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TREND REPORT

3 Trends in Enterprise Data Management

Data management methods are evolving quickly, as enterprises invest in gaining data agility to accelerate insightful decision-making. This trend report introduces 3 trends in how enterprises approach modern data management and discusses how the MarkLogic data platform delivers them.

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INTRODUCTION

> **The focus on modern data management is hardening, driven by an accelerated shift to data in the cloud and the subsequent innovation in data technologies and advanced analytics. Enterprises are recognizing new opportunities to derive value from their data and to save time and money, and they're taking a fresh look at new data management approaches to reap the rewards of smarter and accelerated decision-making.**

In response to this demand for more modern data treatments, a confusing array of architectures, technologies, and approaches has sprung up – and it's not easy to tell which ones will truly deliver better business outcomes and which ones are just hype. Should you invest in graph technology and metadata management? What exactly is a data fabric? How can you leverage the power of AI and machine learning?

We're here to help. MarkLogic is recognized as a Visionary in the Gartner Magic Quadrant for Cloud Database Management Systems and as a Leader in Metadata Management. We're successfully pioneering some of the most exciting new data management approaches, from semantic AI to active metadata management. MarkLogic's capabilities and experience give us a unique perspective on data management trends and how to apply them to solve your most complex data challenges — and gain business advantages like better market intelligence, audience segmentation, and regulatory compliance, as well as faster time to market for new products and services.

Let's take a look at three trends in data management that are worth investigating, and learn how to implement them in a way that delivers business value for your enterprise.

Trend #1: Deeper Data Insights Driven by Context-Enriched Analysis

As part of the push to use data for better decision-making, enterprises are turning to innovative methods to gain deeper and more trusted data insights. One of these methods is context-enriched analysis, which is analysis aided by graph database technology to capture, store, and consume data about both the data and the user's context and needs. This enables deeper analysis of not only the data itself, but the relationships and the effects between data elements. This context allows you to respond quickly to business change. According to Gartner, "By 2025, context-driven analytics and AI models will replace 60% of existing models built on traditional data."[1]

Those traditional models, which include maintenance-heavy patterns like relational databases and document-oriented databases, require extensive up-front data modeling and lack the flexibility of graph technology. By contrast, a context-driven approach keeps data closely coupled with active metadata to drive better analytics – which in turn enables faster, better decision-making.

THE MARKLOGIC DIFFERENCE

How does MarkLogic support context-enriched analysis and the business advantages it enables? For starters, a foundational component of the MarkLogic data platform is the semantic knowledge graph, which enables informed search, contextual applications, facts-based intelligence, and grounded analytics. And context is at the heart of the MarkLogic approach: MarkLogic's platform couples data with its metadata and puts this in context to its state, use, and audience.

[1] Gartner, 12 Data and Analytics Trends to Keep on Your Radar, April 2022

MarkLogic's product capabilities (including fast data connection ready for immediate use, the ability to create and interpret data/metadata, and a consumption model as a knowledge graph) have been recognized in both the Gartner Magic Quadrant for Cloud Database Management Systems[2] and the Magic Quadrant for Metadata Management.

Trend #2: AI in Data Management

AI centered around machine learning is one of the fastest growing trends in data analysis and data management. Organizations have heard about its game-changing capabilities, and they want to use it to quickly adapt to changes and make better and/or more insightful decisions. Used correctly, AI-driven data management can reveal hidden connections between information and save you time and money on activities like faster product innovation, unified enterprise intelligence, exceptional customer experience, and more. But AI is only as good as the data it works with, and it can be unreliable, even dangerous without the right data management strategy, drawing conclusions that are biased at best and outright incorrect at worst.

Some businesses approach this conundrum by enacting policies designed to ensure "ethical AI," but it may be more helpful to think in terms of **trustworthy** AI: The business needs to be able to trust the decisions the AI engine makes as well as understand why it makes them. This demands that business experts remain in control of the machine and at any time have the ability to interrogate the reasons why it made the outputs it did. Knowledge models are intrinsic to this approach as they let you capture a subject matter expert (SME)'s knowledge in a computer structure in order to use that knowledge to drive the AI engine directly, rather than having that SME advise a data scientist (who may understand math, but does not have command of the subject). It also means using data management strategies that ensure transparency, such as using active metadata to ensure that data is accurately tagged at all points in the information supply chain. This allows anyone wanting to validate an AI engine's conclusions to have access to all the information they need to investigate its decision-making process.

THE MARKLOGIC DIFFERENCE

MarkLogic supports both knowledge models and active metadata (more on the latter in the next section). It also introduces **semantic AI**, which uses both NLP (natural language processing) and rules-based algorithms to formally describe *what data means*, much the way people do using their natural language. Since no coding is required, semantic AI creates metadata directly from business user input and uses this metadata to interpret the data, placing it in context to its state, use, and audience. Within the MarkLogic data platform, data and metadata are kept together at all times, ensuring traceable, transparent, repeatable, and auditable results that can be trusted by the business.

Trend #3: Data Fabric Driven by Active Metadata

Data fabrics are trending as business decision-makers look for new ways to transcend the limitations of older architectures like data warehouses and data lakes. A data fabric is an architecture that connects data sources across the enterprise through an integrated layer (the fabric), standardizing data and knowledge and making them available for faster, more informed decision-making. A data fabric has many advantages: not only can it reduce data management tasks by up to 70 percent[3], saving time and labor costs, but it also improves access to information, allowing coordinated research across business units – transcending data and knowledge silos that occur across organizational boundaries, be they internal or external to the organization.

[2] Gartner Magic Quadrant for Cloud Database Management Systems, December 2021
[3] Gartner, 12 Data and Analytics Trends to Keep on Your Radar, April 2022

But it's not possible to create a functioning data fabric without active metadata.

For a data fabric to work, it needs contextual information to help it identify, connect, and analyze metadata. Active metadata immediately reflects changes in the data as it moves through the information supply chain, and this enables the frictionless sharing of data that makes a data fabric possible. This means that a semantic data platform built on active metadata is a foundational requirement for a data fabric.

One further caution: The more solutions you need to integrate in order to implement a data fabric, the greater the risk of failure. If, for example, you're managing the data in one place and the metadata in another (a common yet flawed approach), you're taking an integration risk – and cutting down on the context that makes the data fabric work.

THE MARKLOGIC DIFFERENCE

MarkLogic offers a unified platform for enabling a data fabric, bringing together elements that might otherwise require 15 or more different vendor solutions to replicate. The MarkLogic data platform includes an active metadata management system, which, as we've seen, is a key enabler of a data fabric architecture. In addition, MarkLogic's multi-model database integrates different data sources in order to manage, create, and interpret active metadata. Taken together, these elements of the MarkLogic data platform can lay the foundation for a true data fabric, along with all the advantages it offers.

Conclusion

No matter what problem you're trying to solve with data, you need a single unified platform that's flexible enough to support your business needs. MarkLogic has developed a groundbreaking platform that eliminates data and knowledge silos and lets you connect, create, and consume all types of data to enable informed search, contextual applications, facts-based intelligence, and grounded data for analytics. It delivers data agility in a single platform so that you don't have to build your own solution from different vendors (which risks creating more silos and potential points of failure), and it contains all the components you need to support context-enriched analysis, trustworthy AI, data fabrics, and more. This in turn lets you easily share information across the business and make informed, agile business decisions that can speed time to market and improve outcomes.

Learn more about how the MarkLogic data platform delivers data agility – enabling information services to respond nimbly to business change.

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