# THE FACTGEM DATA FABRIC

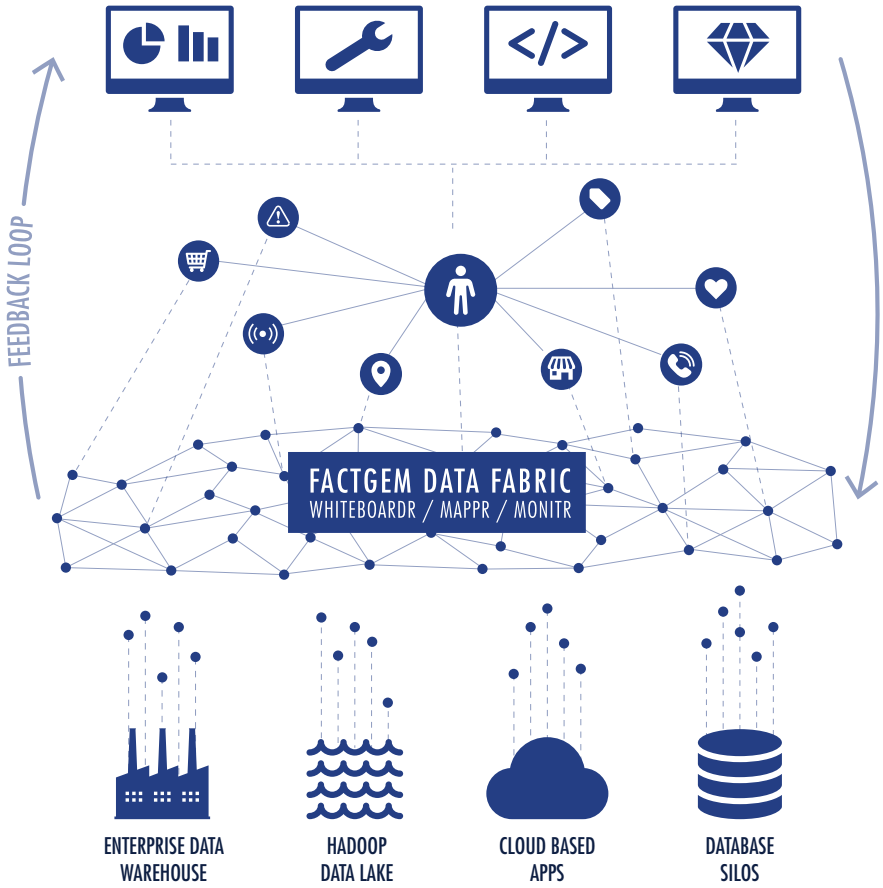
## WHAT IS THE FACTGEM DATA FABRIC?

The FactGem Data Fabric combines data from platforms and applications separated by purpose, geography, or organization into a unified data environment. Data is stored in a cohesive, unified model within the data fabric that provides for easy reporting of data from across multiple sources. The FactGem Data Fabric expresses key business concepts as entities and relationships. The entities, the relationships, or both together can be queried to rapidly reveal superior insights on connected data.

Relationships become first-class citizens in the FactGem Data Fabric. They aren't just an index or a way to link disparate entities together. They can be queried directly. From these relationships, insights can be delivered that illuminate interests, intentions, interactions, and the events and transactions that tie entities, and even other relationships, together.

The FactGem Data Fabric provides an out-of-the-box, normalized data structure for data unification. Business concepts are expressed as entities and relationships in a standard and uniform way, thus minimizing design time. The application provides visual modeling tools and a data loader to populate the FactGem Data Fabric from source systems. This eliminates the need for significant extract, translate, load (ETL) processes or custom application code. Instead of integrating data, existing data is connected from source systems. Updates to existing sources and the introduction of new sources of data can be woven in quickly and easily, without requiring any model changes.

There are many definitions out there for a data fabric. Curiously, many of the definitions don't prioritize the actual data. The focus is often placed on the systems and infrastructure that bring data together and stores

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it, but not on the actual use and management of the data they support. A true data fabric puts the data first and is, simply put, a system that combines data from established sources into a unified data environment. Data fabrics also provide a standard method, or set of methods, for importing and exporting the data. These methods often include APIs.

Data fabrics must also provide a way to define the identity of an entity, so that data merged from disparate systems is governed by the rules of the business and no duplicate data is created within.

The FactGem Data Fabric provides a consistent, but flexible, data model as well as simple ways to query the data. Built to open standards, the entities, relationships, and insights are available via API as well as a growing set of BI reports and other connectors.

## WHY IMPLEMENT A DATA FABRIC?

A data fabric reveals your organization's invisible data. Businesses and government organizations revolve around easy-to-understand entities and relationships, but their data is anything but easy when it comes to pulling insights out of it. In business, this could be customers, products, employees, assets and facilities, and sales transactions. Similarly, governments manage information about citizens, entitlements, regulations, laws, public infrastructure, and even criminals, terrorists, and hostile nations.

Along the way, you might buy applications and implement systems. Each system maps the business concepts to their underlying storage systems and rends the entities and relationships apart, making information in one system easily and readily available, but completely separated by technical and business organizational boundaries from other systems. However, organizations must ask questions of data where it resides to be able make decisions that drive the business.

In an attempt to answer these broad questions, organizations engage in perpetual integration, digital transformation, data mastering, and re-platforming. These projects, regardless of organization, are rarely completed and frequently run over budget. Worse yet, they rely on methods that employ brittle or complex data models. Despite all this, somehow the numbers make it to the boardroom once a quarter. However, if someone in that meeting were to ask, "Where did these numbers came from?" or request that someone re-run the report, they often wouldn't be able to do it. It's as if the data were invisible. Context has been ripped from content.

The FactGem Data Fabric connects key business concepts as entities and relationships in a format that the business understands. By storing information as a graph, traditional analytic questions can be asked, along with those that illuminate the relationships and context of where the data comes from.

## BENEFITS OF USING THE FACTGEM DATA FABRIC WITH A PROPERTY GRAPH

A property graph is the best storage mechanism for a data fabric. Relational databases are, ironically, very bad at modeling relationships. The relationships in a relational database management system (RDBMS) are an artifact of the underlying storage to store and persist business entities in a format idealized for database storage, and not for use by non-technical business users. The relationships in an RDBMS say nothing regarding the key business concepts of the entities they store. Getting data out of an RDBMS and materializing it for business users becomes a complex, technical exercise. The physical storage of an RDBMS is often completely different from the business conceptual models. Relationships and context are managed, if at all, in applications outside of the database, creating a disconnect between what is stored, what can be queried, and what a business wants to ask of the system.

A property graph allows data to be stored in a model

that is closer to how an organization thinks about the entities and relationships their business manages. The conceptual and physical models are closely aligned. Relationships become first-class citizens, providing and persisting additional context in the database, and making them directly available to be queried in relation to the entities they connect. Connecting data in a unified view in a data fabric within a property graph makes the data simpler to manage, simpler to query, more performant, and provides additional flexibility in how new data is imported and connected.

Property graphs are, however, a relatively new addition to the world of enterprise data management. Used on their own, there is not a lot of expertise in the field yet regarding their query languages or how to use them to best model and manage data. FactGem application addresses this problem with three modules: WhiteboardR allows business leaders and the analysts that support them to draw their organization's data model with easy-to-understand circles and lines to show all of the entities, relationships, and properties that characterize key processes, customers, products, and transactions; MappR enables you to import your data and match it to your model, then normalize your data so the results are predictable and unambiguous; and MonitR, which allows you to view the status of files deployed to the FactGem Data Fabric, and configure file structures for automatically loaded files.

FactGem capabilities for entity resolution, de-duplication, and the application of business rules also provide the key, robust features required for managing graphs, without requiring anyone in the organization to write and maintain them. Simply put, FactGem reduces the risk and speeds up the implementation of graph databases in the enterprise.

## A DATA FABRIC & INTEGRATION PROJECTS

It's all about speed to insight and value. Without forcing an organization to take on the risk, time, and expense of mammoth integration projects, the FactGem Data Fabric delivers connected data in hours and days. This is not to say that there isn't value in these digital transformation initiatives, it's just that businesses and government organizations are facing data challenges that evolve faster than IT can respond.

Integrating data is hard. It requires significant time for

## THE FACTGEM DATA FABRIC & SOA ENVIRONMENTS

SOA infrastructures generally include the following characteristics:

- ***Services-focused***
- ***Provide transitory data exchange***
- ***Emphasize data movement***

When used with a data fabric, transformations can be removed from the application layer. Mutations in data previously occurring within services are no longer required and enhance the SOA to include the data fabric benefits of:

- ***Data-centric service architecture***
- ***Durable information interchange and management***
- ***Interchange architecture that discards nothing in the data lifecycle, enhancing data provenance***

Additionally, there is no single, accepted standard for features or behavior for an SOA. Whereas, the FactGem Data Fabric provides a single,unified method for managing the analytics of entities and relationships.

modeling what the integration will look like. Once the model is complete, applications are built to extract data from source systems, transform the data to fit the target schema, and load the data into the integrated repository. These efforts rarely succeed as the model is designed with what the business wants to ask of data at a particular point of time. As time progresses, business needs change and the model requires updates. Updating a model after it already has data in it is challenging. In addition, source systems might be updated to include new fields, or new sources may require integration. These scenarios require updates to the application ETL logic as well as to the target schema.

## HOW DOES THE FACTGEM DATA FABRIC COMPLEMENT INVESTMENTS IN AN API-CENTRIC OR MICRO-SERVICES ARCHITECTURE?

Limitations in business intelligence applications have driven the need for analytical applications to simplify the sharing of insights with customers by providing additional channels. APIs have emerged as the building blocks for composable analytical delivery.

The API economy requires a personalized user experience. The common set of REST APIs a data fabric provides enables consumers to take advantage of connecting analytical insights within their API architecture seamlessly with existing BI tools.

A data fabric complements any API-centric architecture by providing a hub-and-spoke system for connecting data. Hub-and-spoke is the preferred architecture for data integration. Its many benefits include the following:

### *FLEXIBLE ARCHITECTURAL PATTERN*

- Hub-and-spoke is easy-to-understand but can be expressed in multiple variations.
- It provides a consistent architecture that scales, reducing costs.

### *INTERFACE REUSE*

- An interface (spoke) from the data fabric to a given system can be reused as additional systems come online.
- New connections to the data fabric require the same amount of "work," which helps reduce the cost of adding new consumers.

### *FEWER INTERFACES NEEDED*

- Spoke reuse dramatically reduces the number of interfaces you must build and maintain.
- Adding new systems to the data fabric requires less time, investment, and risk, enabling you to move quickly.

Most integration solutions require several technologies working together. By employing a data fabric, SOAs and API-centric architectures become the beneficiary of a hub-and-spoke architecture and a repository of unified, connected data without disrupting any existing systems. Re-platforming is not required and the complex transformations, technical bloat, and overhead of a standard integration solution are no longer needed, as data is connected in the data fabric and served up to the SOA as web services.

***GETTING STARTED:*** *The FactGem Data Fabric reveals insights that are invisible in the enterprise and expresses the most important entities and relationships for easy consumption by BI and analysis tools. Unburdened by typical integration complexity, timelines, and costs, organizations can get a sense of what FactGem can do in hours or minutes. To learn more, visit* ***www.factgem.com*** *or email us at* ***seeingisbelieving@factgem.com*** *to request a demo.*

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