The Data Fabric Guide for Public Sector Leaders

Unify data across your legacy systems.

What is a data fabric and what is it used for?

Government organizations vary in their mandates, jurisdictions, functions, and areas of focus. But they all have one thing in common: too many legacy systems.

Some legacy systems persist because of their longevity and others because of the complexity of custom-built solutions. These systems, once implemented, can remain operational for decades due to the substantial costs and challenges associated with replacing them.

The unintentional result of all of these legacy systems is siloed data. It's a huge detriment, because agencies need to access vast amounts of data stored within these databases for ongoing operations and decision-making.

Solutions have emerged for managing organizations' ever-increasing volumes of data, such as data warehouses, data lakes, and data meshes. But for most public sector organizations with complex data structures, they're just not enough.

Each solution attempts to solve the challenges of joining data across disparate sources. Yet they all have shortcomings for managing data efficiently. Some increase or shift technical debt or involve long and costly data migrations. Others reduce data integrity and compromise security.

To overcome these enterprise data management challenges, **what many organizations need is a data fabric.**

Let's define data fabric: Fundamentally, a data fabric is a virtual database. It's a semantic layer that sits on top of different data sources and brings them together—without moving anything. Data fabric connects data across disparate systems and creates a unified view. That means you don't need to migrate information from where it currently lives— in a database, ERP system, or CRM application, on-premises or in a cloud service.

A data fabric approach enables reading and writing to all data sources and querying multiple sources as if they're combined. It lets organizations merge data in entirely new ways, which is a particularly powerful benefit for digital transformation work. By connecting to the data directly where it lives, it provides the ability to spin up applications and make data-driven decisions faster.

Organizations everywhere are using data fabric to expand access to information and create a single, secure, complete view across their enterprises, driving digital innovation and better decisions.

Lake, warehouse, mesh, fabric—What's the difference?

Data management terminology quickly gets confusing, so let's demystify some terms.

Data lake and data warehouse.

A data lake puts all types of unstructured data, such as tables, documents, images, and videos, into a single repository. Data warehouses collect structured data, such as Excel files and SQL databases. Both storage options require lifting all of the content out of each system and loading it all into one new system (the lake or warehouse).

Data lakes and data warehouses are well-suited to analytical work with historical data, but they don't support transactional systems that require real-time data. Another challenge with using data lakes and warehouses is that shifting the data out of a siloed system and into the lake or warehouse incurs additional development time and development costs.

Data mesh.

Like a data fabric, a data mesh connects directly to your data sources with no need for data extraction. This allows real-time access to data and eliminates timely and costly migration projects.

However, a data mesh uses complex API integrations across microservices to stitch together systems across the enterprise. So, while organizations avoid a lot of data engineering work, they trade it for additional software development to deal with the APIs.

Data fabric.

What makes data fabric unique is its ability to create a virtualized layer on top of data sets, removing the need for the complex APIs and coding that a data mesh or data lake requires. This gives teams added speed and agility for data analysis, data modeling, and digital transformation.

Read our related article: Data fabric vs. data mesh vs. data lake.

Why use a data fabric? Why is it important for public sector organizations?

A data fabric architecture lets you quickly connect data across enterprise silos. But many data management tools out there claim to do this. So why specifically use a data fabric?

As noted earlier, organizations deal with two types of data: transactional and historical. Transactional data is "living data," constantly changing as it's used, such as in case management systems, CRM software, and other applications that support real-time operations. Analytical data is historical data. It is a view into the past—unchanging and immutable.

Unlike data lakes and warehouses, a data fabric accommodates both types of data and thrives in situations where information is constantly changing, such as applications where partners regularly share data. Because data is virtualized and connects directly to source systems, a data fabric enables easy reading and writing to those systems, no migration work required. Teams gain real-time data for real-time insight. This centralized data source provides a complete view of enterprise data—a holy grail that many organizations have chased for years in search of better business outcomes.

A key reason to use a data fabric is that it covers both transactional systems that require real-time data and analytical systems that depend on historical data.

What is a data fabric used for? Public sector examples.

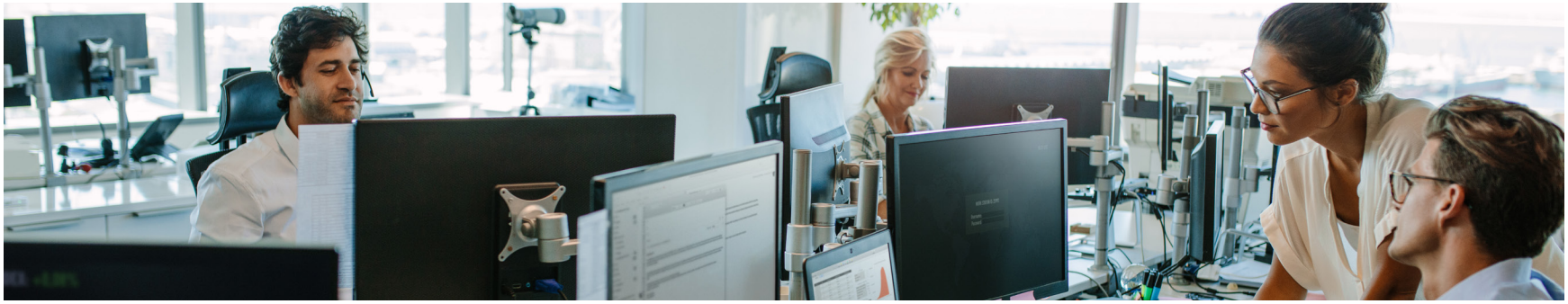
What does a data fabric look like for government organizations? Because they connect a wide range of data sets, data fabrics can be used for many different use cases. And they work better as part of a process automation strategy. Let's look at just a few examples of how a public sector organization could use a data fabric to connect disparate data sources across the enterprise to improve visibility and efficiency.

Data fabric in procurement.

When it comes to procurement in state and local government, agencies often complain that they can't buy the goods and services they need fast enough.

Procurement processes are complex and involve multiple entities, including legal, compliance, accounting, and technology. Agencies typically have disparate systems for procurement activities, contract management, finance, accounts payable, invoicing, and beyond. Much of the information needed to create requirements packages, evaluate vendors, and manage awards is stored in various spreadsheets, shared drives, SharePoint, Word documents, and so on. This makes it hard for stakeholders to find the information they need, slowing down their work. Duplicated effort and more errors often result as well.

Data fabric integrates previously disjointed systems, and configurable solutions—such as Appian's solutions for federal acquisition and state and local eProcurement—use process automation and AI to streamline the procurement process from end to end. Pulling the right data into an automated workflow while providing a centralized, transparent view for all stakeholders improves collaboration and reduces lead times.



Data fabric in HR.

HR in the public sector involves a long, complex, multifaceted set of processes: onboarding and offboarding, management of the hiring pool, employee lifecycle management, security screening, and more. Data is typically stored in disjointed systems such as ADP, Peoplesoft, Phoenix, SAP, and Workday. The manual procedures required to merge data from these core systems create inefficiencies and leave room for human error.

A data fabric unifies data from disjointed systems. When a data fabric is used in conjunction with a process automation platform that centralizes and automates human resources tasks, users gain enterprise-wide visibility and can control processes and data across the entire employee lifecycle. This might involve streamlining processes through automatic routing of approvals and documents or eliminating repetitive tasks such as managing shift assignments, measuring time and attendance, and administering payroll and leave.

Since a data fabric accesses and centralizes data from across the enterprise, it eliminates the need to swap out legacy systems, an undertaking that is costly, lengthy, and error-prone. By using a data fabric, organizations gain modern applications while maintaining their current systems of record.

Data fabric in law enforcement case management.

Police departments and other law enforcement agencies need to manage the full lifecycle of an incident, from the initial report through building and preparing the case for court.

End-to-end visibility is vital for effectively managing cases. With multiple departments and stakeholders saving information in disparate systems (records management, evidence management, forensics, crime databases, whistleblower and tips portals, crime mapping software, and so forth), there needs to be a way to pull all of the information together.

A data fabric can connect disparate systems and data sources without coding, providing a 360-degree view of a case even when stakeholders enter information in different systems. This helps law enforcement solve cases faster and improve resolution rates.

What are the benefits of using a data fabric?

Without a data fabric, organizations have to migrate data into proprietary third-party systems. Nothing is in sync, and data integrity issues constantly need to be addressed. You lose flexibility and, what's more, a third party has access to your data, so you lose control as well.

But with a data fabric, removal of the data migration step translates into faster application development, which is a key difference between data fabrics and data warehouses or data lakes. And particularly at times of competitive disruption or economic recession, every public sector leader wants this speed and flexibility.

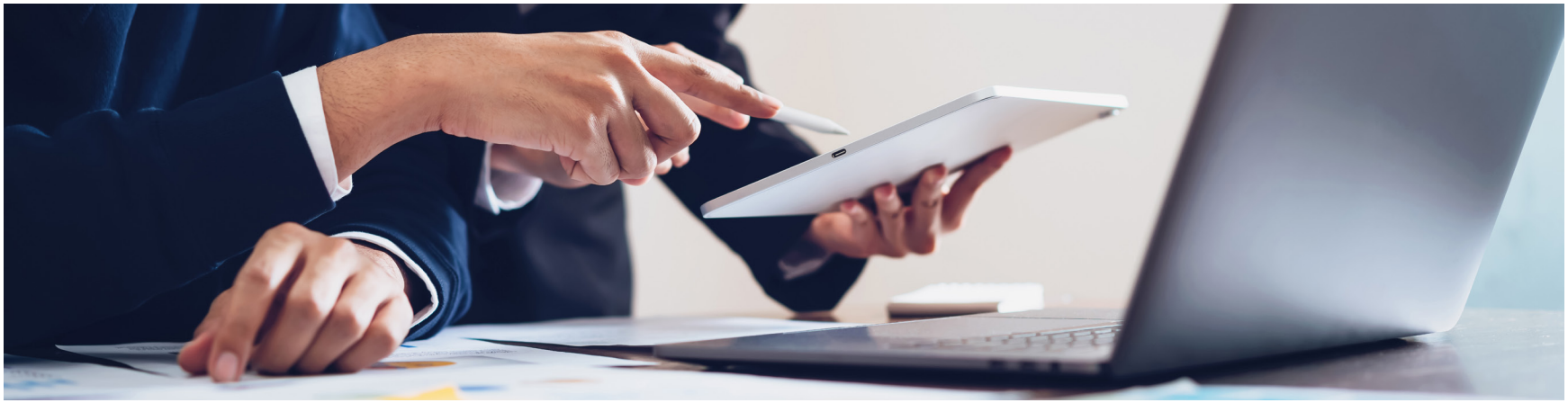
Due to its flexible architecture, a data fabric easily accommodates changes and updates to data models over time. Because it's a virtual data layer that sits on top of data, complex maintenance work isn't required, and organizations can quickly add, delete, and relate sources as business needs change.

Data fabric architecture delivers even more value when it's combined with low-code data modeling tools that have record-level security.

Appian's data fabric lets you leave your data where it is, maintaining its integrity and security, and Appian customers see the difference. Our data fabric is one of the most successful and meaningful features we've ever launched: 94% of new customers adopt it, and it's been used for almost a billion queries. It's powering incredible insights and enabling secure, easy access to data for our customers.

Top data fabric benefits include:

- Improved speed and agility.
- Democratization of data modeling.
- More actionable insights.
- Centralized data management for improved security and compliance.



What are the IT benefits?

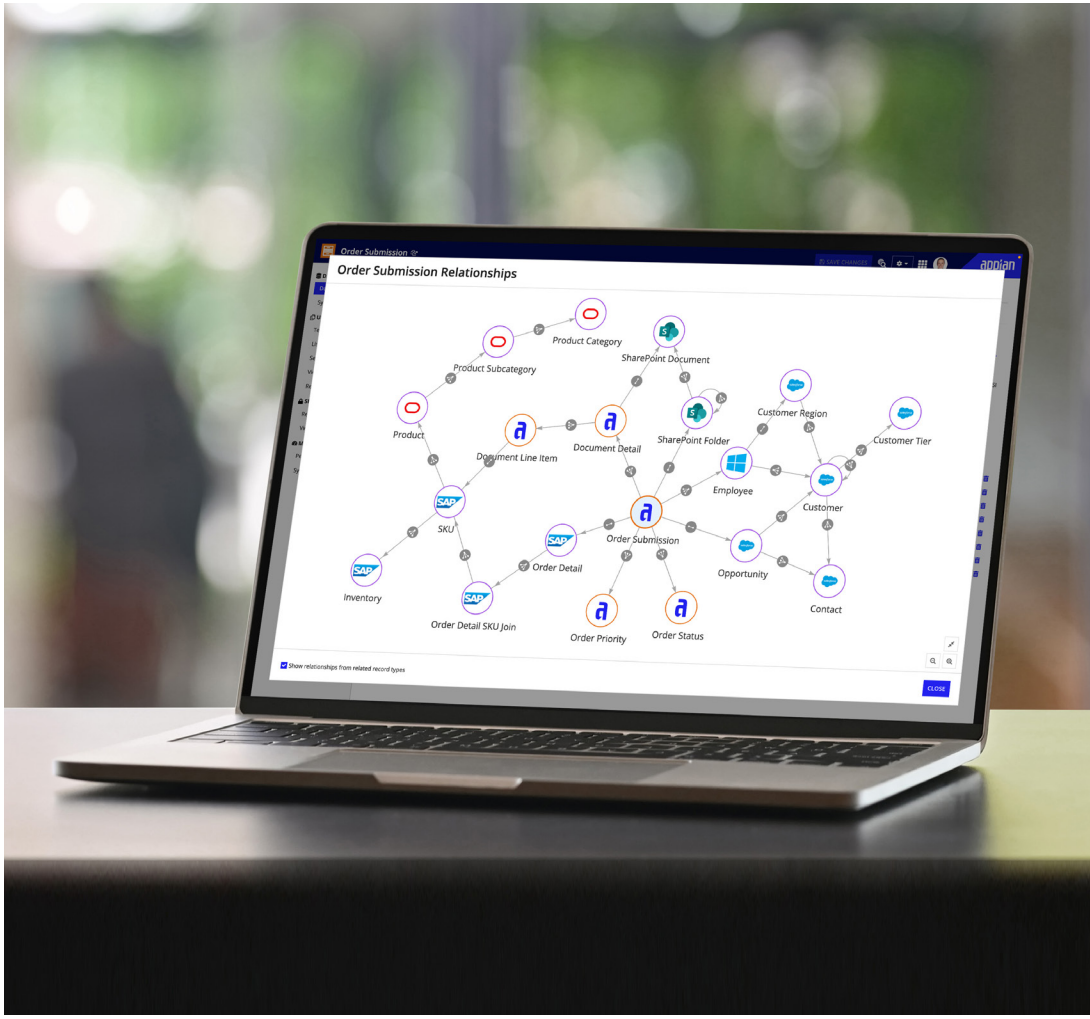
According to Gartner, a data fabric reduces time for integration design by 30%, deployment by 30%, and maintenance by 70%. This is because the technology is able to use, reuse, and combine different data integration styles.

A data fabric's power to connect disparate data sets means valuable data no longer hides in silos, and hordes of database specialists aren't needed to release it. Data fabric delivers a complete view of an organization's data, allowing teams to make better, data-driven decisions.

Data fabric's centralized approach also delivers benefits on the security and compliance front. With a data fabric, IT gains a centralized picture of who can view, update, and delete specific data sets. As organizations democratize data access, sharing more data both inside the organization and with customers and partners, data fabric gives IT teams confidence they have a governed, secure data architecture. That's important as regulatory demands continue to increase.

All of these are reasons why organizations should harness the power of data fabric to increase speed, improve decision-making, and ultimately, drive digital innovation.

Want to learn more about data fabrics and how they can set your organization up for success? Download the guide, Data Fabric Advantage.



By combining a data fabric with AI and process automation capabilities, Appian enables you to de-silo your data and build powerful applications that deliver a 360-degree view of your organization. This dramatically reduces the time required to deliver new applications, simplifies system integrations, and empowers more users to build new, secure digital solutions with your enterprise data.

Learn more about how Appian can help expedite your agency's mission through process automation, AI, and a data fabric that unifies your systems and data.

Visit appian.com/government.
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