cloud architectures.
- **NTT DATA** brings global scale and deep expertise in IT/OT convergence, helping manufacturers adopt Industry 4.0 by bridging ERP, MES, and IoT data streams with advanced analytics powered by Azure and AWS.
- **Addepto** focuses on end-to-end data engineering and AI-powered predictive maintenance solutions, leveraging Databricks and Snowflake to transform disconnected data silos into actionable insights that reduce unplanned downtime.

Because all three understand the intricacies of manufacturing environments — including security certifications like ISO 27001 and SOC 2 and the need for both batch and streaming data handling — requesting references or case studies from them in your RFP will help validate their fit.

Addressing the “Where Does the Sensor Data Actually Land?” Question

One question I always press on in OT and IT discussions is: *“Where does the sensor data actually land?”* It’s easy for vendors to gloss over initial ingestion and data buffering layers, but your RFP should demand clarity on this aspect. Are PLC and IoT sensor streams landing first in an edge gateway, a Kafka cluster, or directly into a cloud event hub? How are data spikes managed without losing fidelity? Clarify these technical details—they impact cost, latency, and system reliability.

IT/OT Integration: The Backbone of Industry 4.0

Increasingly, manufacturing leaders seek to unify IT and OT data for seamless analytics and automation. From ERP transactional data to real-time sensor inputs, your RFP needs to push vendors to demonstrate:

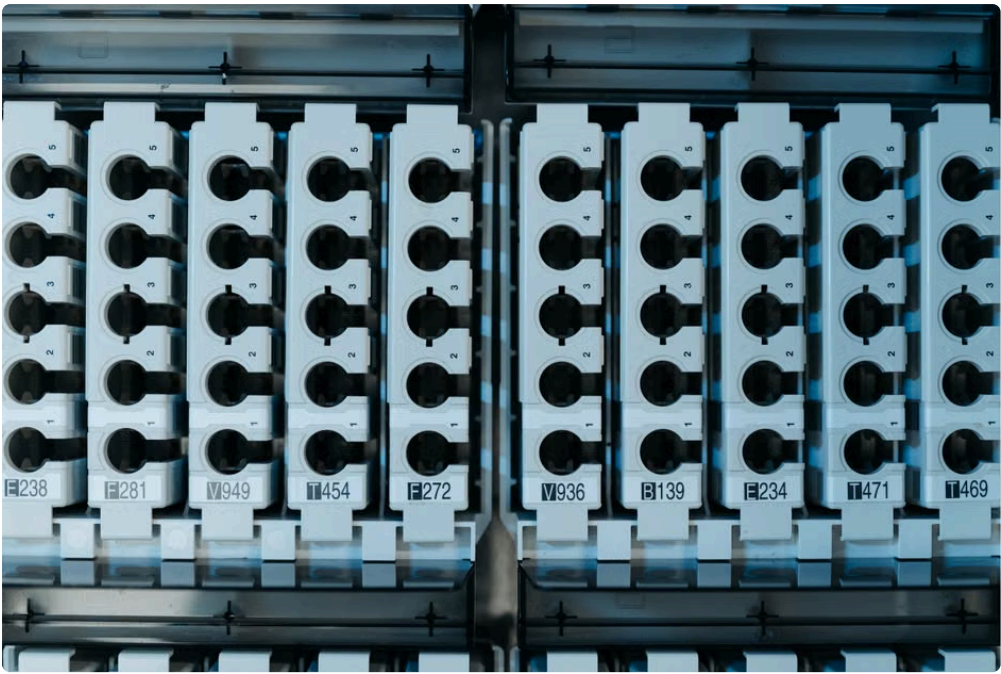
- Strategies for secure, low-latency data flows across IT/OT boundaries
- Use of standard protocols for interoperability

- Data quality and schema harmonization techniques
- Operational monitoring that respects OT constraints

Neglecting these areas leads to disjointed solutions that vendor marketing calls “end-to-end” but in practice require endless manual integration efforts.

Example RFP Pricing Table Template

To avoid opaque pricing submissions, here is a sample pricing breakdown your RFP can include or reference. Asking vendors to fill it out forces transparency:



Service Unit	Estimated Volume	Unit Cost (USD)	Total Cost (USD)	Notes
Batch Data Ingestion (ERP, MES)	GB per day 500	Include data transformation costs	Streaming Data Ingestion (IoT sensors, PLCs)	Events per second 10,000
Include buffering and scaling fees	Storage - Hot Tier	TB per month 50	For real-time data sets	Storage - Cold Tier
TB per month 200	For historical archives	Batch Processing (ETL/ELT)	Job runs per day 10	Include compute and orchestration costs
Streaming Processing (Real-time analytics)	Compute hours 24/7 equivalent	Include alerting and monitoring	Maintenance & Support	Monthly 1
Service level agreements				

Closing Thoughts

Manufacturing data engineering RFPs must balance technical rigor, security compliance, and business outcomes. Prioritize clarity on your disconnected data landscape, demand transparency on pricing—especially for streaming and batch workloads—and evaluate vendors on hands-on Industry 4.0 experience. By including references to trusted companies like STX Next, NTT DATA, and Addepto who understand your specific needs and favored technology stacks such as Azure and AWS, your RFP will guide you to a partner who not only talks the Industry 4.0 talk but delivers with measurable results.

Remember: the devil is in the details—especially around *where sensor data lands*, how IT and OT converge securely, and the cost-to-value equation. Armed with this checklist, your RFP will be a powerful tool to avoid costly late-stage surprises and kickstart your manufacturing data transformation on the right foundation.