

Why Enterprises Need to Rethink Operational Data Sharing

Executive Summary

Operational technology (OT) data is rapidly becoming the foundation for digital transformation in industrial enterprises. Service providers, SaaS vendors, and analytics partners all depend on access to plant and machine data to deliver efficiency, reliability, and sustainability gains.

But how enterprises choose to share OT data matters. Traditional approaches, such as custom point-to-point pipelines or vendor-hosted portals, introduce escalating costs, governance blind spots, and loss of control.



This whitepaper outlines three primary approaches for OT data sharing:

1. **Ad-Hoc Integrations** (custom pipelines, FTP, APIs).
2. **Vendor-Hosted Platforms** (e.g., Cognite, Aveva Data Hub).
3. **Enterprise IT-OT Convergent Data Lakes** (using software like DeepIQ as the integration layer, then enabling secure sharing with platforms such as Databricks Delta Sharing and Snowflake Secure Data Sharing).

We compare the benefits and drawbacks of each approach and demonstrate why convergent enterprise data lakes provide the most scalable and future-proof strategy.

1. Ad-Hoc Integrations

Overview: Ad-hoc integrations rely on point-to-point data transfers: custom-built APIs, FTP drops, or one-off pipelines created for specific partners.

Advantages

- **Speed:** A single connection can be set up quickly.
- **Low Initial Cost:** Minimal investment required for limited, tactical use cases.
- **Simple for One Partner:** Works when sharing with a single external vendor.

Drawbacks

- **Scaling Costs:** Each new partner requires its own custom integration. Costs multiply linearly with every additional connection.
- **Fragile Architecture:** Pipelines are brittle, difficult to monitor, and prone to failure.
- **Weak Governance:** Limited visibility into who accessed what data, when, and why.
- **Duplication and Silos:** Multiple pipelines create inconsistent and duplicated data across the enterprise.

Fit for Purpose: Ad-hoc integrations may work in the early stages of digital transformation or for isolated projects. However, they become unmanageable as the number of partners and use cases grows.

2. Vendor-Hosted Platforms

Overview: A newer model uses vendor-hosted data-sharing platforms, such as Cognite or Aveva Data Hub, to aggregate OT data and provide access to third parties.

Advantages

- **Convenience:** Vendor handles integration and infrastructure.
- **Rapid Partner Onboarding:** External users can connect quickly to the portal.

Drawbacks

- **Loss of Control:** Enterprises relinquish ownership of sensitive OT data.
- **Fragmentation:** Vendor portals do not include comprehensive enterprise data, creating new silos.
- **Escalating Costs:** Data volumes, unstructured formats (e.g., maintenance notes), and partner expansion all drive licensing and usage fees upward.
- **Vendor Lock-In:** Long-term dependency on third-party platforms limits flexibility.

Fit for Purpose: Best for organizations that value short-term outsourcing of complexity, but it undermines long-term independence and convergence goals.

3. IT-OT Convergent Data Lakes

Overview: The most strategic model integrates OT data into the enterprise data lake alongside IT data. Modern platforms like Databricks Delta Sharing and Snowflake Secure Data Sharing then enable governed collaboration without moving or duplicating data.

Advantages

- **Ownership and Governance:** Enterprises maintain full control over their OT data.
- **IT-OT Convergence:** Enables advanced use cases like predictive maintenance, energy optimization, and supply chain alignment.
- **Scalable Sharing:** Share real-time data securely with multiple partners at once.
- **Cost Efficiency:** Avoids vendor lock-in and reduces duplication.

Drawbacks

- **Initial Investment:** Requires integration software and a mature data lake strategy.
- **Organizational Alignment:** Success depends on IT and OT collaboration.

Fit for Purpose: Enterprises seeking long-term scalability, flexibility, and advanced analytics will find this model the most sustainable and future-ready.

The DeepIQ Advantage

DeepIQ Data Studio makes IT-OT convergent data lakes practical and scalable by:

- **Streamlining Integration:** Connecting diverse OT systems without fragile custom pipelines.
- **Preparing Data for Convergence:** Standardizing OT data for analysis with enterprise IT datasets.
- **Ensuring Security and Governance:** Enabling role-based access, automated compliance, and full auditability.
- **Supporting Modern Sharing Protocols:** Working seamlessly with Databricks Delta Sharing and Snowflake Secure Data Sharing.

By addressing integration complexity head-on, DeepIQ empowers enterprises to adopt the convergent data lake model with confidence.

Criteria	Ad-Hoc Integrations	Ad-Hoc Integrations	IT-OT Convergent Data Lakes
Speed to Deploy	Fast for single use case	Medium (depends on vendor setup)	Medium (requires setup of lake + software)
Cost Over Time	Escalates linearly with partners	High (usage & licensing fees)	Lower (no vendor lock-in; scalable)
Data Ownership	Enterprise retains partial control	Vendor owns/hosts data	Enterprise retains full control
Scalability	Poor (brittle, point-to-point)	Moderate (limited to vendor ecosystem)	High (supports multiple partners securely)
Governance & Security	Weak and fragmented	Vendor-controlled	Enterprise-controlled, end-to-end
Integration with IT Data	Difficult; siloed	Limited; creates new silos	Native convergence with IT systems
Risk of Vendor Lock-In	Low	High	Low
Best For	One-off projects, early pilots	Short-term outsourcing of complexity	Long-term, strategic OT-IT integration

Conclusion

Enterprises face a strategic choice in how they share OT data:

- Ad-hoc integrations are quick but fragile and unsustainable.
- Vendor-hosted platforms are convenient but costly and limiting.
- IT-OT convergent data lakes offer control, scalability, and future-proof integration, especially when powered by DeepIQ.

DeepIQ Data Studio enables organizations to confidently adopt the convergent model, retaining control of their data while unlocking greater value from IT-OT integration.

To learn more about DeepIQ, explore [our Customer success stories](#) or engage with us through a focused pilot to experience the platform's capabilities firsthand. Contact us at info@deepiq.com to begin your transformation journey.