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The Data Fabric Advantage: De-Silo Your Data for Rapid Innovation

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Data, data, everywhere, but not a drop to use.

Organizational progress starts with getting data right. But for IT teams, data has typically been more of an obstacle than an asset.

In 2021, 81% of businesses still did not have a solid strategy in place to use the full potential of their data.¹ And this problem is only becoming more urgent—thanks to companies adopting more technology each year, data is proliferating.² For organizations that have a strong data strategy to manage this growth, new opportunities abound. For those that don't, it's a curse of untapped potential.

Your business users want data-driven solutions and applications that give them a 360-degree view of operations, but data is often siloed and inaccessible. Integrating this disconnected data is fraught with challenges, including:

- Expensive technical integration efforts.
- Change management as data models and business requirements evolve.
- Data security to ensure effective governance of enterprise data.

But you can't stop innovating. Change in enterprise technologies is continuous—and accelerating. You need to be at the forefront of enabling data-driven change, or else you risk holding growth back.

So ask yourself: How strong is your data strategy? Will it enable you to turn data into an asset and cover rough data terrain efficiently and effectively? If not, you have options, which we'll dive into in the next section.

“The Global DataSphere is expected to more than double in size from 2022 to 2026. The Enterprise DataSphere will grow more than twice as fast as the Consumer DataSphere over the next five years, putting even more pressure on enterprise organizations to manage and protect the world's data while creating opportunities to activate data for business and societal benefits.”³

John Rydning,
Research Vice President, IDC's
Global DataSphere

¹ The Rise of the Data-Driven Enterprise | Accenture

^{2,3} Worldwide IDC Global DataSphere Forecast, 2022–2026: Enterprise Organizations Driving Most of the Data Growth

Get to know 4 popular data strategies.

Out of the many proposed solutions for managing data, which one will solve this data problem? Review four popular data strategies—data warehouses, data lakes, data meshes, and data fabrics—and find out the best use cases for each.

Data warehouse.

What it does: Replicates structured data from its source by routinely extracting data out of each system, transforming it into a defined structure, and loading it all into a new system for reporting and data analysis.

Ideal use: Reporting and data analysis. Activating the data is streamlined since all the work has been done to mold the data into a usable, optimal format. A data warehouse works well with defined, orderly information.

Drawbacks: Massive engineering resources are required to extract, transform, and load data into data warehouses. A warehouse is not ideal for housing unstructured data.

Data lake.

What it does: Stores unstructured, semi-structured, and structured data from its source by lifting raw source data out of each system and loading it into one new system to support data science, machine learning, and analytics.

Ideal use: Data science, machine learning, and analytics. A data lake is more flexible than a data warehouse since there is less pre-work involved in getting new data into the lake. Additionally, a data lake supports big data sets needed for complex data science and advanced machine learning, and works well for housing data that may have unclear strategic potential or relationships.

Drawbacks: A data lake requires complex engineering resources to make the raw data in the lake usable. Data scientists must engineer sophisticated data pipelines to take loosely structured data and process it into usable insights.

Drawbacks to both data lakes and data warehouses:

- **Complexity.** Given the complexity of transforming and transferring data, warehouses and lakes have not traditionally been a good solution for the transactional data you'd use to support real-time operations.
- **Overhead costs.** Added development, maintenance, and upkeep introduces operational overhead.
- **Risk scales.** Complexity and risk of failure scale along with your organization and systems.
- **Data integrity issues.** Lakes and warehouses risk data integrity by introducing a new source-of-truth system that is abstracted away from the originating source of data with complex transformation logic.

Data mesh.

What it does: This architecture and management approach relies on connecting domains of data through web services that are curated by subject matter experts.

Ideal use: Connecting data domains. A data mesh effectively connects systems while allowing data to stay where it lives and maintaining that original source of truth.

Drawbacks: A data mesh requires software engineers and subject matter experts to build and manage connections between data domains. The decentralized nature of a data mesh requires active governance and alignment of subject matter experts to continuously manage and coordinate connected data domains.

While strategies like data warehouse, data lake, and data mesh serve specific purposes, they don't meet organizational needs to build real-time applications that deliver a 360-degree view of operations. But there's one data management strategy that does.

Data fabric.

Meet data fabric. A data fabric is a rapidly growing technology solution to discover enterprise data and prepare it for use across a variety of organizational needs. Instead of a conceptual architecture like a data mesh, a data fabric is supported by key enabling technologies that make data easily reusable across your enterprise.

“With data fabric, you can stop spending endless cycles of money and staff effort that merge, remerge and redeploy silos of data management with new siloes.”⁴

Gartner®

A data fabric gives you four key advantages:

1. Discover your data.

Thanks to a data fabric's codeless data modeling capabilities, you can quickly connect existing sources of data or even create new data models for your projects. Once you've pinpointed the data you need, you can even enhance that data with custom calculations and intelligence. For example, you can build new relationships between data points and databases via the data fabric as well as transform and manipulate existing columns into new fields of data. This creates new context and meaning for your data—quickly and simply.

2. Unify data sources.

Once you've connected your data, a data fabric establishes a unified data model, which is managed in a single virtualized layer. The data fabric stays in sync with your data sources so that data is always kept up to date in both places. You can now work in a layer above the data, avoiding complex database work and gaining a complete view of disparate data systems.

3. Create unique security controls.

Organizational data security across systems is always a daunting challenge, but a data fabric makes building powerful security controls simple. Rather than having to manage different individual access controls across each of your systems, you can manage them in the data fabric. Create security patterns with unique conditions so that only certain users can see certain data. Once you've created your secure framework, you can confidently build applications and share access knowing your security will stay intact.

4. Optimize your data—automatically.

When data access permissions need to change in your applications, you'd typically have to call in advanced data experts to tune your data structure to keep each application performing well. But with a data fabric architecture, you eliminate the need for complex tuning. How? A data fabric automatically detects data pattern access and reshapes the data for optimum performance. Thanks to this automatic tuning, you're freed to focus on digital innovation without the burden of ongoing and costly data management.

⁴ Gartner® Top Strategic Technology Trends for 2022: Data Fabric, 18 October 2021. GARTNER is a registered trademark and service mark of Gartner, Inc. and/or its affiliates in the U.S. and internationally and is used herein with permission. All rights reserved.

A data fabric is the best data management option for organizations that want to build real-time applications with a 360-degree view of their operations. Compare the four data strategies to see why.

Comparing Four Popular Data Strategies

	Data Warehouse	Data Lake	Data Mesh	Data Fabric
Connects data from original systems	●	●	●	●
Offers agile data modeling	●	●	●	●
Manages historical data	●	●	●	●
Manages transactional data	●	●	●	●
Democratizes data access	●	●	●	●
Centralizes data governance	●	●	●	●
Provides speed to value	●	●	●	●
Can be done without data engineers	●	●	●	●
Can be done without software engineers	●	●	●	●

Table Key

● No ● Sometimes ● Yes



The end-to-end procurement process, modernized and accelerated.

General Services Administration (GSA) is a U.S. government agency that helps manage and support the basic functioning of federal agencies. The GSA needed an application platform to modernize operations across core areas within the agency.

They built an application on the Appian Platform, called “Electronic Acquisition System Integrated” (EASi), to accelerate and modernize the end-to-end procurement process, from initial request through solicitations and contract writing, administration, and close-out. Built with a simple social interface, the application leverages Appian’s data fabric, as data integration is central to GSA’s vision for improved procurement case management.

[Read the GSA story](#)



How a data fabric works—in practice.

With a data fabric, developing data-driven solutions across any process or industry is faster and easier. To showcase a data fabric in action, let's look at an example.

Example: A data fabric for a customer call center process.

A multinational bank needs to improve their customer call center process. It's a key business process tied to important metrics like customer satisfaction and customer experience that drives the business's bottom line.

But the situation is complicated. The parent company owns multiple organizations that each use different CRM software. That software spans multiple on-premise and cloud call routing systems and emailing tools, and there are different instances of the same CRM software with unique logins that have never been migrated. Each call center agent should have easy access to all customer information, but because systems are siloed, they don't always.

See the next page for a visual example.

Here's how the as-is call center process might look:

The company has had lots of mergers and acquisitions activity over the past few years and IT hasn't had the resources to migrate all the data into one system. A couple integration projects are active, but they've dragged on due to competing priorities and unexpected challenges finding technical expertise.

Before.

Request

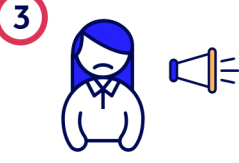


1 The customer calls with a request.

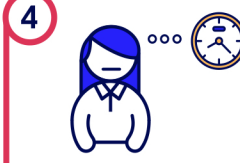
Resolution



2 The agent needs to search five different databases to find the right customer record.



3 The customer has to provide their information multiple times as the agent navigates the different systems.



4 As the customer waits on hold for their issue to be resolved, the agent scrambles to find the needed information.



5 They encounter a database they don't have access to. They try to log into another system they hope has what they need but aren't successful.

Result



6 They go to their manager for help. Eventually, they find the information they were looking for.



7 After a lengthy phone call, the issue is resolved, but the experience was so poor, the customer leaves a negative review of the company.



8 After a while, none of the agents at the company can handle enough cases per day, leading to unmet goals and long wait times for customers.



9 Agents become very frustrated and feel helpless with the process. Leadership can't expand headcount, and attrition in the Customer Service department is up.

After.

Request



1 With the new application now in place, a customer calls in with a request.

Resolution



2 The centralized app gives agents a 360-degree view of the customer. Everything relevant to that customer, across all the databases, surfaces.

Result



3 The agent places the customer on a brief hold, finds the requested information, and quickly gives the customer their answer.



4 The customer ends the call feeling satisfied with the service experience, and the agent continues to the next customer in the queue.

Here's how the company reworked their process in the "After" version:

The IT team creates an application that uses a data fabric to pull data from the five different systems into a centralized call center dashboard. Because they use a data fabric, the data can stay where it lives. Building the application on a process automation platform with a built-in data fabric takes them just eight weeks. When the company makes another acquisition, IT integrates their data into the centralized dashboard simply by connecting those new sources into the data fabric.

As you can see, a data fabric can completely streamline this type of process by democratizing access to the organization's many sources of data through a unified architecture.

Of course, there's more to a process like this than just bringing data together. In fact, data is usually only the beginning. You can build in automation, using tools like robotic process automation (RPA), to complete the monotonous, time-intensive tasks that employees get stuck with. You could apply intelligent document processing (IDP) to extract information from documents. **But when you are blocked from your data, the basic starting point of any project, your process improvement effort may never get off the ground.**

Consider a few other processes where a data fabric could help:

Government acquisition management.

Give groups of employees different permissions for an acquisition management application so they can see what they need to see in one central place.

Anti-money laundering (AML).

Track all potential AML cases—along with their case information, documentation, comments, and collaborations—by connecting all data sources in one interface.

Vehicle service request.

Bring together different supplier databases so employees can fulfill parts requests for dealerships.

Retail returns.

Set up viewing permissions in an application so the customer service department can access purchase information and process returns.

Equipment repair.

Unify data so employees can manage the aftermarket service repair process, from receipt of the broken equipment to shipping it back to the customer.

Pharmaceutical development.

Track cases from start to finish in one case management solution that draws on all needed data sources.



9x faster customer service.

Check out a real-life version of a company improving their call center process with a data fabric. Insurance company Aviva unified 22 different systems with Appian's data fabric, allowing them to perform all call center operations from one unified platform. The result? A 9x acceleration in customer service response times.

[Read the Aviva story](#)

Why a data fabric is game-changing for organizations.

Now that you've seen how a data fabric works, here's why it matters. A data fabric can help your organization overcome four data problems so common, they've become the status quo.

Data Problem	How a Data Fabric Helps
<p>Disparate data sources.</p> <p>Gaining a truly complete view of data feels nearly impossible. Huge amounts of data are siloed across disparate systems, and attempts to collect data in a single location have created unmanageable workloads for IT. Complex data integration and migration projects get bottlenecked even further due to additional database and API development needs.</p>	<p>Complete view of unified data.</p> <p>With a data fabric, you gain a complete view of the data in your organization and dramatically simplify the process of integrating data systems. A data fabric's ability to connect to data sources and auto-sync with no-code integrations allows you to work with data in real time, so you never risk relying on stale data. And a data fabric also eliminates complex database tuning, further removing the need for advanced technical expertise.</p>
<p>Complicated organizational data security.</p> <p>A growing number of systems with users who need different levels of access is daunting for IT teams to manage. As new staff are onboarded, change roles, or leave, these hard-coded permissions need to be updated. Often, users need to request access to individual systems to get what they need.</p>	<p>Democratized data access.</p> <p>Because you can govern precise access to all your data in one central location, a data fabric empowers more users to securely build and access new digital solutions using your enterprise data.</p>
<p>Obstacles to speed.</p> <p>A scarcity of technical database admins and developers delays projects, strains resources, and keeps you from working on other critical initiatives, from regulatory compliance to internal organizational improvement.</p>	<p>Accelerated application development.</p> <p>Data fabric's codeless data modeling capability allows you to quickly connect data across sources. You can reuse any components you design across applications, so you don't need to build data connections twice. Codeless data modeling also enables business users without coding skills to work with data.</p>
<p>Too much guesswork.</p> <p>Because of the many obstacles to accessing your siloed data quickly, business users are limited to making decisions based on whatever data is available, which may be out of date or inaccurate.</p>	<p>Data-driven decision making.</p> <p>A data fabric creates an intelligent digital enterprise, enabling your organization to manage, integrate, and innovate on data. With a complete view of enterprise data, leaders can make smarter and faster decisions. The new relationships you can build in the data give business leaders context and meaning quickly.</p>



A data fabric transforms your entire operation.

With a data fabric, your IT team can turn data into an asset that enables the rest of the organization to grow. Harness the power of data fabric to accelerate innovation that will carry you into the future.

The Appian Platform provides everything you need to build powerful low-code applications, including a data fabric, automation capabilities, and process mining. By combining a data fabric with process automation capabilities, Appian lets you de-silo your data and build powerful applications that deliver a 360-degree view of your organization. [Check us out.](#)



Appian is a software company that automates business processes. The Appian Platform includes everything you need to design, automate, and optimize even the most complex processes, from start to finish. The world's most innovative organizations trust Appian to improve their workflows, unify data, and optimize operations—resulting in better growth and superior customer experiences. For more information visit [appian.com](https://www.appian.com). [Nasdaq: APPN]