Leveraging Analytics of Things to Improve Business Outcomes

ANALYTICS OF THINGS

Organizations look to Analytics of Things (AoT) as they pursue a new competitive advantage from connected devices that enable data to be available on a real-time basis. Although AoT promises to help companies gain critical insights into operations—and drive business value across the organization—achieving this can present challenges.

Consumer-oriented businesses have made significant progress in leveraging the Internet of Things to increase revenues and improve customer satisfaction by tapping into consumer data from cell phones, web activity, and home devices. Despite advances in this area, varied standards across devices and limited availability of data across multiple data sources hinder the capability to derive integrated insights. Overcoming these silos can provide a more holistic view of consumer interest, and promise a better customer experience.

The analytics and business value derived from data within the industrial sector—despite equipment advancements that allow the capture of large volumes of data for studying product behavior, service delivery, and consumer usage—have not matured at the same level. In most cases, operations are deeply siloed and heavily dependent on non-agile applications; and lack an enterprise analytic capability that prevents them from optimizing data use for business gains.

Overcoming the Business Challenges of Data Management

Data Ingestion

While the potential for sensing and capturing data is great, a robust infrastructure is needed to accommodate and store huge volumes of data—and be easily accessed by analytics engines and other applications. The challenge lies in the transmission, storage, and maintenance of high volume data flowing at high frequency.

Data Qualification

Not every data point received is necessarily a right representation of reality, as sensors can fail or data can be corrupt. The ability to identify correct data plays a key role, so multiple stages of data validation is needed: data capture, transformation and storage, analytics applications, and the final output.

Deep Data Analytics

Business challenges that can be addressed using sensor data require a much deeper analytics capability, involving machine-learning techniques and other advanced analytics applied to multiple data domains. Equally important is the need for efficient response times from analytics algorithms to drive quicker decisions—and keep pace with the volume of data ingested.

Business Relevance

Analyses and insights must translate into meaningful, actionable recommendations that directly impact the organization and improve business outcomes. Making a connection between what data is saying and how it can be leveraged to mitigate risk and improve revenue is key.

A New Way: Teradata Capabilities

Data Ingestion

Teradata offers a robust, end-to-end infrastructure that empowers companies to fully leverage sensor data and deliver business value across the organization. Data ingestion systems can parse any type of input source or format, and stream it into multiple targets where data should be stored. Both batch and real-time streaming data analysis is supported. It can then be integrated with open source environments and commercial infrastructures to support ERP, cloud, big data, and streaming environments.

Qualifying Sensor Data

Teradata enables sensor data and analytics qualification at every stage in the end-to-end AoT environment to detect and alert users of false signals, anomalies, and outliers—as well as recommendations that don't align with business context:

- Stage 1: Sensor data receipt and ingestion
- Stage 2: Sensor data processing and transformation to target environments

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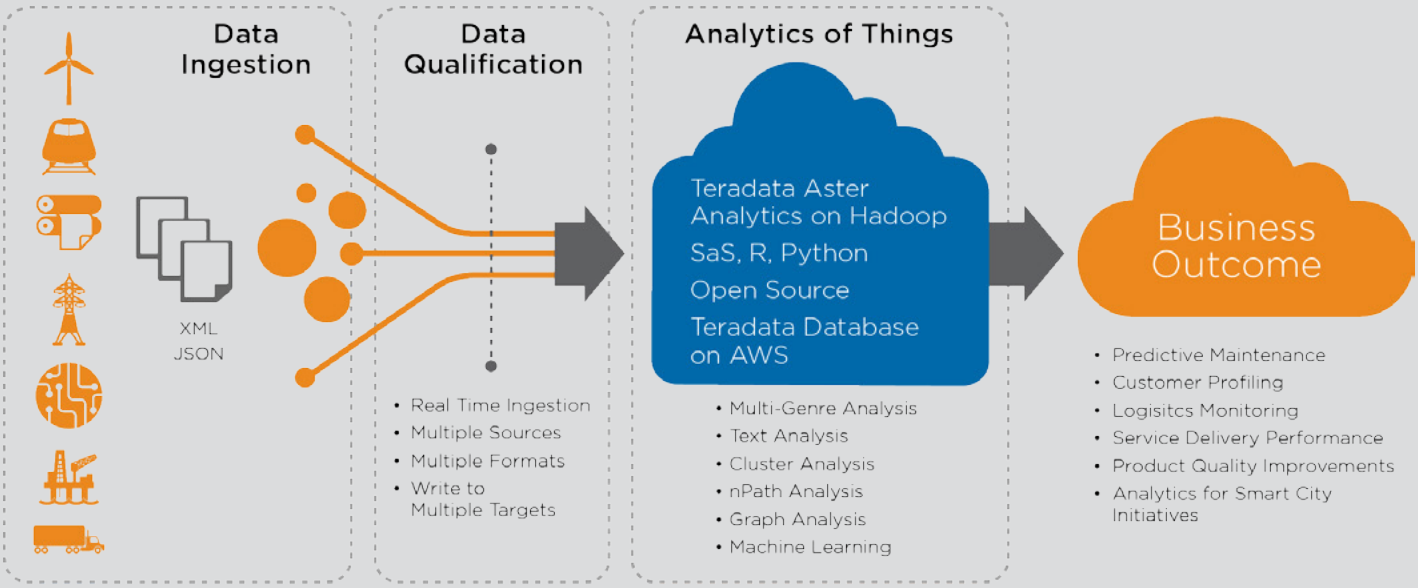

Figure 1: Data orchestration for Analytics of Things to drive business outcomes.

- Stage 3: Analytics output from various statistical and machine learning algorithms
- Stage 4: Predictions, alerts, action, and recommendations to support business process

Advanced Analytics

Teradata supports the application of deep analytics in many genres, such as machine learning, time series, regression, text mining, cluster analysis, nPath, and graph analysis techniques. Out-of-the-box analytics capability can be combined with custom algorithms to achieve business-specific analysis using SaS, R, and Python. Analysis is supported by evaluation of the signal to detect false versus true signals.

Analytics are enabled on the integrated, multi-domain high-volume data—without sampling or removing it to separate platforms—to preserve the value and fidelity of the insights. Efficient proprietary techniques support the high volume and frequency of data ingested from sensors.

Transforming Data into Business Value

Teradata has successfully addressed the predictive maintenance needs for many types of industrial assets, including heavy mining equipment, trains, paper process, steel, and consumer packaged goods manufacturing. The early detection of signals to mitigate risks of equipment breakdown reduces downtime significantly for Teradata customers.

Other business areas include transportation/logistics analytics for real-time sensing of delays and mitigation plans; traffics congestion analysis by day and time to support smart city initiatives; driver profiling to support insurance agencies for better service offerings; and service delivery performance for data centers to improve customer satisfaction and increase upsell/cross sell of service offerings.

The Teradata Advantage

Teradata empowers companies to achieve high-impact business outcomes. With a portfolio of business analytics solutions, architecture consulting, and industry-leading big data and analytics technology, Teradata unleashes the potential of great companies.

For more information about Teradata and leveraging the Analytics of Things to improve operational efficiencies, visit Teradata.com.

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