

THOUGHT LEADERSHIP SERIES



THE RISE OF DATA FABRIC ARCHITECTURE



WEAVING TECHNOLOGY AND CULTURE INTO A DATA FABRIC

Data is the lifeblood of modern businesses, providing valuable insights into customer behavior and operational efficiency. However, as the era of disparate and differing tools, platforms, and environments continues to grow in conjunction with a need for real-time, reliable data, it becomes increasingly challenging for enterprises to adapt.

A Unisphere Research study revealed the quantity of data facing many organizations: 25% of enterprises reported that their largest production database was 1TB-5TB; 23% reported it was 5TB-25TB; 12% reported it was 25TB-50TB; and these statistics omit the non-production databases existing as warehouses and lakes. Needless to say, enterprises are responsible for an ever-increasing load of data in multiple databases, all endowed with differing sources, structures, types, and needs.

Many are beginning to look to data fabrics—a new approach to data management that promises to make data more accessible, intuitive, and productive—to unify their equally massive and complex data environments.

According to a study commissioned by IBM, enterprises embracing a data fabric architecture experience 86-158% increased ROI. Benefits of this magnitude beg the question: What is a data fabric?

DATA FABRIC: EXPLAINED

Data fabric is a term used to describe a set of technologies, services, and strategies that provide ‘a unified and reliable view’ of data spanning hybrid and multi-cloud environments.

At its core, data fabric revolves around creating a virtual layer that eliminates the complexity of underlying data sources, making it easier to access and use data for various purposes. It is not a single tool or technology; it is an equally technological and cultural data management design that leverages knowledge graphs, semantics, and ML/AI on active metadata to instill agile, reusable, and augmented data integration pipelines within an, according to the Gartner Glossary definition of data fabric.

A data fabric can be thought of as a mesh of interconnected nodes that span multiple data sources, including databases, data lakes,

data warehouses, and cloud platforms. This mesh is designed to provide a single point of access to all data, regardless of its location or format, making it easier to discover, integrate, and use data across the enterprise.

These connections are at the forefront of a data fabric’s utility; by leveraging continuous analytics over reliable, discoverable metadata underpins the design, deployment, and utilization of data while making it increasingly real-time and accessible.

Mark Beyer, distinguished VP Analyst at Gartner, explained that “The emerging design concept called ‘data fabric’ can be a robust solution to ever-present data management challenges, such as the high-cost and low-value data integration cycles, frequent maintenance of earlier integrations, the rising demand for real-time and event-driven data sharing, and more.”

According to Gartner’s Understand the Role of Data Fabric: Guides for Effective Business Decision Making, by eliminating tedious manual tasks—ranging from data integration, to augmentation of data design/delivery, and incorporating more automation—a data fabric can aid in

remediating a complex, enterprise-grade data landscape. This journey toward data productivity is already in the works; according to a Gartner report, by 2024, data fabric deployments will quadruple efficiency in data utilization, while cutting human-driven data management tasks in half.

THE PERKS OF EMBRACING A DATA FABRIC

By developing a woven, interconnected data infrastructure that goes *with* the natural grain of data, as opposed to going against its inherently linked quality, enterprises can accrue benefits in terms of business impact, data management, and data organization. These advantages include:

- Incorporating subject matter experts during the data modeling process
- Increasing accessibility time through ready-to-use data
- Enabling a self-service data consumption and collaboration network
- Improving accessibility, integration, and sharing of data for less technical users
- Enhancing productivity through automated data transformation and integration
- Eliminating cost burdens of acquiring several tools with common functions
- Receiving better performance through optimizations in data integration
- Embracing a more collaborative culture by connecting data managers and data consumers

The adoption of a data fabric can encourage a transparent, resilient data environment for any enterprise. Eliminating data silos, surfacing insights more effectively, and both the improving productivity value of data, are some ways data fabrics can transform an otherwise divergent data landscape.

PUTTING THE FABRIC TO WORK

Though an ideal scenario, a data fabric cannot simply be “bought;” it is a series of incremental steps, technologies, and changes that are unique to every enterprise. It’s developed through an understanding of your use cases, existing tools, databases, storage, and source environment, acting in concurrence with cultural acceptance and usage at the level of the data consumer and manager.

Using Gartner’s *Understand the Role of Data Fabric: Guides for Effective Business*

Decision Making” to guide these steps in implementing a data fabric, it begins” with identifying the business goals or objectives that will be supported by said fabric. Accompanying this is understanding the data sources, data types, and the data management requirements that are needed by an individual enterprise.

A successful data fabric partly relies on the technology in place—specifically, technology that semantically enriches metadata. While traditional methods of data pipeline builds include ETL processes employing static data models, AI is needed to effectively understand, tag, and enrich the data before it’s consumed, underpinned by a data catalog; this applies even more so to unstructured data, including pdf documents and images.

Automation and orchestration is the next step in the data fabric journey toward accessibility; orchestration tools, which are fed with active metadata, allow data to be consumed more effectively and readily. According to CIO Magazine’s “How to Weave Your Data Fabric in Three Steps,” automation tools that can check for data completeness can additionally alleviate labor pains associated with cultivating an interconnected fabric.

According to *CIO Magazine*, “Many data engineers spend more than 50% of their time building complex data pipelines. But a data fabric that is built with AI-enabled and automated processes frees up their time to perform higher-order tasks.”

While, undoubtedly, data fabric is a technological venture, its success also lies in its adoption by the employee. Ensuring that your enterprise is enabled to embrace a data fabric culturally amid opposing environments, needs, and latencies is key; this may take shape in getting data consumers, who may be experts in unique areas, to contribute to enriching metadata. Training employees in how to best leverage a data fabric, as well as how to maintain it, is critical to the effectiveness of its weave.

Additionally, giving stakeholders the proper assurance of the “why”—why a data fabric poses tremendous value to an enterprise—similar to any other technology acquisition proposal, paired with its calculated business outcome, can make a difference in its overall success, according to Gartner.

CHALLENGES WITHIN THE FABRIC

Like any new and promising strategy, it’s not without its difficulties.

Though data fabric can increase accessibility to less technically-inclined data consumers, its development requires specialized skills and expertise, particularly within the realm of integrating data from various sources. Between disparate systems, databases, and applications, integrating data will need a deft hand.

Data security poses another roadblock for enterprises looking to realize the value of their data with a data fabric. Establishing robust access policies can effectively mitigate against unauthorized access. Luckily, there is an internal advantage by implementing a data fabric architecture: According to IBM’s “Top Three Benefits of a Data Fabric,” the inherent AI-enhanced automation that accompanies data fabrics can help create data governance rules and definitions via extraction of content from regulatory documents.

Data quality is equally as critical as the technologies that govern and integrate it. To feed the data fabric effectively, ensuring that the data is accurate, complete, and consistent is key. According to another Unisphere Research study, data quality is the priority for only 56% of enterprises in 2022; further, only 33% of enterprises are completely confident in their data quality. Promoting data quality can mean the difference between a successful fabric and one filled with detrimental holes.

Adopting a data fabric is intertwined with change management, which cannot be stressed enough. The process of implementing a data fabric constitutes significant change to an organization’s existing architectures, processes, and systems. Concise communication and training with stakeholders, as well as with data consumers and managers, is paramount to transition into a data fabric architecture.

THE JOURNEY TOWARD WEAVING A DATA FABRIC

A data fabric can provide a competitive edge for enterprises seeking to adapt to the modern needs, quantities, and behavior of data at scale. The benefits are numerous for a successful transition: increased ROI, a self-service network, greater accessibility, productivity, and collaboration throughout an enterprise, and more. Remembering a data fabric is not just all technology and integration is essential; ushering an enterprise’s employees toward efficient utilization of and participation within a data fabric remain a critical step for optimal transition and enterprise-wide adoption. ■

—Sydney Blanchard

AI Data Fabrics via Semantic Knowledge Graphs—AllegroGraph



Industry analysts recognize the power of Knowledge Graphs in delivering integrated, trusted, and real-time views of enterprise data. Knowledge Graphs excel at delivering a semantic layer which unifies business data with knowledge bases, industry terms, and domain knowledge for an enterprise-wide Data Fabric.

Franz Inc.'s AllegroGraph platform delivers Semantic Knowledge Graphs to provide the foundation that makes an Enterprise Data Fabric possible.

Gartner has noted, “The semantic layer of the knowledge graph makes it more intuitive and easy to interpret, making the analysis easy for D&A leaders. It adds depth and meaning to the data usage and content graph, allowing AI/ML algorithms to use the information for analytics and other operational use cases.”

A Semantic Knowledge Graph Architecture facilitates more flexible data operations, lowers data integration costs, and delivers powerful insights only possible when data is connected as part of your Enterprise Data Fabric. Semantic Knowledge Graphs enable your organization to explore and exploit unknown connections across your data for richer analytics and enhanced AI.

Franz Inc.'s AllegroGraph platform delivers Semantic Knowledge Graphs to provide the foundation that makes an Enterprise Data Fabric possible.

Franz's unique Knowledge Graph approach encapsulates a novel Event-Native Model, integrated with domain ontologies and metadata, and dynamic ways of setting the analytics focus on all entities in the system (patient, person, devices, transactions, events, operations, etc.) as prime “temporal” objects that can be the focus of an analytic (AI, ML, DL) process.

This unique Entity-Event Data Model utilized by [AllegroGraph](#) with [FedShard](#) puts core “entities” such as customers, patients, students, or people of interest at the center and then collects several layers of knowledge related to the entity as “events.” Events represent activities that transpire in a temporal context.

ALLEGROGRAPH - COMBINING DATA AND KNOWLEDGE AT SCALE.

Most AI applications and complex reasoning analytics require information from both databases and knowledge bases that contain domain information, taxonomies, and ontologies in order to conduct queries. However, many large-scale knowledge bases cannot be shared because they contain highly interconnected data. Franz's patented FedShard uniquely combines data with knowledge bases—providing a novel way to scale applications for enterprise-wide solutions.

AllegroGraph is the first temporal Knowledge Graph technology that encapsulates a novel entity-event model natively integrated with domain ontologies and metadata and dynamic ways of setting the analytics lens on all entities in the system.

Financial institutions, healthcare providers, contact centers, manufacturing firms, government agencies, and other data-centric enterprises that use AllegroGraph gain a holistic, future-proofed Data Fabric architecture to discover deep connections, uncover new patterns, and attain explainable results.

FRANZ'S TECHNOLOGY AND SERVICES

Franz's Data Fabric Solution includes both technology and services for building industrial-strength Entity-Event Knowledge

Graphs based on best-in-class tools, products, knowledge, skills, and experience. Dozens of Fortune 500 companies have chosen Franz Inc. to extract sophisticated decision insights and predictive analytics from highly complex, distributed data that cannot be uncovered with conventional database approaches.

Franz's technology excellence continues to be recognized by industry experts. AllegroGraph was recently named a Trend Setting Product for 2023 and the company was acknowledged in the AI50 List of Top Artificial Intelligence Companies.

Contact Franz Inc. today to

build your [Data Fabric solution](#). ■

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