ATSCALE

The Future of Manufacturing
Runs on Semantics

The manufacturing industry is undergoing rapid transformation driven by Industry 4.0, IoT, GenAI, and global supply chain complexity. These advancements offer huge opportunities but also introduce data challenges. ERP systems, IoT sensors, MES platforms, and supplier networks all generate valuable data, yet most manufacturers struggle to unify and trust it.

Legacy OLAP tools, inconsistent KPIs, and disconnected reporting workflows make it difficult to make fast, data-driven decisions. As GenAI and agentic AI gain momentum, a governed, interoperable data foundation becomes critical.

A universal semantic layer changes that. AtScale virtualizes access to your data, centralizes business logic, and delivers governed insights to BI tools and AI agents alike. The result: faster decisions, AI you can trust, and analytics teams that move with agility.

Manufacturers leverage a semantic layer to instill trust in Generative AI and analytics-driven KPIs. A semantic layer can yield:

$2+
million in analytics project cost savings

3x
increase in ROI of IT investments

4x
improvement in real-time query performance

100%
deterministic NLQ accuracy using AtScale's Model Context Protocol (MCP)

What Is a Semantic Layer? A semantic layer is a business-friendly data interface that translates raw data into common terms like "machine uptime," "inventory turns," or "customer churn."

AtScale's Universal Semantic Layer makes this logic reusable and consistent across tools like Excel, Tableau, and Power BI. It now extends to GenAI platforms through direct integrations with Databricks Genie and Snowflake Cortex, and with AtScale's MCP server, teams can connect to any agentic system or AI application.

How Manufacturers Use a Semantic Layer:

1. Supply Chain Optimization: Federate ERP, IoT, and supplier data to enable real-time inventory visibility, improve demand forecasts, and streamline logistics.

2. Production Efficiency Analytics: Surface bottlenecks, downtime trends, and root causes across plants using governed OEE and performance metrics.

3. Quality Control and Compliance: Standardize inspection, defect, and audit reporting with unified, traceable data for regulatory compliance and ISO certification.

4. Customer 360 & After-Sales Support: Connect CRM, IoT telemetry, and service data to enable predictive maintenance and data-driven service workflows.

Challenges Solved by a Semantic Layer

- **Data Silos:** Fragmented data across ERP, MES, CRM, and IoT systems hinders a unified view.

- **Outdated Tools:** Legacy tools like Excel and OLAP cubes limit scale and adaptability.

- **Inconsistent Metrics:** Different teams interpret KPIs differently, reducing trust in analytics.

- **Collaboration Barriers:** Siloed systems slow cross-functional decision-making.

Why AtScale for Manufacturing?

AtScale's Universal Semantic Layer bridges the gap between raw data and real-time insights, enabling manufacturers to modernize analytics, power AI agents, and unify data across plants, platforms, and teams.

With AtScale, you can:

- Simplify analytics with consistent, business-friendly data models
- Empower self-service across BI tools, Excel, and GenAI platforms
- Scale with sub-second performance—no data movement required
- Govern everything with fine-grained access controls, Git-based versioning, and RBAC

And you get:

- Live queries—no duplication, no extracts
- Standardized metric definitions across all tools
- Built-in support for RLS, CLS, and platform impersonation
- One source of truth for GenAI agents and business users alike

Why Now? The future of analytics is composable, agentic, and governed. Manufacturers need real-time, AI-ready insights to stay competitive.

With AtScale, your semantic model becomes the foundation for analytics, decision intelligence, and explainable AI.

Real-World Examples

- **Global Manufacturer:** Improved supply chain efficiency by integrating data from multiple sources and enabling self-service analytics, reducing reliance on IT teams.
- **Multinational Industrial Company:** Unified data across platforms and replaced outdated reporting workflows, significantly enhancing operational efficiency.
- **Leading Automotive Company:** Created a comprehensive "Customer 360" view, enabling seamless self-service analytics while decommissioning legacy systems.
- **Bicycle Manufacturer:** Accelerated data query performance, minimized data duplication, and improved reporting agility with a modern semantic layer solution.

Related Resources

- Practical Guide to a Semantic Layer
- The Business Impact of Using a Semantic Layer for AI and BI
- Buyer's Guide to a Semantic Layer

ABOUT ATSCALE

AtScale delivers a Universal Semantic Layer that bridges Power BI with modern cloud data platforms, making analytics faster, more trusted, and GenAI-ready. Our platform empowers enterprises to eliminate data silos, enforce governance, and enable real-time insights at scale across BI and AI ecosystems.

For more information, visit www.atscale.com and follow us on LinkedIn.