Industrial Data Operations: Unlocking the AI Factory with HighByte, Novotek and the Snowflake Data Cloud

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Manufacturers today are data-rich but insight-poor. Up to 90% of industrial sensor data goes unused because it lacks the necessary context for IT and line-of-business applications. The fragmentation between Information Technology (IT) and Operational Technology (OT) systems prevents the activation of this latent value, hindering the scalable deployment of AI and advanced analytics for Industry 4.0.

Industrial Data Operations (DataOps) is the strategic framework that solves this challenge. It is the operationalization layer that integrates all data — from the shop floor to the enterprise — into a unified system.

The joint solution of **HighByte Intelligence Hub**, **Novotek** and the **Snowflake AI Data Cloud for Manufacturing** delivers this vision:

1. **HighByte** provides the Industrial DataOps engine at the Edge, connecting proprietary OT sources, modelling data into a unified, operational context, and standardizing it for the Cloud.

2. **Snowflake** acts as the unified, scalable AI Data Cloud, consolidating the newly contextualized industrial data with existing enterprise data for AI, ML, and democratized analytics.

3. **Novotek** with almost 40 years of unparalleled experience in industrial IT and automation, acts as a vital reseller and consulting partner. Novotek provides the deep expertise required to design, implement, and support these complex digital transformation initiatives, ensuring optimal outcomes and long-term success for manufacturers.

The result is a single, governed, and real-time data foundation that accelerates decision-making, enables predictive maintenance, and drives AI-powered innovation across the global enterprise.

The Unified Solution Stack: Edge-to-Cloud Data Activation

1. HighByte: Contextualization at the Edge (The Universal Translator)

HighByte Intelligence Hub is the critical **Industrial DataOps software** purpose-built to model and orchestrate data directly at the Edge. It solves the fundamental problem of data fragmentation and lack of context, transforming raw sensor values into meaningful, business-ready information before it leaves the factory floor.

HighByte's Core Values

- Securely connects diverse industrial protocols (OPC UA, Modbus, MQTT, etc.) via a script-free interface, eliminating complex, custom code.
- Enriches raw telemetry with vital operational context, such as **Machine ID, Operational Mode, and Timestamp**. This converts a temperature reading from "noise" into an actionable insight (e.g., "CNC Mill 3 is 15°C above normal").
- Models and structures data into a **Unified Namespace (UNS)** architecture, ensuring data is delivered to consuming applications — including Snowflake — in a consistent, usable format.

2. Snowflake: The AI Data Cloud for Scale (The Analytics Engine)

Once contextualized by HighByte, the industrial data flows into the Snowflake AI Data Cloud, where it is consolidated with enterprise data from various IT systems. Snowflake provides the single, governed platform needed to truly bridge the IT/OT divide.

- **Advanced Analytics & AI:** Provides a scalable, flexible environment to run predictive maintenance models, perform real-time operational analytics, and train sophisticated AI/ML applications.
- **Data Democratization:** Breaks down data silos, making clean, standardized data accessible to data scientists, analysts, and business users across the organization.
- **Secure Collaboration:** Enables frictionless, live data sharing across departments, vendors, and partners, all underpinned by a robust, built-in governance framework.

SAP, Snowflake, and HighByte: The Synergy for IT/OT Integration

The recently announced **strategic partnership between SAP and Snowflake** delivers the final piece required for a complete, AI-ready data fabric for manufacturing. This collaboration provides a direct, highly governed bridge between the OT-side context and the business-side context.

The Challenge: HighByte adds *operational* context (What is the machine doing?). But to act on it, you need the *business* context (What is the Order ID, the Bill of Materials, or the Inventory level?) — which resides in SAP (ERP/MES) systems.

The Solution: The SAP/Snowflake partnership, enabled by the new **SAP Snowflake solution extension**, allows for **zero-copy data sharing** between the SAP Business Data Cloud (BDC) and the Snowflake AI Data Cloud.

This is a game-changer for IT/OT integration:

HighByte

Contextualizes OT Data: Connects to PLCs/SCADA and tags the raw telemetry with **operational details** OT data also comes from time series databases (historians), transactional systems (MES), and files. It’s this mix of real-time and historical data that makes HighByte unique and not just another protocol translation tool.

SAP BDC

Provides Business Context: Houses the **semantically rich data** (Order IDs, Product Specs, Inventory).

Snowflake

Unifies the Context: Receives the contextualized OT data from HighByte *and* seamlessly accesses the rich SAP business data via **zero-copy sharing**.

Novotek

Experts in the OT environment and in Industrial DataOps. Partner with knowledge about bridging the OT / IT Gap. Being a vital player in the eco-system in bringing seamless solutions to the market.

The Combined Outcome: AI Grounded in Business Truth

By combining HighByte's ability to model and standardize OT data with the SAP/Snowflake zero-copy link for business data, manufacturers can now:

- **Run Real-Time Predictive Maintenance:** Instantly correlate a machine's high-vibration reading (from HighByte) with the specific **Warrantee Status, Cost of Goods, and Production Schedule** (from SAP via Snowflake) to immediately calculate the financial risk of downtime and prioritize maintenance.

- **Simplify AI/ML Development:** Build AI models directly in Snowflake that are trained on a harmonized dataset combining high-volume sensor data and trusted SAP business data, avoiding complex, manual data duplication and integration.

- **Achieve Complete Data Lineage:** Ensure end-to-end data governance and traceability from the raw sensor to the final financial report, enabling faster compliance and root-cause analysis.

This creates a true, end-to-end data fabric where OT, IT, and ERP systems are unified in one governed platform, accelerating time-to-value for Enterprise AI initiatives.