No More Silos: How DataOps Technologies Overcome Enterprise Data Isolationism

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What You Need to Know

Data—and the value derived from it—dictates success in the modern enterprise. Enterprises that exploit data to derive value recognize new revenue, see new efficiencies, and enjoy intangible benefits like strengthened customer relationships and greater marketing efficiency.

But organizational ennui, legacy system burdens, and change aversion conspire to bury enterprise data in metaphorical silos. The free flow of data is a mandate for success in the modern enterprise. When silos obstruct data-workflow efficiency, that modern enterprise cannot maximize data-derived value.

In this report, Blue Hill Research examines how enterprise leaders use DataOps approaches to break down silos, whether those silos are organizational, architectural, or process-driven. This report also introduces a migration framework for DataOps adoption.

How Data Silos Hinder Progress

For the purposes of this report, "silo" refers to metaphorical forms of enterprise data isolationism. For example, one group within an organization may confine its data and work to its own purview. The metaphorical walls built up around that particular group form a figurative silo, hindering collaboration, limiting data flows, and reducing productivity.

Silos take many forms—physical, metaphorical, prejudicial. In this report, Blue Hill Research focuses on three enterprise silo examples:

1. **Organizational** (encompassing functional, divisional, and geographical) – Information is not easily shared between different groups within an organization.
2. **Architectural** – Data is isolated in legacy storage systems making it difficult to consume.

AT A GLANCE

The Summary:

Silo culture complicates data accessibility, and contributes to enterprise inefficiency. Silos can be organizational (functional, divisional, geographical), architectural, or process-based. With its accompanying transparency, control, and unification, DataOps orchestration framework adoption helps organizations get data flowing.

The Impacts:

Enterprises that deploy DataOps models to establish the free flow of data within their organizations will see new efficiencies, realize new insights, accelerate time to action, and maximize data-derived value.

Featured Enterprise Cases, Technology Vendors:

Western & Southern Financial Group (Informatica)

VICE Media (Switchboard Software)

Marion Body Works (Domo)

ServiceChannel (GoodData)

Macquarie University (Yellowfin)

JJ Foods (Microsoft)

"ABC Retail" (Anodot)

3. **Process –** Point functions are performed in isolation without regard for global, comprehensive business workflow orchestration or integration with neighboring value-add workflow functions.

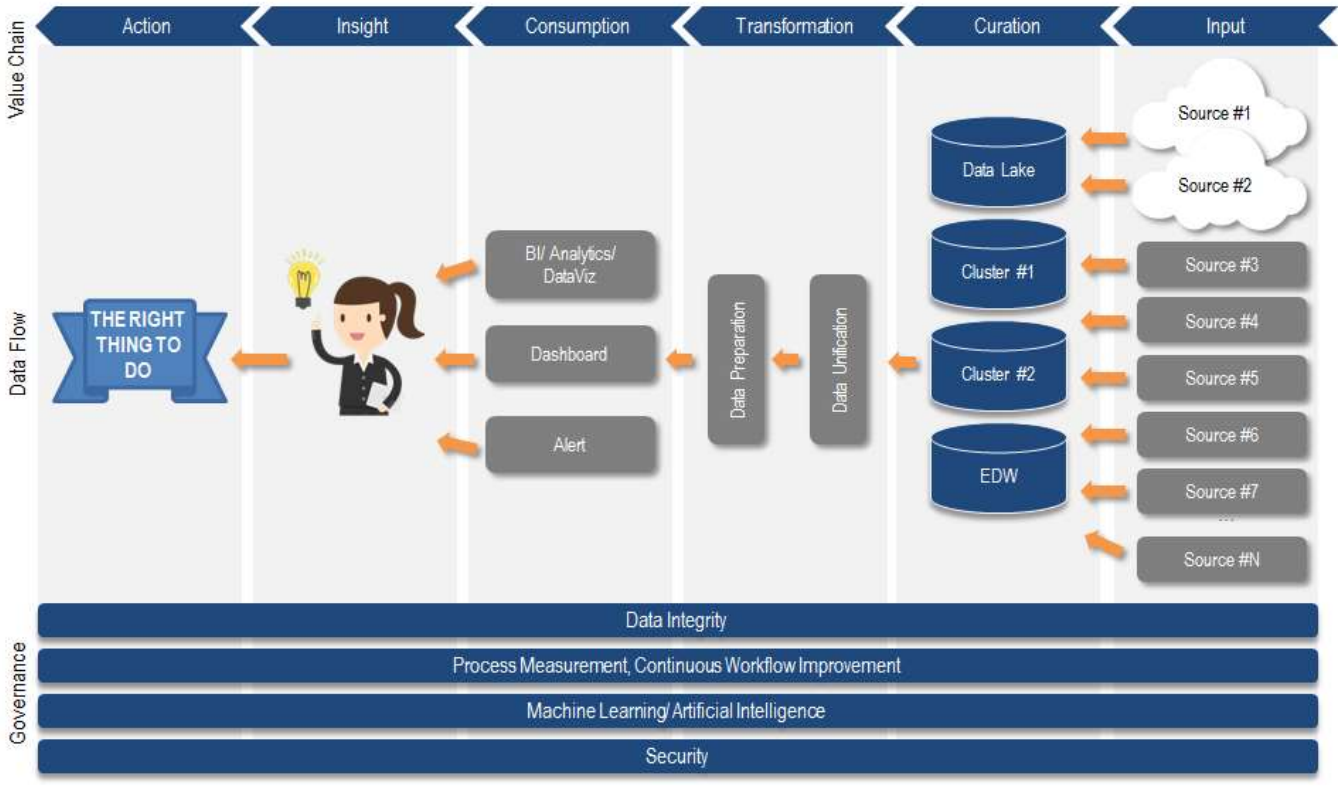
DataOps 101

In the Blue Hill Research Report "DataOps: The Collaborative Framework for Enterprise Data-flow Orchestration[1]," DataOps is defined as the

> ***[E]nterprise collaboration framework that aligns data-management objectives with data-consumption ideals to maximize data-derived value. DataOps "explodes" the information supply chain to create a data production line optimized for efficiency, speed, and monetization.***

Like a traditional DevOps model, DataOps builds upon a commitment to collaboration: DataOps establishes a collaboration layer that ensures goal alignment between those consuming enterprise data and those managing it. Underlying that collaborative ideal is a conceptual layer that maps end-to-end data workflows back from value to curation. Mapping data workflows enables enterprise data leaders to measure, then improve upon data-derived value delivery. Supporting the process are horizontal mandates of governance and security.

In principle and in practice, DataOps looks like this:



[1] http://bluehillresearch.com/dataops-the-collaborative-framework-for-enterprise-data-flow-orchestration/

Figure 1. DataOps "exploded-view" conceptual assembly-line context diagram with enterprise data value chain and horizontal data-governance-stack overlays.

Enterprises adopting DataOps embrace its three central principles:

1. **Global Enterprise Data View**: Define data journeys from source to action to value delivered, and measure performance across the entire system.
2. **Collaborative Thinking**: Structure organizational behavior around the ideal data-journey model to maximize data-derived value and foster collaboration between data managers and data consumers.
3. **Get in Front of Data**: Decentralize, then empower self-service data discovery and analytics throughout the organization.

In most cases, the first principle of DataOps (adopting a global enterprise view of business and data workflows) is key to breaking down siloed business process in an organization. But without corporate commitment to collaborative thinking and proactive data-workflow management, an enterprise won't escape the progress-limiting curse of corporate silos.

When Enterprise Data Collaboration Is More Difficult Than It Should Be

Most modern enterprises (understandably) segment roles into marketing, development, production, operations, finance, product management, customer support, sales, etc. Such traditional organizational delineation fosters specialization and provides structure for business operations. High-performing enterprises establish collaboration models (e.g., matrix org definitions) to ensure cross-functional productivity between groups.

But even the best-performing enterprises can struggle to share data. The notion of distinct groups working together toward a united organizational aim is noble. But often in practice, ingrained corporate cultural obstacles make achieving that noble collaboration objective painfully unrealistic. Those cultural obstacles can exacerbate data isolationism—and even lead to misguided, self-centered data protectionism—within those organizations. When it comes to collaboration, corporate cultural obstacles can create organizational silos around groups, making it more difficult to foster alignment. Enterprise leaders struggling to overcome silo obstacles may recognize these real-world organizational, architectural, and process-based silo examples:

- The customer-support team that establishes effective data-collection and data-analysis procedures, but can't unify leadgen data with an archaic CRM solution hostile to outside-API connectivity access.
- The finance team that works mightily to collect data from different teams, integrate it, then standardize it to produce static, instantly out-of-date performance reports illustrating what everyone already knows.
- The new subsidiary that balks at adopting new-parent data-sharing or data-curation models.
- Process stakeholders who own responsibility for, have skills in, and utilize specific technology for a single workflow function (e.g., data preparation), and emphasize it to such an extent that it hinders investment

in and progress of adjacent (and equally important) functions (like say, integration, curation, or discovery automation).

- The marketing group that plans campaigns based on gut instinct without input from other stakeholders because "it's the way we've always done it."

Several cultural challenges can reinforce perhaps-originally-well-intentioned yet misguided operations:

- **Politics/Reverse Incentives**: "My team competes for budget with another team, so it's not in my best interest to share with them."
- **Change aversion**: "We've always done it this way, and any learning curve for a new approach will be too costly."
- **Threat of innovation**: "I manually prepare this report. If we automate it, I'm out of a job."
- **Not speaking truth to power**: "My CXO introduced this approach. Changing it threatens my employment."
- **Ownership and trust issues that prevent transparency**: "My team produced this report with my team's investment. I am not comfortable sharing it with marketing."

Management consultants seek out such dysfunction to pitch reengineering projects. In the real-world examples above, it's not that process is broken. It's just wrong (or missing). And the impact those absent ideal processes—especially the collaborative aspect of "the better way to do things"— manifests itself in the organization's inability to derive maximum value from its data. It's easy to measure the cost of change. ("Those consultants are so expensive!") It's less easy to measure the lost opportunity cost of preserving the status quo.

How a DataOps Model Overcomes Silo Obstructions

So how do silos impact delivery? Let's start with a fundamental truth of the data-driven enterprise: Data workflows are business workflows. Seeing them any other way is short-sighted. This is a chicken-and-egg scenario: DataOps lowers the walls of silo-based operations, but at the same time, but DataOps benefits can't be reaped without a corporate commitment to eliminating enterprise silos, whether they're organizational, architectural, or process-based.

The collaborative data orchestration ideal of a DataOps business approach delivers tangible benefits to an organization…benefits that contribute to maximizing data-derived value:

- Transparency: Open data means accountability, auditability, and visibility. Organizations with data locked up in team, geographical, or divisional silos simply can't make the most of it.
- Control: Silos often rise when data ownership (and especially curation) is tied to specific groups, and then made worse when those groups are pitted against each other. (Picture the budget "Hunger Games.") Shared, democratized data socializes data distribution (and ultimately, value delivery), and centralizes

control with data management. Embracing that basic premise enables better data governance within the organization.

- Expediency: DataOps is predicated on automation. Enterprises that seek to preserve antiquated, manual processes handicap their own success, making it more difficult for line-of-business stakeholders to get in front of their data.

DataOps is both a top-down data-management model and bottom-up collaboration framework. In that regard, its successful employment requires buy-in at multiple levels and from multiple stakeholders in the organization, including the C-suite, data management teams, and line-of-business end users. Getting to that point data-management alignment is easier said than done, and can require significant internal evangelism.

So how can an enterprise move from the "ugly before" of value-delivery-limiting silo culture to the "happy after" of efficient, dynamic, value-maximizing DataOps? To start, it requires a commitment to best practices. Enterprises willing to adopt the continuous improvement required of DataOps must ask themselves, "If we were designing net-new data workflows from scratch, would they look like our existing processes?" (Spoiler alert: The answer is rarely yes.)

As with any good self-help program, Blue Hill Research recommends a 12-step approach for enterprise DataOps adoption:

1. Commit to change. This is often the most difficult cultural challenge in an organization.
2. Observing DataOps principles, idealize data workflows to maximize value delivery.
3. Audit existing data workflow architecture, all the way along the value chain from curation to consumption.
4. Compare/contrast the ideal with existing to identify gaps.
5. Recognize that manual data manipulation should rarely if ever be a critical-path exercise.
6. Establish performance metrics (e.g., time to insight, data-derived value measurement, etc.).
7. Identify technology(ies) to enable delivery at each process step.
8. Evangelize to internal stakeholders. Many organizations employ Center of Excellence (CoE) teams with cross-functional ownership representation to drive enterprise DataOps adoption.
9. Migrate.
10. Operate.
11. Measure.
12. Iterate. (Go back to step #1.)

How DataOps Technologies Enable Practical Silo-busting

DataOps is a technology-driven conceit. Technology enables DataOps, leadership commitment to innovation drives its adoption. DataOps transforms data leaders from ad-hoc reporters to proactive performance monitors.

DataOps is a value-chain-based way to orchestrate tangible value delivery, and different technology vendors take different approaches to packaging the enabling services. There are end-to-end-of-the-value-chain, full-data-stack (or nearly-full-data-stack) platform solutions from vendors like Informatica[2], Teradata[3], SAP[4], and Microsoft. There are workflow-step solutions that aim to offer best-in-class process technology, such as that served by vendors like Trifacta[5] (data prep), Tamr[6] (data unification), or Alation[7] (collaborative cataloging), or Tableau[8] (BI). Worth noting: Nearly every single-process-step solution provider (including the ones listed above) have expanded into fuller-spectrum, up-or-down-the-value-chain technology extension, or partnered with complementary-technology vendors. (Tableau, for instance, will soon offer data preparation and data integration tools to complement its namesake analytics solution. Similarly, Alation has recently announced alliances with Teradata and Trifacta.)

Companies like Nexla[9], Composable Analytics[10], DataKitchen[11], and Switchboard Software[12] treat data management and data delivery as discrete functions, and offer DataOps-as-a-Service-type solutions (though not necessarily only cloud-based). Switchboard, for instance, effectively provides outsourced data curation, data integration, and data preparation functions as a packaged service. ("DataOps" rolls off the tongue easier than "DCDIDPaaS.")

DataOps' capability to overcome silos is best exemplified with real-world case examples.

Western & Southern Financial Group

Cincinnati-based Western & Southern Financial Group provides diversified financial, insurance, and real-estate management services to its clients. The company has grown dramatically in the past decade, in no small part due acquisitions. Integrating new-subsidiary data is not trivial, particularly when different divisions report in their own unique ways. Additionally, data management is performed in a highly-regulated environment. When

2 http://www.informatica.com
3 http://www.teradata.com
4 http://www.sap.com
5 http://www.trifacta.com
6 http://www.tamr.com
7 http://www.alation.com
8 http://www.tableau.com
9 http://www.nexla.com
10 http://www.composableanalytics.com
11 http://www.datakitchen.io/
12 http://www.switchboard-software.com

employees providing claims-processing needed to review data, their requests could require diving into dozens of different data systems, a manual approach that simply wasn't scalable.

Working with technology from **Informatica**, senior technical analyst Randy Murphy and team built an information hub that standardized and unified data across Western & Southern's disparate data sources. The resulting service bus means data is no longer trapped in its legacy silos, and that claims processors enjoy one-step access to data.

VICE Media

VICE Media is a digital media and linear television company. It pushes its media through numerous channels, including its VICELAND cable network. Director of Revenue Operations Jay Glogovsky oversees DataOps in practice enabled by DataOps technology from **Switchboard Software**. Switchboard provides cloud-based, integrated data curation, unification, and preparation and real-time monitoring services so VICE can drive its business based on data.

Glogovsky describes the pre-Switchboard days as "challenging without any data insight." Data was fragmented, and business decisions were hard to navigate without essential data, a risky proposition in the fast-paced media world. Since VICE adopted Switchboard, Glogovsky and team have been able to unify previously unintegrated data, enabling the company to embrace data-driven action (and reduce reliance on gut-based decision-making), and eliminated unexpected surprises with data visibility.

Marion Body Works

Marion Body Works is a Midwestern manufacturer of commercial truck components, serving commercial, municipal, and defense industry customers. (That fire truck that just passed probably has a Marion Body Works-built cab.) When VP of Information Technology & Information Systems Vincenzo Speziale joined Marion Body Works a few years ago, he encountered data-workflow processes weighed down by static, manual reporting methods. Data was trapped in organizational silos, typically stored in static spreadsheets buried in individual departments.

Speziale implemented a data integration, preparation, and analytics solution using software from Domo[13]. Data is fed from Marion Body Works' data warehouses into cloud-based Domo, where it is—as Speziale puts it—"aggregated the way I want it." The business impact was substantial: The Domo-enabled digital transformation has changed how Marion Body Works makes business decisions. Reporting is dynamic, and data is shared across divisions…two process improvements that have increased visibility *and* accountability. Next steps include extending Domo data-layer transparency all the way to the manufacturing shop floor.

[13] http://www.domo.com

ServiceChannel

ServiceChannel develops software for facilities-management teams. ServiceChannel is a marketplace built to scale: Its cloud-based service automation and reporting platform enables more than 450 global brands to track performance of more than 200,000 locations worldwide.

Five years ago, ServiceChannel stakeholders recognized that it—and more importantly, its customers—could derive more value from data. ServiceChannel data teams were scrambling to develop and deliver ad hoc reports for clients in a timely fashion. ServiceChannel had to manually manage a work pipeline, an unscalable logistics task made more complex with exponentially-growing customer data management needs.

ServiceChannel turned to cloud-based software provider GoodData[14] to help clean up and automate its data processes, and to offer customers an intuitive, easy-to-use BI solution. ServiceChannel VP, Marketplace Strategy & Experience Sid Shetty and his team worked to move its reporting engine and platform to the GoodData cloud, and then onboard customers. The impact? Improved dashboards, dynamic data, better-informed customers. From a DataOps perspective, the GoodData deployment established transparency from ServiceChannel corporate all the way down to individually-managed facilities: Data now flows up and down the chain dynamically, giving both company and customer visibility into operations, and facilitating near real-time management action upon data. As Shetty concludes, "Our vision for the future is to help our customers make the right decision when they actually need it, so they're not just always looking in hindsight."

Macquarie University

Sydney, Australia's Macquarie University maintains an enrollment of 40,000+ undergraduate and graduate students. Serving the data needs of such a large and diverse institution requires coordination between disparate academic and administrative departments, a daunting task that used to be complicated by a lack of standard data management procedures.

A few years ago, the newly-formed BI & Analytics team aimed to improve enrollment trend tracking, but faced the challenge of collecting, then unifying data. As Banmali Pradhan, BI specialist at Macquarie explains, data was trapped in spreadsheets within individual groups, often isolated on individual laptops. Macquarie looked to BI solution provider Yellowfin[15], and now employs its software for data curation, integration, preparation, and analytics. According to Pradhan, Yellowfin has greatly improved data-sharing across departments, in particular cross-functional reporting, and has enabled the university to shift from spreadsheet-based tracking to web-based dashboarding. The marketing team now tracks enrollment trends better, and can act upon insight faster.

JJ Foods

JJ Foods leverages cloud, CRM, and analytics tools from **Microsoft** to manage its data supply chain. The UK-based food-service specialist serves food-industry sector customers including restaurants, pubs, schools, hotels,

[14] http://www.gooddata.com

[15] http://www.yellowfin.bi

and more. JJ Foods prides itself on its customer service, and offers same-day collection and same-day (or next-day) delivery to all customers, seven days a week.

That level of customer-service responsiveness requires sophisticated (and complicated) logistics management, from corporate headquarters to warehouse branch to delivery truck. JJ Foods now employs comprehensive data management from Microsoft to support that logistical chain. Chefs and restaurateurs can order stock via mobile app (using a UI-based recommendation engine tailored to each specific customer). Delivery drivers refer to their own mobile app to optimize delivery efficiency—and IoT sensors within those delivery trucks report back monitored data to corporate. When customers sign for deliveries, their purchase data flows upstream. JJ Foods orchestrates its business using data integration from Azure Data Factory, machine-learning-driven customization from Azure ML and Cortana Intelligence Suite, CRM tracking via Dynamics, and curation with Azure. It's a DataOps workflow that enables JJ Foods to push the envelope of customer (food) service logistics.

"ABC Retail"

ABC Retail (not its real name) operates 30+ consumer businesses, delivering products through online and retail channels. ABC's success depends upon how well it uses data to understand its customers. In the past, ABC consolidated subsidiary data. The centralized approach simplified curation, but—ironically—complicated division-specific reporting. Without the capabilities to pull, integrate, and assess divisional-specific data, ABC was re-establishing subsidiary-specific data silos, just in one place. Getting trustable data was manual, expensive, and untenable. Worse, aggregated-data reporting tended to obscure performance (good and bad) of smaller-division operations.

Last year, ABC's data lead connected with **Anodot**[16]. Anodot's anomaly-detection software would enable ABC to analyze subsidiary data across multiple dimensions. ABC trialed Anodot with live data, and soon adopted it.

Anodot has helped ABC Retail pull data out of organizational silos, improve cross-functional transparency across the distributed enterprise, and accelerate time to insight-informed action. ABC now tracks both online and brick-and-mortar store performance with more than 260,000 real-time metrics culled from back-end and third-party data sources. Algorithms identify patterns and recognize anomalies, and then alerts notify the right people to take action. In one case, ABC quickly identified root cause of a retail revenue dip: An increase in HTTP and API errors coincided with the implementation of a new online checkout upgrade that was timing-out some purchases. The issue was addressed within one day. These were high-volume transactions: Before Anodot, troubleshooting would have taken up to a week, and ABC would have incurred seven-figure losses.

Conclusion

Too many organizational leaders accept, ignore, or, remain blissfully unaware of the costs of corporate silos. The cost of doing nothing is higher than most wish to contemplate.

16 http://www.anodot.com

Silos can be organizational (functional, divisional, geographic), architectural, or process-based. When data flow between/around/through silos is limited, progress is limited too. Silos both foster and reinforce enterprise complacency. For many years, business-school professors have preached a practical, forward-looking product-management philosophy: "Cannibalize yourself before a competitor does it for you." (Talk amongst yourselves: Blockbuster v. Netflix. Discuss.)

Digital transformation must become a mandate for old-world companies. For new-world enterprises, the free flow of data, its accessibility, its integrity, and its immediacy are all operational *starting points*. (Refer to VICE Media above. "Net new" means no costly migration.) We have entered a new world where competitive advantage is to be gained not just through product. It's one thing to build a better mousetrap. It's quite another to build the next one. If in building that first mousetrap an enterprise silos its data, the next great mousetrap will come from a competitor. The new metric of competitive differentiation is data-workflow efficacy: Enterprises that can derive the most value from their data will win. DataOps is the engine to do that.

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Toph Whitmore is a Blue Hill Research principal analyst covering the Big Data, analytics, marketing automation, and business operations technology spaces. His research interests include technology adoption criteria, data-driven decision-making in the enterprise, customer-journey analytics, and enterprise data-integration models. Before joining Blue Hill Research, Toph spent four years providing management consulting services to Microsoft, delivering strategic project management leadership. More recently, he served as a marketing executive with cloud infrastructure and Big Data software technology firms. A former journalist, Toph's writing has appeared in GigaOM, DevOps Angle, and The Huffington Post, among other media. Toph resides in North Vancouver, British Columbia, Canada, where he is active in the local tech startup community as an angel investor and corporate advisor.

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