

Modern Application Requirements Driving the Need for Hybrid Data Processing

The 451 Take

Digital transformation has become something of a buzzword in the IT industry in recent years, but it is a very real trend that is in the process of effectively separating the leaders – those adapting fastest to a world of digital engagement – from the laggards, which are at serious risk of extinction if they fail to adapt their products, services and business processes accordingly. While digital transformation is driving cultural and organizational change through the digitization and automation of back-end business processes, its impact is most obvious in the evolution of new applications – both consumer- and employee-focused – that drive engagement through the delivery of contextual experiences.

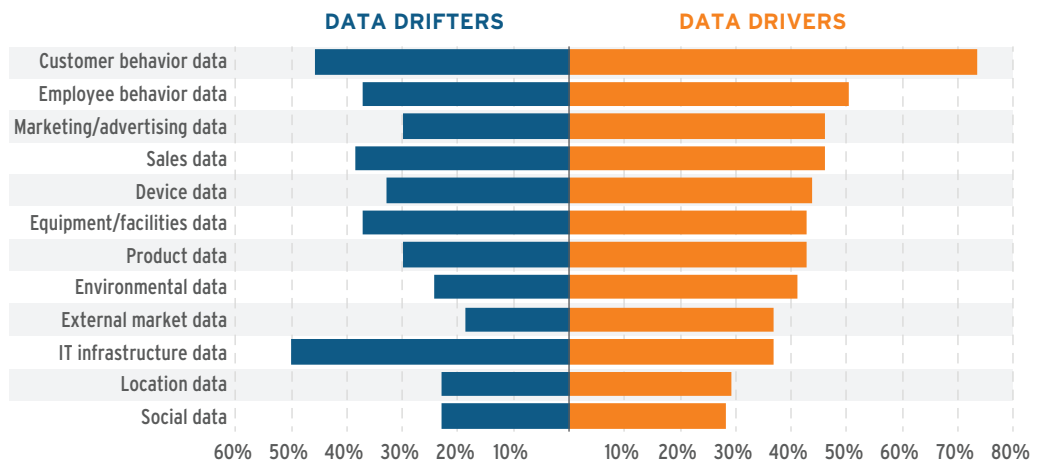
These new applications (or systems of engagement) involve the three imperatives of digital transformation – intelligence, agility and customer-centricity – and are being developed and adopted to replace or augment traditional transactional applications (or systems of record) that have been used to record the results of interactions that occur in the physical world. In order to drive these new applications, systems of intelligence (artificial intelligence and machine learning) are also required to automate real-time decision-making and deliver functionality such as intelligent personalization, recommendations and forecasting.

These requirements are driving the need for new and advanced database functionality – what 451 Research calls hybrid operational and analytic processing (HOAP) – to support operational and analytic processing on the same database, at the same time. 451 Research’s recent Voice of the Enterprise: Data and Analytics study illustrated how the most data-driven companies (the Data Drivers – those making nearly all strategic decisions based on data) have increasingly different strategies and approaches to the least data-driven (the Data Drifters).

For example, while Data Drifters are more focused on core back-end business functions (i.e., keeping the business running), Data Drivers are more advanced in terms of analytics and business intelligence use cases, as well as customer-facing functions and employee productivity functions. Similarly, Data Drivers are also more likely than Data Drifters to analyze data from a range of data sources, including customer behavior data, marketing/advertising data, employee behavior data, environmental data, external market data, device data, social media data and location data.

Data Drivers vs. Data Drifters: Comparative Use of Multiple Data Sources

Source: 451 Research, Voice of the Enterprise: Data and Analytics, 2H, 2018



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Business Impact Brief

Business Impact

REAL-TIME. The delivery of contextual experiences requires a real-time response. Consumers and employees alike expect immediate information and content from modern applications, driving the need for real-time data processing.

RESPONSIVENESS. The rapid processing and delivery of static information and content isn't enough, however: this information needs to be related to the individual and the interaction at hand.

AGILITY. It also needs to be contextual, changing dependent on the channel, device, delivery model and specific nature of the interaction.

PERFORMANCE. Supporting the real-time delivery of contextual data and content relies on simultaneous operational and analytic processing within the engagement window, which relies on high-performance data processing.

SIMPLICITY. Delivering simultaneous operational and analytic processing in a highly performant manner relies on products that have been designed to eliminate the complexity of multifunctional capabilities.

COST-EFFECTIVENESS. Providing simultaneous operational and analytic processing has the potential to lower data processing and overall infrastructure costs.

Looking Ahead

There is a case to be made that the data warehouse originated as a workaround for the performance limitations of operational data processing. HOAP does not eradicate the need for separate big-data analytic platforms, but it reduces the cost and complexity of extended analytic services, such as ad hoc data warehousing and real-time data processing on operational data. It is still early on for the adoption of HOAP database functionality, but we anticipate that HOAP workloads are set to grow significantly for new database deployments, driven by the delivery of automated systems of engagement and the underlying systems of intelligence, in part to support improved customer engagement.

Most companies are increasing their investment in data processing, analytics and machine-learning software with a desire to become more data-driven – or they should be if they are to outlive those that don't in the Darwinian struggle that is the drive to transform business processes and organizational activities in response to digital transformation. The development of new enterprise operational applications reliant on recommendations, personalized content, personalized offers and real-time fraud analysis, in particular, will drive the adoption and use of in-memory, hybrid operational and analytic processing.



To learn more about the HOAP market and how MemSQL is simplifying data architecture while improving performance and price for customers, check out our webinar [The Three Ways HOAP Databases Simplify Data Management](#).