

The background features a vibrant, futuristic digital landscape. A large, glowing sphere composed of interconnected nodes and lines is the central focus, emitting a bright white light. This sphere is surrounded by a complex network of thin, colorful lines (red, blue, green) that create a sense of depth and connectivity. The overall color palette is dominated by deep blues, purples, and magentas, with bright highlights from the glowing elements. The text is overlaid on this scene, positioned in the lower-left to center area.

The
New World
of **DATABASE**
TECHNOLOGIES



Off to the Data Races With the NEW WORLD to DATABASES

Best Practices Series

The database is no longer just a database. It has evolved into the vital core of all business activity, the key to market advancement, the essence of superior customer experience. In short, the database has become the business.

This change has elevated the roles of database managers and professionals, who are increasingly finding themselves thrust into the roles of counselors, advisers, and leaders in the digital charge. Consider manufacturing. A recent survey of 1,000 manufacturing executives by Google Cloud and The Harris Poll found that the use of AI and machine learning within their organizations surged over the past year in response to the challenges of the COVID-19 crisis. More than three-quarters of respondents cited increased adoption of AI, data analytics, and cloud services during this time period. More than one-third, 36%, now employ AI to manage their supply chains.

Data—or, more precisely, the ability to leverage data to advance the business—has become the key competitive advantage, and companies are scrambling to harness it. Organizations that don't invest

effectively in data analytics will get left behind—a fact not lost on today's business leaders. What role does the new data environment—let's call it “the era of data races”—play in moving enterprises forward? Consider the ways

emerging technologies and best practices can support enterprise initiatives:

AI and machine learning:

Manufacturing, of course, isn't the only area where AI and machine learning are making a difference. These technologies

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have become part of business strategies across a wide range of industries. AI and machine learning add intelligence to the day-to-day processes of business, from production lines to customer service requests. Any new capability developed

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today, such as extracting and analyzing data from IoT, ecommerce systems, or even traditional customer records systems, can benefit from the predictive insights AI-based technologies can provide. AI and machine learning can also help organizations address data compliance and quality issues.

Self-service and low-/no-code platforms: Of course, the insights gleaned from basic or even sophisticated analytics engines will gain little traction if not accessible by business decision makers. Accordingly, there is an increasing emphasis by vendors and enterprises alike on building and deploying user-friendly, yet sophisticated, approaches to presenting business data through vehicles such as interactive dashboards. At the same time, a new generation of low-code and no-code platforms is making it easier for both business users as well as their IT counterparts to rapidly build and launch applications as required. Modern data environments need to be designed and built to support the rapid, yet secure, movement of data between storage sites, compute engines, and front-end applications.

Cloud databases: Cloud technologies have altered the IT landscape and, in recent years, the database landscape as well. While cloud providers offer ways to offload many of the headaches associated with data management, this approach doesn't mean business owners are relieved of the responsibility for their data. Moving data to the cloud has many technical considerations, including management of security, compliance, performance, and licensing costs. While the data may reside in an offsite location, data managers need to continue to ensure

that the data is available, protected, and delivering business value.

Open source software, platforms, and frameworks: Just a few years ago, many enterprises were locked into proprietary tools and technologies that meant reliance on vendors for features and functions. Now, there are multiple communities providing solutions for all levels of the data and technology stack—from databases to data lakes to analytical tools. Enterprises can now move with technology built from pre-assembled and tested building blocks available either directly from open source communities or from supporting vendors that provide value-added services and features. This has opened up data environments to solutions from a variety of providers with the ability to apply appropriate technology to business challenges. At the same time, this means data managers need to have, or have access to, a range of skills to manage the differing protocols and requirements in what are becoming extremely heterogeneous environments.

DevOps and DataOps: For decades, databases and the teams supporting them existed in silos. In today's emerging digital organizations, however, data needs to move at the speed of business as opportunities unfold. Data managers, developers, and business teams need to work as one to ensure the continuous delivery. This has given rise to the practice of DevOps, which aligns and automates the work of development and operations teams, helping these two groups work in sync to deliver quality software in a consistent and rapid way. A related practice, DataOps, promotes the idea of a "data factory," which automates the flow of data across enterprises through

collaborative teamwork. Such automation encompasses the development, integration, testing, transformation, and delivery of data and analytics.

Data-driven culture: To take advantage of modern technologies and build upon best practices such as DataOps, the organization needs to be capable of acting on data insights as they are delivered. This is perhaps the most challenging aspect of competing on data analytics. Data managers must have a seat at management meetings and have the attention of C-level executives. They need to be involved in both day-to-day happenings as well as the strategic side of their businesses. Organizations that have committed to data analytics investments and forward-looking approaches to data-driven best practices have been shown to exceed their competitors in key areas such as operational efficiency, product delivery/time to market, business revenue growth, customer satisfaction, and customer retention.

WINNING IN THE DATA RACES

Modern technologies and associated best practices are the best tools for winning today's data races. They also provide unprecedented opportunities for data managers and professionals to elevate their roles within their businesses, helping to guide them and ensure the viability of data-driven decision making. With the convergence of new technologies and new ways of managing enterprise data environments, come more rapid deployment and continuous improvement of applications. ■

—Joe McKendrick

Entity-Event Knowledge Graph Solutions: Franz Inc.



ALLEGROGRAPH UNDERPINS FLEXIBLE AI KNOWLEDGE FABRICS

Ubiquitous AI requires a new data model approach that unifies typical enterprise data with knowledge bases such as taxonomies, ontologies, industry terms and other domain knowledge.

Franz's Knowledge Graph approach encapsulates a novel Entity-Event Model, natively 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 objects that can be the focus of an analytic (AI, ML, DL) process.

The 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.

The rich functional and contextual integration of multi-modal, predictive modeling and artificial intelligence is what distinguishes AllegroGraph as a modern, scalable, enterprise analytic platform. AllegroGraph is the first big 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 Knowledge Graph architecture for big data predictive analytics and machine learning across complex knowledge bases in order to discover deep connections, uncover new patterns and attain explainable results.

ALLEGROGRAPH WITH FEDSHARD™

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 sharded because they contain highly interconnected data. Franz's patented FedShard technology shards data with any large-scale knowledge base—providing a novel way to shard knowledge bases without duplicating knowledge bases in every shard.

AllegroGraph efficiently combines partitioned data with domain knowledge through an innovative process that keeps as much of the data in RAM as possible to speed data access and fully utilize hardware resources. This approach creates a modern analytic system that integrates data in context (ontologies,

metadata, domain knowledge, terminology systems) and time (temporal relationships between components of data). The result is a rich functional and contextual integration of data suitable for large-scale analytics, predictive modeling and artificial intelligence.

GRUFF—INDUSTRY-LEADING GRAPH VISUALIZATION AND QUERY BUILDER

AllegroGraph includes Gruff, the most advanced Knowledge Graph visualization application on the market. [Gruff](#) enables users to create visual Knowledge Graphs that display data relationships in views that are driven by the user. Ad hoc and exploratory analysis can be performed by simply clicking on different graph nodes to answer questions. Gruff's unique "Time Machine" feature provides the capability to explore temporal context and connections within data. The visual query builder within Gruff empowers both novice and expert users to create simple-to-highly-complex queries without writing any code.

Gruff is a browser-based application that does not require an additional download or application installation once AllegroGraph is installed. All AllegroGraph users need is a web browser and internet connection to log on. This approach gives users the convenience to access Gruff from anywhere on any type of system, while also simplifying deployment and streamlining updates within enterprise environments. Work with Gruff at the [Gruff Demo Site](#).

FRANZ'S TECHNOLOGY AND SERVICES

Franz's Knowledge Graph 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. Franz was recently named a [Best Database Management Software Company of 2021](#) and the company's flagship product, AllegroGraph, has gained prominence as a [Champion in the Knowledge Graph analytics market](#), which has skyrocketed in the past few years—prompting Forrester to publish its first [Forrester Wave: Graph Data Platforms](#).

Contact Franz Inc. today to build your AI Knowledge Graph solution. ■

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