

Agentic Data Operations

An ADAM Foundational Solution

Achieve Zero-defect Data Operations,
Minimizing Downtime and Maximizing Efficiency.

Business Challenge

Managing modern data pipelines is increasingly complex, and traditional manual oversight with scattered tools often leads to delayed issue detection and extended downtime. Organizations need a unified data operations solution that proactively monitors pipelines, detects and resolves failures before they escalate, and augments human response with AI-driven insights. The goal is to minimize business disruption, accelerate incident resolution, and scale operations efficiently with the growing complexity of modern data pipelines.

Brillio's Agentic AI Solution for Data Operations

Our Agentic AI framework introduces an autonomous, multi-agent system for zero-defect data operations. Proactive agents continuously analyze pipeline logs, detect real-time anomalies, and automatically resolve issues before they escalate into incidents. These agents autonomously handle Level 1 and Level 2 operations by taking preventive and corrective actions without waiting for human intervention.

For more complex incidents where agents have lower confidence or need contextual decision-making, they escalate by automatically creating tickets and involving human operators (Level 3). Here, reactive agents act as co-pilots, assisting humans with rapid root cause analysis by tracking lineage, past incident history, and recommending resolution actions. This dual-layer (proactive + reactive) design brings together autonomous AI (for prevention and correction) and augmented AI (for efficient human-led resolution), delivering a scalable and intelligent approach to data operations.

Use Case Examples

Consider a scenario where a batch data pipeline fails during its nightly run due to a 'duplicate key' error captured in the pipeline's error log. This pipeline feeds critical sales forecasting dashboards used by business leaders every morning.

Proactive agents immediately detect this specific error signature from the logs as the job runs. Because this pattern matches past incidents stored in the agent's knowledge base, the agent automatically applies a known fix: it reruns the

failed job step after programmatically removing the duplicate records from the staging table. The issue is resolved in real time, and the pipeline completes successfully, avoiding dashboard downtime and preventing an incident ticket from being raised.

Consider a different case where a pipeline throws an ‘unexpected null value’ error in a transformation step. Here, the **proactive agent** does not find a direct historical match and flags the issue for deeper analysis. A **reactive agent** steps in to assist:

- It traces the pipeline’s **data lineage** backward to identify the source system and upstream transformations that might have introduced the nulls.
- It uses **sample data execution** to safely reproduce the error in a controlled environment without disrupting production.
- It provides the operator with a ranked list of **potential root causes** (e.g., missing join keys, upstream schema changes) and **suggested next steps** (e.g., check recent schema update in system X, validate the join condition on table Y).

Benefits

- **Faster Resolution:** Mean Time to Resolution (MTTR) is decreased, enhancing operational efficiency.
- **Reduced Downtime:** Autonomous agents detect and fix pipeline issues before they impact downstream systems, reducing operational disruptions.
- **Operational Efficiency:** Automating L1 and L2 tasks reduces manual monitoring and intervention, allowing teams to focus on higher-value work.

ABOUT BRILLIO

Brillio is a digital technology services company that drives AI-first engineering and design-led experiences for global enterprises. Born digital in 2014, its consulting-led services span Customer Experience, Data & AI, Product Engineering, and Digital Infrastructure. With an industry-leading NPS of 71, Brillio accelerates time to market through its proprietary BrillioOne.ai platform, powered by AI-ready talent with deep domain expertise.

Brillio is the official Digital Transformation Partner and the official Data and AI Services Provider of Atlassian Williams Racing. Brillio partners with leading technology providers including Microsoft, AWS, Google Cloud, Salesforce, Adobe, Databricks, and Snowflake and operates with 6,000+ “Brillians” across 15 global delivery centers. Consistently recognized as a Great Place to Work® since 2021, Brillio blends innovation, talent, and purpose to deliver measurable outcomes for clients and fulfilling careers for employees.



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