**What Are Your Barriers to Digital Transformation?**

Does your industrial data infrastructure scale and enable your organization to organize, clean, validate and assemble the data they need? Have you tried to manage this and struggled with data management? Are your industrial IoT (IIoT) applications failing to provide the expected value because the data feeds are not reliable or comprehensive enough? Have you integrated your operations data and implemented successful IoT proofs of concept, but found that they have not progressed beyond the pilot stage? Or are they unable to meet return on investment (ROI) requirements to justify spreading across the enterprise?

**Meeting the Special Needs of Industrial**

The data management requirements of an industrial operation are not the same as a bank or insurance company. Hitachi provides the tools that make the job of correlating operational technology (OT) and IT data easier. For example, OT data is high-velocity time-series and event information that many times lacks the detailed descriptors and features needed to leverage it outside of operations. Business IT data comes across in batches or transaction records with different metadata descriptors. Industrial DataOps automates the process of abstracting, tagging and rationalizing IT and OT data. It organizes the data in your data lake or data warehouse so it is usable for analysis and building AI and machine learning (ML) solutions. Data pipelines are established, and multiple transformations and inferences are calculated and orchestrated for you as part of the workflow. Industrial process engineers can work with data scientists, analysts, and applications consultants to unlock the combined value and make significant operations improvements.

**The Tools To Enable Your Digital Enterprise**

As part of Hitachi’s enterprise IoT platform including Hitachi’s Lumada solutions for digital innovation, the Lumada Industrial DataOps portfolio offers a comprehensive and sustainable platform for your operations data management and AI/ML application delivery needs. It provides the tools that power the data fabric for an industrial organization to reduce costs, supplement organizational knowledge and worker capability, and help to create new digital products and solutions to grow your operational effectiveness. Built on the solid core of Hitachi’s Lumada DataOps, it adds industrial features needed by operations data teams.

**Value for Every Data User**

- Connect IT-OT: Leverage Hitachi’s data and industrial operations expertise to onboard OT data from any industrial system and combine with IT data from edge to cloud.
- Reliable prediction: Enable better predictions with reliable data feeds.
- Enable operations applications: Use packaged and proven IIoT software to accelerate analytics applications deployment.

**Industrial DataOps Example for Smart Grid Data Management and Analytics**

Say, for example, that you are a major utility wanting to blend and integrate data from smart meters and enterprise resource planning (ERP) sources to get better insights for operations, marketing, and services. Your data is in multiple formats, across several owners and data stores. Data available includes historical records, smart meter data, tariff, usage, billing, demographic, geographic information system (GIS) mapping, weather, and grid asset data. You may want to:

- Implement a time-series and geolocation data self-service approach for business planning.
- Provide customer 360-degree views of insights from data.
- Build predictive analytics to alert team members to maintenance optimization opportunities.

Industrial DataOps enables data integration, blending, and cataloging IT and OT data. Data is tagged with metadata, reformatted, enriched, and published for wider consumption: for example, by downstream AI or ML models that predict remaining useful life, process anomalies, and so forth.

Potential benefits include:

- Productivity through data pipeline automation.
- Faster production deployment.
- Data quality improvements.
**Moving Beyond Pilots and Technology Experiments**

IIoT solutions have stopped being technology experiments and are now becoming a mainstay approach for operations to solve specific business problems across the organization. Regardless of what kind of organization you have or whether you are digitalizing the business for internal optimization purposes or creating new products, AI and ML applications fed with quality data will help you better monitor, predict, and prescribe instructions, helping your organization remain more competitive.

But scalability in industrial analytics has been hampered by the inability to handle the entire industrial operations data life cycle. Constantly having to manually integrate, clean, merge, curate, rationalize, govern, and operationalize data is a tedious process that does not scale. This is one of the main reasons why Industry 4.0 initiatives do not make it past the pilot stage. Industrial DataOps overcomes these challenges.

**Extend Into Vertical Industry Solutions From Hitachi**

Building on the capabilities of Lumada’s software for IIoT, the Lumada Industrial DataOps portfolio is the underlying data services layer, including IIoT Analytics, that can support Lumada advanced digital solutions for energy and utilities, manufacturing, transportation, or smart cities. Clients can choose between packaged vertical solutions or a develop-your-own-approach with a framework, or anything in between.

**Handling the Industrial Data Management Dilemma for You**

Hitachi Vantara delivers tools that are optimized for the environment and tasks of the industrial data engineer and data scientist. Our capabilities provide near-real-time insights and outcomes within your critical operations groups and empower high quality and more reliable industrial data management at scale.

Building on a solid base of device management, business data integration and metadata cataloging capability, Lumada Industrial DataOps adds core IIoT software capabilities like digital twins and analytics solution (or solutions) cores to enhance your ML model training needs. This real-time organization of equipment attributes along with pretrained ML models reduces the amount of work needed to deliver industrial solutions.

**DataOps Tools That Enable Your Industrial Enterprise**

**IIoT Management**

IIoT Core software and its Edge Connect component enable actionable real-time insights at remote locations and enterprise-class data management from edge to cloud. It is ideal for hosting third-party and custom developed IIoT applications addressing industry-specific business operations requirements. Deploy AI and ML analytics applications at the edge or cloud and generate alerts anywhere and anytime to act. Automated data movement and processing optimization with store and forward. Integrate time-series data through a combination of embedded and third-party servers. Leverage open standards, which provide more choices for storing and exposing data, and 3D visualization tools like Grafana and Kibana, which can plug into the architecture and consume data from a persistent API layer.
**Operations Business Data Integration**

Collaboratively build, deploy, and monitor data flows to streamline data delivery. Connect real-time and batch data sources. Deliver analytics-ready data to end users faster with visual tools that reduce time and complexity. Without writing SQL or coding, Data Integration Software, built with Pentaho technology, along with Lumada Video Insights, lets you gain real value from structured and unstructured data sources, such as:

- Supervisory control and data acquisition (SCADA) systems.
- Historians.
- Relational databases.
- Picture and video databases.
- Data warehouses and data lakes.

Also, integrate and blend your OT data sources with applications like manufacturing execution systems (MES), customer relationship management (CRM), enterprise resource planning (ERP), enterprise asset management (EAM), application performance monitoring (APM), computerized maintenance management system (CMMS), and building management systems, as well as external systems, such as weather, GIS, financial market feeds, and emergency alert systems, to name a few. Build situational awareness dashboards by using analytics or third-party visualization tools.
Data Cataloging
Data Catalog accelerates data discovery for self-service analytics, compliance, and data rationalization across your data fabric with accelerated metadata discovery and data categorization. Search in the same way you would an online shopping application and share and collaborate between engineers, operations SMEs, and IT data teams.

- Automatically detect, tag and organize data using machine learning.
- Secure and redact specific operational data.
- Rapidly respond to evolving regulations and business needs.

ML Application Acceleration
IIoT Analytics provide prepackaged modules to give you a faster start by providing the data integration and preconfigured functions, so you can focus on fine tuning for your specific application.

- Machine learning services framework to deploy AI and ML applications more easily.
- Digital twins for data and asset organization.
- Packaged ML models for faster assembly.
- Simulation software interfaces for more features and greater accuracy.

A Partner You Can Start With Locally and Scale Globally
Hitachi Vantara has the experience, products, and services capability to start with a site-specific pilot and scale globally across your organization so your entire data team can benefit from innovative ideas and ways of solving problems. Along the way, our tools handle the hard technology problems so you can focus on what you do best, running and maintaining your business. We have the people and partners located across the globe and can deploy resources where and when needed to support implementations and provide hands-on support.

Contribute to Your Bottom Line
- Shorten breakeven time on analytics projects with faster operational cost savings.
- Augment a lack of IT resources or development and data management experience through easy-to-use tools.
- Better support company growth goals and address competitive issues through a sustainable industrial data fabric that enables digital transformation.

Contact Hitachi Vantara to take the next step and experience what Lumada Industrial DataOps can do for you.