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Five Data Principles for Ensuring Effective Operational Analytics

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for Ensuring Effective
Operational Analytics**

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The evolution of data analytics

Without insights from data, it would be impossible to make informed decisions about business operations, understand customer needs, and drive sustainable growth. Because of this, demand for analytics throughout enterprises continues to grow as line of business teams consume and analyze more data than ever.

Analytics has undergone huge changes in the last two decades. The rise of big data and the proliferation of digital technologies meant traditional analytics tools were unable to handle vast volumes of data, quickly becoming outdated and struggling to make sense of complex data infrastructures. The resulting data integration friction has become a major issue. 68% of leaders say data integration friction prevents them from delivering data at the speed the business requests, while 43% say it is a "chronic problem".[1]

Organizations cannot unleash the true potential of successful operational analytics unless they urgently tackle the **three key drivers of data integration friction**

- Increasingly complex data environments
- Brittle infrastructure that breaks at the first sign of trouble
- A lack of balance between retaining control and enabling self-service analytics

Picking the right tools and infrastructure to enable operational analytics has become a make-or-break moment. If you're an IT or data professional responsible for managing data infrastructure, read on to understand how to future-proof your organization's data infrastructure and unlock the value of operational analytics.

[1] Lifting the Lid on the Hidden Data Integration Problem

What is Operational Analytics?

Operational analytics powers day-to-day business processes and decisions in real-time or near real-time. This entails thousands of actions every single day, including anything from setting prices to managing inventory to marketing personalization.

Operational analytics also powers the automation of some business processes. Data points act as triggers that notify systems to execute actions. For example, sending delivery updates to customers, compiling end-of-month financial reporting, push notifications to remind buyers to complete purchases, and flagging possible fraudulent transactions.

When operational analytics is running well, it is because the data infrastructure has been instrumented to ensure organizations can spot opportunities and trends and use real-time data to monitor performance, identify problems, optimize operations, and trigger actions.

The end-state for operational analytics is to be the lifeblood of an organization. It ensures processes happen and decisions get made and is the foundation for organizations to launch even more advanced analytics.

What's stopping enterprises from making the most of Operational Analytics?

Modern enterprises' data ecosystems are complex and dynamic. They are constantly evolving as data architectures become increasingly fluid. Without an agile data infrastructure that supports modern tooling, organizations face multiple challenges in delivering the operational analytics the business needs.

1. **Collecting meaningful data** – Rising data complexity makes it impossible to manually sift through data and feed it into analytics tools, meaning insights may be inaccurate or irrelevant.

2. **Selecting the right tools** – Organizations don't have the infrastructure and tooling to deliver analytics-ready data, with teams using a variety of hand-coded tools, point solutions, and legacy systems.

3. **Data visualization** – Organizations lack the observability required to see their data infrastructure end-to-end, making it hard to manage data sets and pipelines.

4. **Data from multiple sources** – Data is siloed in multiple systems with inconsistent formats. At the same time, teams must grapple with orphaned data sets and data sets created by employees without notifying IT.

5. **Low quality data** – Inaccurate data or problems with change data capture result in the delivery of low-quality data that doesn't factor in real-time changes and insights.

6. **Scaling challenge** – With rising data volumes comes a scaling challenge that makes analyzing and creating meaningful reports increasingly difficult as data piles up.

7. **Budget limitations** – Data analytics is costly, and static or shrinking budgets can force IT to favor quick fixes over a long-term view of future-proofing data infrastructure.

8. **Lack of data culture and skills** – Data analytics can become an exclusive club where only skilled coders and data professionals have access, shutting out users that need the data most.

9. **Data inaccessibility** – Organizations would like to enable "data open season" to make data accessible to the right people but lack the controls to ensure security, governance, and compliance.

10. **Lack of data security** – The more data organizations have, the more there is to protect, so they need to step up security controls to minimize risk.

These challenges are leaving organizations open to making bad decisions and automating actions based on wrong or incomplete data.

When Operational Analytics Goes Wrong

Data integration challenges prevent operational analytics from delivering what's expected. This can impact businesses in multiple ways:

Customer packages go to the wrong address

Confirmation emails aren't sent or go to the wrong person

Fraud goes undetected

Products are given incorrect prices

Shelf-space goes unallocated

Opportunities to up-sell / cross-sell are missed

Poor customer recommendations are made, impacting loyalty

Supply chain processes are inefficient
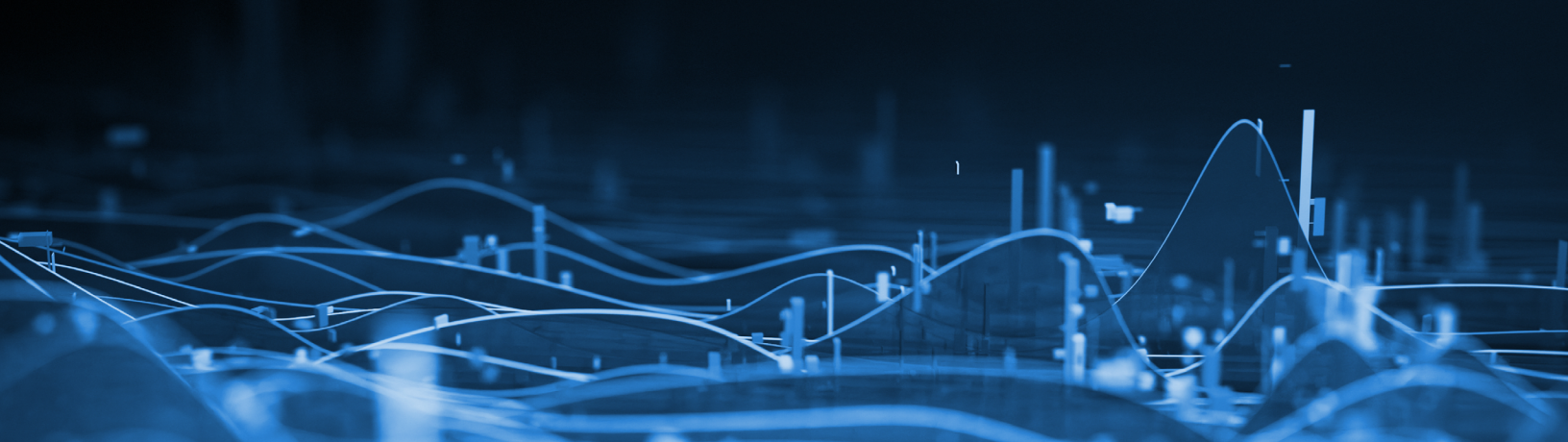
How does an agile data infrastructure power Operational Analytics?

An agile data infrastructure drives order and discipline from chaotic data environments to power operational analytics. It helps organizations make sense of complexity and eliminate data integration friction. It's ideal for messy and fluid data ecosystems that span the cloud, legacy, and on-premises assets across internal and external systems.

Key benefits of an agile data infrastructure include:

- ✔ **Offers high resilience and flexibility**

- ✔ **Delivers elasticity and scale**

- ✔ **Ability to create order from chaos**

- ✔ **Secure "any-to-any" data pipelines**

- ✔ **Prevents pipeline breakages and data drift**

- ✔ **Enforces good governance**

- ✔ **Opens up analytics for all via self-service**

- ✔ **Reduces reliance on hand coding, points solutions and legacy tools**

- ✔ **Provides central mission control covering the entire data infrastructure**

- ✔ **Total observability across data and pipelines**

With an agile data infrastructure, business users no longer need to "get in the queue" for the IT and data engineering teams to support new data gathering and analytics requests. This is enabled by integrating core enterprise data into operational analytics, providing greater consistency, accuracy, and depth of insights.

The five agile data infrastructure principles for effective Operational Analytics

Principle 1

Define data sources for collection to improve visualization and unleash your secret sauce.

- Select a data integration platform that has a single, robust smart interface for managing all data pipelines.

- Define all the data you want to draw on for analytics purposes. This will be thousands of pipelines for the typical enterprise, ranging from enterprise data, operational systems, and IoT devices to customer and sales databases.

- Define where data needs to go once collected, such as downstream to modern data storage destinations like Snowflake or Databricks.

- Don't shy away from data that is locked away in legacy systems such as mainframes or on-premises databases – often, this data is your enterprise's "secret sauce."

Organizations lack visibility into data environments, with 67% saying data fragmentation has made it **hard to understand, govern, and manage data.** [2]

[2] **Creating Order from Chaos: Governance in the Data Wild West**

Principle 2

Create a malleable data infrastructure to support any-to-any pipelines to integrate all data.

- Develop malleable infrastructure based on resilient data pipelines that allow the business to integrate data from defined sources to the end destination.

- Create flexible pipelines that support a breadth of connectivity and can run across on-premises, cloud, hybrid, and multi-cloud environments.

- Select a platform that embeds the ability to resist change. When there are changes to data infrastructure, schema, and dependencies, pipelines need to continue operating instead of breaking. Pipeline breakage results in out-of-date and inaccurate analytics.

- Achieve this by using pre-built modern and legacy data source connectors and data processors, so files and data are easily ingested and incorporated into analytics tools, common data sources, and platforms.

- Create repeatable templates and pipeline fragments so brittle "one-off" hand-coded pipelines are no longer required.

- Scale to thousands of different data sources by deploying common logic with minimal code to automate the creation of batch, change data capture, and streaming pipelines.

87% of organizations have experienced data pipeline breakage at least once a year, with **more than a third (36%) saying their pipelines break every week.** [3]

[3] Lifting the Lid on the Hidden Data Integration Problem

Principle 3

Embrace DataOps principles to tease order from the chaos of modern data architecture.

- Embrace DataOps practices and technologies that operationalize data management and ensure resiliency and agility.

- Create a team of data leaders to resolve data integration friction and keep insights flowing from operational analytics in real-time.

- Enable a collaboration mindset between line of business teams and central IT teams. This allows organizations to understand business use cases, rapidly identify data integration challenges, and implement practices and processes across the data lifecycle to reduce future friction.

- Allow users with the right permissions to access data without the roadblock of waiting for busy IT teams or delays in getting the data they need to support analytics.

IT teams are open to collaborating with users, with 72% saying they want to **empower lines of business to use data while maintaining visibility and control** [4]

[4] **Creating Order from Chaos: Governance in the Data Wild West**

Principle 4

Establish a centralized data mission control for deep observability and control.

- Your single, smart interface is your centralized data mission control for managing data pipelines and infrastructure, helping teams to "see" across all environments.

- This delivers observability over data architecture, showing how systems are connected and how data flows across the enterprise to quickly spot friction points.

- Observability also allows teams to detect, control, and adjust to data drift – the unexpected and undocumented changes to data pipelines supplying operational analytics.

- This ensures pipelines keep running while notifying about changes in data quality, sizing, throughput performance, error rates, and private or sensitive information leakage for rapid response.

Organizations can't see when data is being used in multiple systems (48%) and can't ensure data is being pulled from the best source (40%). 68% say **users are also independently creating datasets that IT doesn't have visibility of.** [5]

[5] **Understanding, Governing and Managing Data Pipelines: The "Data Wild West" Facing Financial Services**

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Principle 5

Put in place data guardrails to help power transformation across the organization.

- Find the right balance between security and giving users what they want to power their operational analytics projects. You can unlock data without ceding control.

- Ensure policies and procedures governing how data is created, processed, and distributed are in place, granting access to data while complying with privacy and data safety laws and maintaining security.

- By establishing these guardrails, line of business users can access the data they need to complete operational analytics projects without causing governance or security challenges.

- Line of business teams can also safely innovate and experiment with operational analytics within centralized guardrails without creating blind spots.

44% of organizations cannot maintain governance and automate policy controls around data, while **42% cannot enforce consistent security measures.** [6]

[6] **Understanding, Governing and Managing Data Pipelines: The "Data Wild West" Facing Financial Services**

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Future proof and thrive with agile infrastructure

Operational analytics is the lifeblood of modern enterprises. It's critical for decision-making, automating processes, and optimizing operations. But data integration friction is preventing the delivery of analytics-ready data to operational analytics tools, meaning data and insights don't flow at the speed of business. If data integration friction is left unresolved, operational analytics will fail.

In a data-driven world, organizations can't afford to take a short-term view. By eliminating data integration friction with an agile data infrastructure, organizations can power operational analytics to unleash the power of data across the enterprise, allowing them to grow, save, and reduce risk.

Grow	Save	Resist Risk
✔ Increase revenue and market share	✔ Reduce costs & expenses	✔ Reduce regulatory risk
✔ Improve marketing and promotional effectiveness	✔ Increase operational productivity	✔ Reduce compliance risk
✔ Expand partner and channel effectiveness	✔ Increase employee productivity	✔ Reduce fraud
✔ Increase customer satisfaction	✔ Increase employee satisfaction	
✔ Increase customer likelihood to recommend	✔ Reduce waste	

To learn more about how operational analytics can help lay the foundations for **effective enterprise reporting** and **advanced analytics,** download our other eBooks now.

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About StreamSets

StreamSets, a Software AG company, eliminates data integration friction in complex hybrid and multi-cloud environments to keep pace with need-it-now business data demands. Our platform lets data teams unlock data—without ceding control—to enable a data-driven enterprise. Resilient and repeatable pipelines deliver analytics-ready data that improve real-time decision-making and reduce the costs and risks associated with data flow across an organization. That's why the largest companies in the world trust StreamSets to power millions of data pipelines for modern analytics, data science, smart applications, and hybrid integration.

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