



# Data Fabric 2023

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Make more informed business decisions with less time and effort:

# with a tailored data fabric



Enterprise organisations continue to face significant challenges with managing, maintaining and driving value from their data. This is down to a diverse variety of factors, including accessibility issues, expanding information volumes, increasing complexity, and a lack of suitable skills, technology knowledge and data quality.

During the last decade in particular, the exponential growth of big data has made its management even more complicated and unwieldy. In response, businesses are prioritising the need to effectively unify and consistently govern data environments. For their strategies to succeed, they must ensure that their data enables them to remain both

resilient and adaptable, to cope with rapid and extensive change (for example, from Covid, the global energy crisis, climate change, societal challenges and inflation).

Automation is absolutely essential in this evolution. Operationally, solutions must be capable of quickly increasing process efficiency and modernising platforms, to ease admin and drive greater value from available data. In tandem, it has to somehow integrate and simplify the myriad of software platforms and data repositories that have built up over time, containing dispersed information as a scattered landscape.

## At a technical level, this means:

- Establishing strong connectivity via APIs to enable data exchange with applications and existing databases.
- Ensuring that all data remains up-to-date and synchronised wherever it resides.
- Storing data independently from applications.
- Exposing prepared data to reporting tools and external data science environments.

To address these requirements, the ideal solution is to construct a tailor-made data fabric: a dedicated data management design architecture that connects data sources with the entities consuming that data, such as applications, reporting tools, AI/ML algorithms, and so on.

## Data fabric: what is it, and how does it benefit your business?

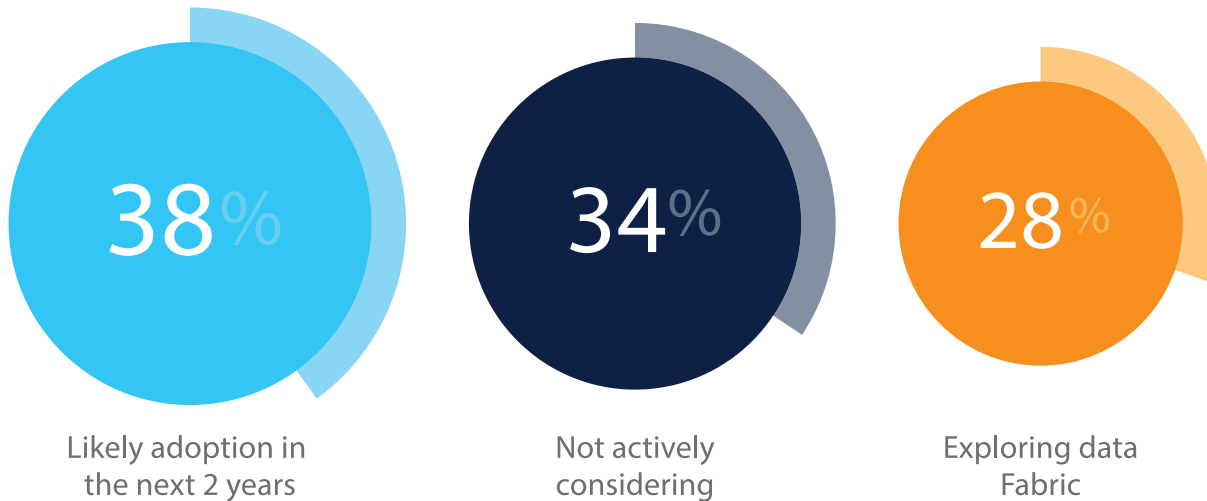
According to Gartner, a data fabric is defined as “an emerging data management design that promises to reduce the time to integrated data delivery through active metadata-assisted automation.” It is made up of an integrated layer (a fabric) of data and the connecting processes surrounding it.

In this way, it brings together all data from across the enterprise, from its multiple sources and applications, thereby preventing it from being limited or constrained by any single platform or tool. It is not meant to replace existing systems, but rather, to make them interoperable.

Data fabrics support a combination of different data integration styles and leverage metadata, knowledge graphs, semantics and machine learning to augment data integration design and delivery. Although the concept is still gaining traction, it has captured the attention of organisations around the world for its clear potential to solve their complex data management dilemmas.



## Adoption trends for Data Fabric



Adoption and interest in data fabric by organisations.

Source: Gartner 2023

Research shows that 1 in 4 organizations are exploring the idea of a data fabric, with 60% of these organizations implementing the full adoption of a data fabric (Source: Gartner, 2023). Once deployed, a data fabric can immediately and significantly reduce manual data integration tasks, across the board, while becoming the common platform to handle data from multiple data and application sources and deliver it to its consumers to support the various needs of the organisation.

Ultimately, as well as unifying these disparate data systems, it also embeds reliable governance, strengthens security and privacy, and makes data more accessible to those that need it.

### The benefits

Monitor and manage your data and applications, regardless of where they reside. Enjoy integrated data architecture that's adaptive, flexible, and secure.

Drive more holistic, data-centric decision-making.

Gather data from legacy systems, data lakes, data warehouses, sql databases, and apps to create one holistic view of business performance.

Increase fluidity between data environments and make all data available across the enterprise.

The CAGR for data fabric investments (compound annual growth rate) is expected to be 21.2% from 2022 to 2030

Source: Grandview Research, 2023

## The principles underpinning an effective data fabric



In its conception, a data fabric follows a set of clear and consistent guidelines to deliver these benefits:

- It uses advanced connecting capabilities to interact with all data storage systems and applications/platforms, wherever they are located (on-premise, in private or public clouds).
- It enforces the collection and storage of all metadata, providing domain-specific context descriptions and technical storage details to make data reusable and promote interoperability.
- It facilitates or automates the construction and execution of complex data transformation pipelines whenever possible, using new tools and advanced technologies like Natural Language Processing (NLP) and knowledge graphs.
- It is composable by design and its components can be selected and assembled in different combinations to deliver evolving needs.
- It is future-proof and software-agnostic, to guarantee its long-term lifespan and ensure it adapts to technological and regulatory developments.



## How does it work?

The underlying premise of a data fabric is about the smooth flow of information from source to target. Along the way, a series of key business decisions are made, using pre-defined, automated processes. This automation provides an intelligent mechanism for metadata to deliver the insights needed to intelligently integrate this information in a meaningful way.

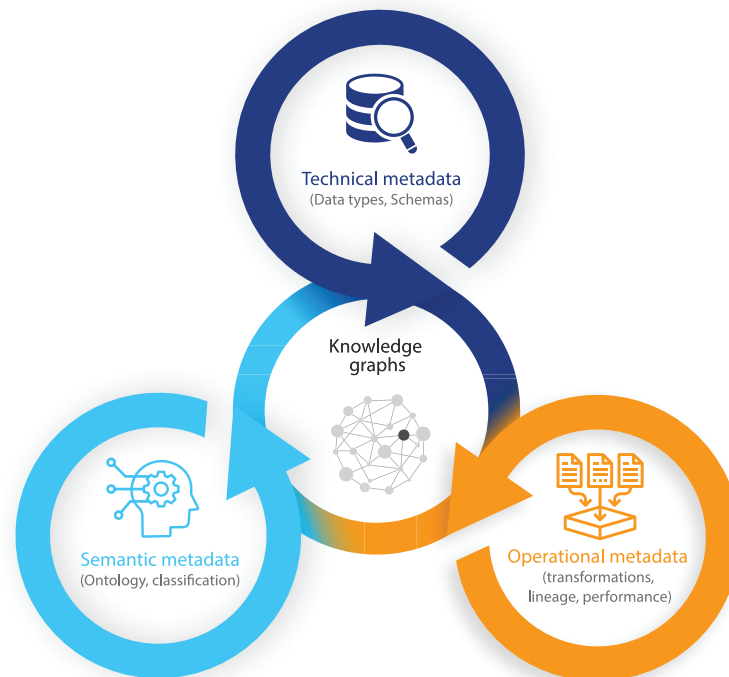
This design starts with discovery: finding the interesting connections and patterns in the metadata that will enable this to happen. These show how people are working with data; people are working with data; which combinations of data are being used, which are being rejected and where they are all

being stored; how final data is communicated and how frequently; and so on.

Alongside, a review of existing data management infrastructure and technology is carried out to assess its capabilities and maturity: in other words, what you can realistically expect it to achieve today, and what you need to do to ensure it continues delivering what you need it to for your data fabric, going forward.

These combined results determine which products and capabilities will be needed to make the data fabric work best for its particular organisational requirements.

# Collecting and making sense of all metadata unlocks the automation abilities of the data fabric design



## The process behind building an effective data fabric

Define the technical data needed (Schemas, Data types, Data models)  
 Define the operational processes needed to analyse this data (ETL or actions, Lineage metadata, Performance metadata)  
 Understand the business terminology and processes required to give meaning and value to the data being processed and delivered (Ontology – classify and tag data, Map metadata to business relationships)  
 Map this insight onto a knowledge graph for the final output (Deliver to business users in a digestible format, Get developer feedback to refine and improve).

fabric configuration. As interconnected displays of nodes, they reveal relationships and semantics which provide the valuable insight needed to make decisions based on patterns of behaviour and the meaning behind the data. Having this information represented in a knowledge graph makes it easier for other parties such as data scientists and subject matter experts to become involved in the design and modeling process.

That said, creating and managing knowledge graphs requires a certain degree of technical expertise and know-how. Organisations less comfortable with traditional data modeling techniques risk wasting a substantial amount of time and effort in coding and complexity, if their systems and skillset are not sufficient.

Knowledge graphs are a vital element in data

## The six layers of a data fabric model

### Data ingestion

The fabric begins to stitch cloud and on-premise data together. It finds relevant connections between all data sources – whether structured, semi-structured or unstructured – and leverages AI to establish coherent find patterns and trends, in order to increase organizational speed and productivity.

### Augmented data catalog

AI is then used to automate as many tasks as possible, to the greatest extent possible in relation to metadata extraction and management. This further enables data discovery, understanding and classification. This catalog is one of the cornerstones of data fabric architecture. It creates the ability to further automate the generation of insights which drive business value.

### Knowledge graphs

These graphs represent the collated data as a network of real-world entities, and demonstrate the individual relationships between them. They allow data from multiple sources to be organized and connected. In this way, they add semantics that make sense of the information involved.

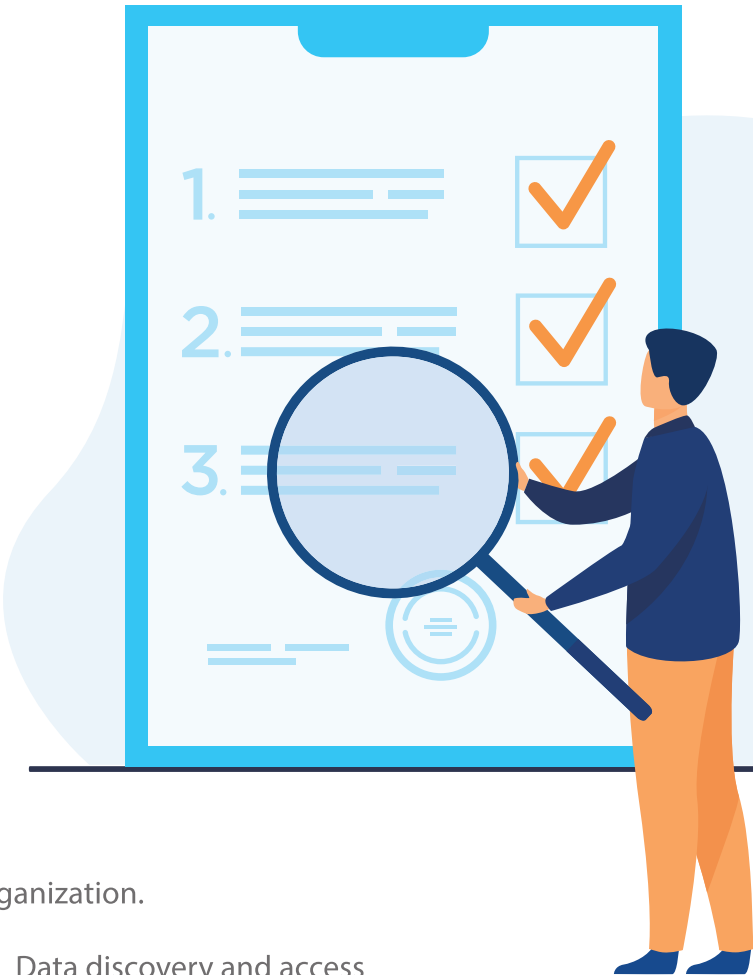
### Data management and processing

Data governance and security principles are applied to refine the information and ensure that only relevant data is extracted for analysis.

### Data orchestration

This process is one of the most critical stages of the data fabric's role. It transforms, integrates and cleanses the data to make it usable and practical for operational teams across the

organization.



**Data discovery and access**  
This final process searches for new opportunities to integrate disparate data sources in the same way. For example, it might find ways to connect data in a supply chain data mart and a customer relationship management data system, which could create new opportunities for providing product offers to clients or to improve customer satisfaction. This allows for the consumption of data and puts the right permissions in place to comply with internal rules and public regulations. This process also supports the identification of relevant data through the use of dashboards and other data visualization tools, so it can be leveraged by the organization.



## What value does it deliver to you?

Data fabric's biggest value proposition is the fact that it can augment and automate many data management tasks. As data pipelines grow in size, volume and complexity with data platforms evolving continually, this value can only increase.

In turn, its capability will help data management employees to work more productively, by managing more tasks in less time and freeing up capacity to focus on higher value tasks

The benefits for those closest to data management are clear. Business analysts can get closer to the data integration process, by being able to view specific datasets that are ready to be used by masking PII or sensitive attributes, to optimise performance. Data engineers can do more with less resources and time, based on empirical evidence rather than 'gut feel', regarding insights about which engine to use, when to push down, when to virtualise, and so on. And senior D&A leaders can experience a faster turnaround time to realise their analytics projects by enabling efficient and governed self-service and reduced IT bottlenecks.

## How Keyrus can help

Keyrus is your trusted partner for building sustainable, high-performing data architectures. Using our extensive and deep expertise in designing and creating data repositories, we can work closely with you and your business to ensure that you receive a platform capable of

meeting your data demands and delivering unique value to your stakeholders, employees and customers.

We leverage insights and knowledge extracted from raw data to discover patterns, relationships and causalities; then identify ways to improve your business in the areas you have chosen for review and analysis. Built using the latest data intelligence design paradigms, our data fabric features a full metadata environment which links business contexts to data assets in a composable architecture: so, there is no need to redesign or extensively modify your existing systems.

Then, automation leverages these factors for optimal operational efficiency, while also maintaining compliance with changing data regulations.

Our broad experience and knowledge of design paradigms and the differences/advantages between them means we can continue to guide you in your data management decisions. Indeed, we have already done this for customers in a wide variety of sectors, including marketing and sales, customer experience/engagement, production efficiency, finance and distribution/logistics.



<sup>1</sup>Source: Source: Top Trends for D&A, 2022:

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Keyrus is ready to help you design an actionable data strategy that will deliver your business objectives and drive commercial success.

## Find out more about our range of services

### Data strategy:

<https://keyrus.com/be/en/services/data-strategy>

### Leveraging data usage/value (addressing a more business/functional audience) :

<https://keyrus.com/be/en/services/data-science-and-advanced-analytics>  
<https://keyrus.com/be/en/services/data-visualization>

### Data architecture/backbone (addressing a more technical audience):

<https://keyrus.com/be/en/services/data-and-digital-architectures>  
<https://keyrus.com/be/en/services/cloud-data-platforms>

Keyrus is a global consulting and technology company that focuses on making data matter, truly matter, from a human perspective.

Since it's not only the data itself that matters, but the opportunities we can develop by leveraging it, we are constantly working at understanding what our clients are trying to achieve. We explore and measure behaviors. We understand and translate. We make sense of the realities data represents to shape better, impactful, real-life decisions. Our value proposition is founded upon five major groups of services, each comprising multiple offerings:

- Automation and artificial intelligence
- Human-centric digital experience
- Data & analytics enablement
- Cloud and security
- Business transformation & innovation

Relying on the accumulated experience of more than 3500 people and present in 26 countries on 4 continents, Keyrus is one of the foremost international experts in data, consulting, and technology.

Learn more 

<http://www.keyrus.com/za/en/home>

We are here to solve your business challenges through modern data solutions.  
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