

Executive Brief

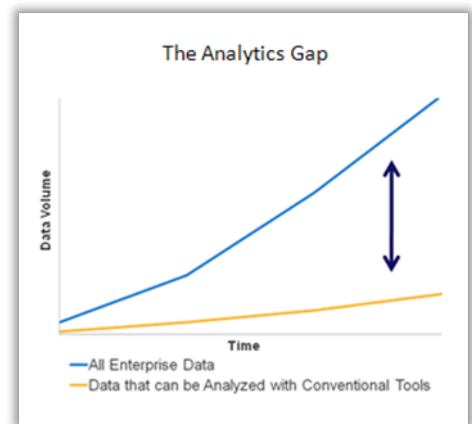
Overview

Relational database management systems are fundamentally inadequate for business analytics. Their lack of flexibility results in poor cost-performance and, as data volumes grow, they are approaching their useful limits. To make actionable decisions, enterprises need to nimbly combine sets of data, but the amount of effort it takes to integrate data (not just structured data, as in relational databases, but any data -- e.g., Weblogs, video, e-mail, etc.) quickly becomes nearly insurmountable.

Consequently, as the volumes of data and queries increase, business analytics agility is being stifled. In other words, the ability of enterprises to create and collect data has outpaced their ability to derive Business Intelligence from it. This is the Analytics Gap.

Enterprises have become data driven, but technology is holding them back from reaching their analytic goals.

Algebraix Data Corporation is addressing the problem with a radically new technology that gives enterprises access to data wherever it resides – inside or outside of their data centers – so they can become as nimble as they are data driven.



Algebraix Data Corporation

Algebraix Data Corporation was founded to enable real-time data access and eliminate manual performance tuning while integrating all enterprise data in an environment that is at once distributed, collaborative and dynamic. The company has been **awarded six U.S. patents** for its innovative **ALGEBRAIX®** technology.

ALGEBRAIX technology has broken the bounds of conventional relational data-management systems by subsuming the Relational Data Model in a **Universal Data Model based on modern algebra**. As a result, *ALGEBRAIX technology enables the world's first commercially viable solution for distributed querying across heterogeneous environments.*

Why ALGEBRAIX Technology is Necessary for the Future of Analytics

The Problem with Relational. The Relational Data Model was a breakthrough when it was defined more than 40 years ago. It provided a means to map business data into structures that computers could process more effectively.

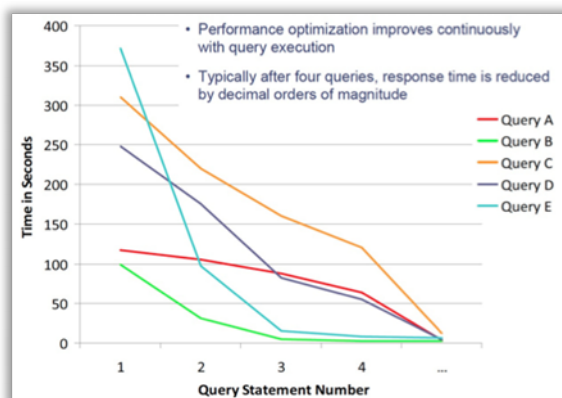
Relational databases are useful and straight-forward for transaction processing because relational databases can be effectively tuned for transactional applications. However, conventional relational databases are too cumbersome, time-consuming

and maintenance-intensive for many Business Intelligence (BI) applications. To avoid rampant proliferation of application-specific data marts and the maintenance that goes with them, data must be integrated to accommodate multiple applications and mixed query types. This integration adds further maintenance and, as the volume of data and the number of applications relying on it increases, the problem is compounded.

A Flexible, Distributed, Scalable, Mathematical Solution. To solve the problem permanently, it is necessary to mathematically map logical data models to physical data models, and vice versa. ALGEBRAIX technology does this; the rigorous mathematics underlying ALGEBRAIX technology can be used to map any regular well-defined data structure -- not just structured data, but any data structure (e.g., relational, XML, hierarchical, network, etc.) -- to any other.

By mathematically modeling logical and physical data structures, ALGEBRAIX technology delivers high performance even in heterogeneous environments. This is because each node manages its own data. At the same time, ALGEBRAIX technology creates a collaborative, peer-to-peer environment in which mathematical metadata and costing information can be shared across the nodes of computing networks to mathematically optimize performance both locally and globally. It is its ability to partition and distribute data and queries across computing networks that enables ALGEBRAIX technology to scale beyond the bounds of individual data centers.

ALGEBRAIX technology is **inherently self-optimizing and self-managing**. The rigorous mathematics underlying ALGEBRAIX technology enables unique capabilities, such as



Adaptive Data Restructuring – the ability to alter data structures while maintaining their mathematical identity, the ability to mathematically minimize data transfers across the persistent-storage/volatile-memory performance barrier, and **Node Splitting** – the ability to accelerate performance by dynamically partitioning data based on actual data, query patterns and resource usage at

run-time. Not only is ALGEBRAIX technology self-balancing and linearly scalable, but, in fact, performance optimization improves continuously with query execution.

Important Use Cases

ALGEBRAIX technology's revolutionary design has important implications not just within and across enterprise data centers but as the first true enabler for analytic Cloud computing and embedded analytic applications.

Analytic Applications in the Cloud. Cloud computing – a large collection of distributed, heterogeneous computing components that can be dynamically partitioned – is a growing trend. 36% of US enterprises now have some applications running in the Cloud (*Mimecast, February 2010*). However, there is today no data

analytics solution for Cloud environments because the architectures have been biased toward traditional SMP (symmetric multiprocessing) homogeneous environments while enterprise data centers face a different reality with data spanning geographies and heterogeneous systems – everything from parallel servers on high-speed networks to mobile devices on WiFi. The self-optimizing, distributable and collaborative nature of ALGEBRAIX technology extends business analytics to encompass heterogeneous global Cloud computing networks.

Embedded Analytics. ALGEBRAIX technology’s inherent self-optimization and the fact that it’s deployable on any device with a minimal footprint, makes it ideally suited to delivering embedded analytics in everything from enterprise solutions to mobile BI.

How it Works

Technical details about ALGEBRAIX technology can be found online:

[Functional Overview](#)

[Doing the Math](#) (whitepaper by Robin Bloor, Ph.D.)

[What Is a Cloud Database?](#) (whitepaper by Robin Bloor, Ph.D.)

Net Result

As a result of Algebraix Data’s radically new technology based on rigorous mathematics, a long-sought-after capability becomes possible – **distributed heterogeneous query**. In such an environment, disparate data sources across geographically dispersed and dissimilar computers can be tapped to answer queries in an efficient manner. To enable this, each ALGEBRAIX technology node can receive inbound queries and each is able to delegate some or all processing for a query if it can’t answer it locally. If it delegates all of a query (as subqueries to one or more nodes), it also delegates its duties (combining the final answer set) to the most capable node.

Through this unique and powerful design, ALGEBRAIX technology removes the software limitations that constrain Cloud-based analytic applications. **It is the only data management technology that can provide real-time access to distributed enterprise data in any format without extensive programming yet can be installed and configured in minutes on most platforms.**

With ALGEBRAIX technology, enterprises that seek nimble analytics and the solution providers that hope to deliver them can easily reach their potential and enjoy tremendous advantage.

More Information

This executive brief merely scratches the surface of the comprehensive solution that is ALGEBRAIX technology. More information is available via the web at www.algebraixdata.com or by calling us directly at 1-858-200-7215.