



End-to-End Visibility: From Customer & Product Lifecycles to the Connected Car

Teradata Analytics Solutions for the Automotive Industry



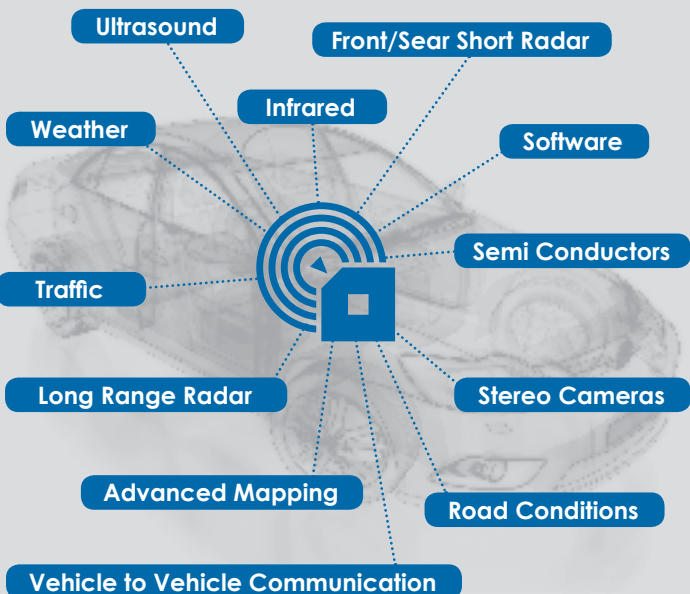
Speeding Ahead in the Age of Data-Driven Automotive

In the face of changing economic and operating conditions, automotive manufacturers need insights that can help them take action to outmaneuver challenges from old and new competitors. And, it's by integrating, manipulating and utilizing insights taken directly from their data and consumer vehicles that they will continue to be top of mind for the next generation of empowered automotive consumers.

Data is everywhere. But, only insights gleaned from vehicle and consumer data can reap the biggest payoffs. Analytic insights are needed to help them complement products with services and create the concepts that sell—all based on the integration of thousands of data points derived from business systems and customer touch points like connected cars, customer lifecycles, dealers, manufacturing operations, the supply chain, financial management, and social media.

The combination of this data, with the right Big Data environment and Business Intelligence technologies, in a timely manner, is what drives that critical competitive edge in today's evolving automotive market. And, it's by integrating, manipulating and utilizing insights taken directly from their data that enables a 360 degree view

Valuable Data collected from Sensors



Automotive manufacturers will need to increase not only their knowledge of the consumer, but forge alliances with many of the applications and service providers for deep insights to the consumers' wants and needs.

of the customer. The insights developed by automotive manufacturers will continue to keep them top of mind for the next generation of empowered automotive buyers.

The Analytics Advantage

Teradata helps automotive companies unlock the potential of diverse customer and business data, so they can do more of what really matters, better and faster. New, innovative capabilities can impact areas throughout their enterprise. Utilizing our unique and powerful analytics, newfound knowledge can be applied in meaningful ways to deliver significant value for long-term business impact:

- Connected Car & Sensor Data Integration, Analysis
- Product Quality & Warranty Management
- Vehicle Buyback Prevention
- Supply Chain Visibility
- Product (VIN) Profitability & Margin Analysis
- Financial Performance (Spend) Management
- Master Data Management

Integrate, Analyze Connected Car & Sensor Data

The connected car has been called an unprecedented and powerful engine for data collection. The benefits to the industry and society are seemingly countless. Data insights derived from customer, product, and service data can drive new, innovative car design; minimize warranty and defects; enable car sharing schemes and even manage traffic congestion.

Manufacturers today are downloading 100–200 kilobytes of data from a car, each year, during service visits. But, with the connected car, manufacturers will be able to download kilobytes every day. As the systems mature, the remote diagnostics capability of recording and sending

data on-demand, will enable the study of anomalies in detail for a vehicle or an entire fleet.

New innovations like predictive braking can present an incredible safety enhancement for consumers to avoid accidents. But, inevitably deployment errors can occur, along with some accidents. To adequately address these incidents in hours—not days or weeks—data integration and analysis is the new control imperative.

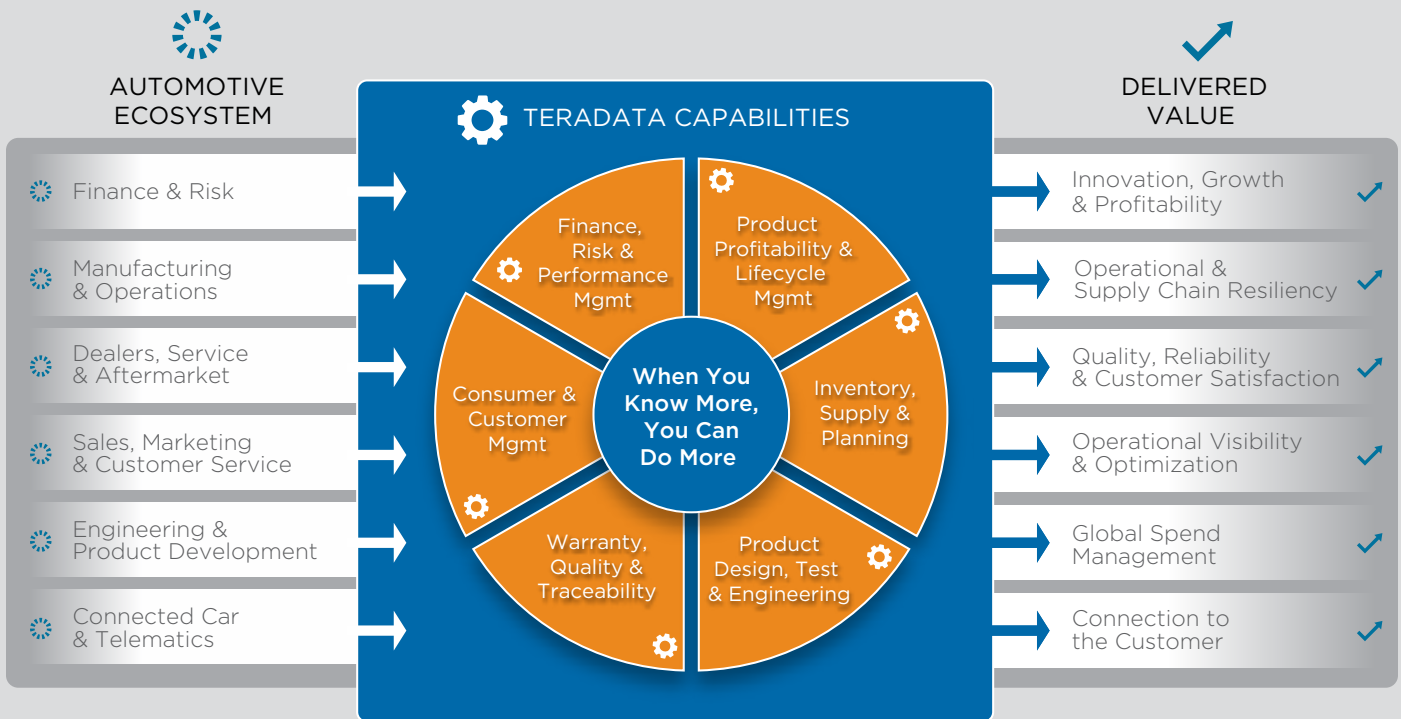
Automotive organizations aren't the only ones seeking control of the consumer. Connected consumers want to interact with manufacturers on a channel of their choosing, whether that is in the showroom, online, at the call center, on social media, or via in-car applications. Marketing must now be more targeted and relevant in how they interact with the consumer, recognizing when, where, and what they want communicated to them. Automotive manufacturers will need to increase not only their knowledge of the consumer, but forge alliances with many of the applications and service providers for deep insights to the consumers' wants and needs.

All of this information captured must be readily available from every touchpoint. Using a data and analytic centric approach to managing the information makes it readily available to perform advanced analytics with agility, using cutting-edge interactive technologies. It is now possible to not only create a 360-degree view of the customer, but also predict his/her behavior, deliver tailored next-best actions across channels, and devise highly personalized ways to engage, retain, cross-sell, and boost overall brand loyalty beyond basic sales and service revenue streams.

Improve Product Quality & Warranty Management

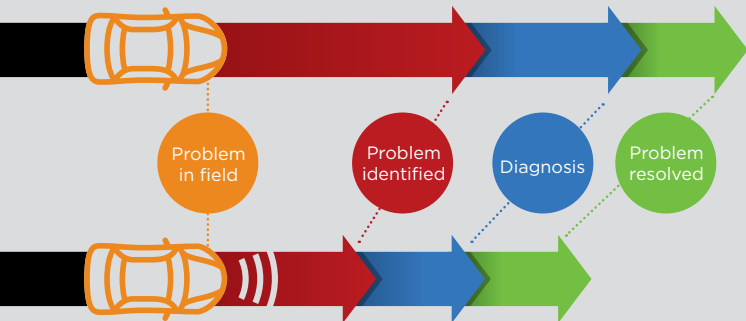
Warranty Management is about much more than merely fixing product failures; it's an opportunity to identify and address consumer and design issues proactively. When warranties are affected by less than exceptional product quality, the results are large. Higher warranty costs drive an ever-expanding warranty reserve budget that directly impacts the company's profitability. Sales also suffer from the loss of customer confidence and

Teradata Framework for Creating a Next Generation Analytics Advantage



Reducing the Detection-to-Correction Time

Without Early Warning System



With Early Warning System

The population of vehicles impacted and the cost to remediate the quality issue is significantly reduced.

from the resulting damage to the firm's brand image and equity. When a vehicle defect may affect public safety, the situation may lead to increased government scrutiny resulting in product recalls, hefty fines—or worse, a major hit to the Brand Image.

Using advanced analytics to predict and address warranty issues early helps you build and sustain customer loyalty, reduce warranty costs, gain better profit margins, and earn repeat business.

Predict & Prevent Vehicle Buybacks

Standard surveys can do little to uncover true customer sentiment, identify customers for the next best offer or predict and prevent vehicle buyback requests. Even when there are other touch points available for analysis, it can be a big challenge to bring together all other customer data to accurately score loyalty. With such scattered visibility, little opportunity is left to take the right actions at the right time to improve the customer's experience, or to stave off potential roadblocks in forming great customer relationships.

Leveraging advanced analytics empowers automotive manufacturers to string together multiple customer touch points over time to create a customer sentiment index (CSI). Path and pattern analyses may be conducted to fully understand customer event and experiences across carholds and individual drivers. The business can proactively take action with a customer, based on a CSI

score trending down from events or behavior that may lead to a buyback. Alerts are triggered and customer service takes action to mitigate the trend.

Gain Greater Visibility of The Supply Chain

Every day, automotive manufacturers seek answers to local and global questions, like these:

- What happens to the material on the way to our plants?
- What are cost drivers in the supply chain?
- How do our individual suppliers perform?

Lack of transparency along the supply chain can cause insufficient process stability and high supply chain costs. Manual and disconnected systems and queries can cause latency issues in responding to logistical problems and no fact-based assessments of suppliers/carriers regarding quality and logistics performance. However, integration and aggregation of data throughout the global supply chain allows total visibility via one, centralized information platform. This view can provide an early warning system of alerts for variances and scoring to track supplier and carriers, and take action to minimize or eliminate impacts on the business. As well as enabling operational reporting and forecasting for organizational management and experts from overall process down to a unique part number.

Keep an Eye on Product (VIN) Profitability & Margins

Moving any product from supply chain through manufacturing, shipping, and sales offers countless opportunities for margins to erode. Having the ability to track why and where profits are leaking can help you make strategic and operational decisions with timely, data-driven insights into whether or not those decisions will keep you in the black. Knowing the actual cost of each vehicle at the dealer enables improved strategies to manage the inventory and sell vehicles at the highest margin.

Strengthen Financial Performance Management (Spend Management)

Automotive companies that employ continuous global spend analytics can gain visibility into the procurement

ecosystem, shorten the time between an event, discovery, and action while lowering the overall cost of parts and material.

Build a Manufacturing Data Management Model

You would never consider building a manufacturing plant without a blueprint because you wouldn't know if you had sufficient production space, ample storage room or if inventory could flow easily in and out of your production lines. So why build a data warehouse without first knowing the details of exactly where data will be stored?

Seeing a coherent map of critical information is a challenge when your data is stored across disparate systems. Utilizing a master data management system gives automotive manufacturers a single view of master and reference data, whether it describes customers, products, suppliers, locations, or any other important attributes.

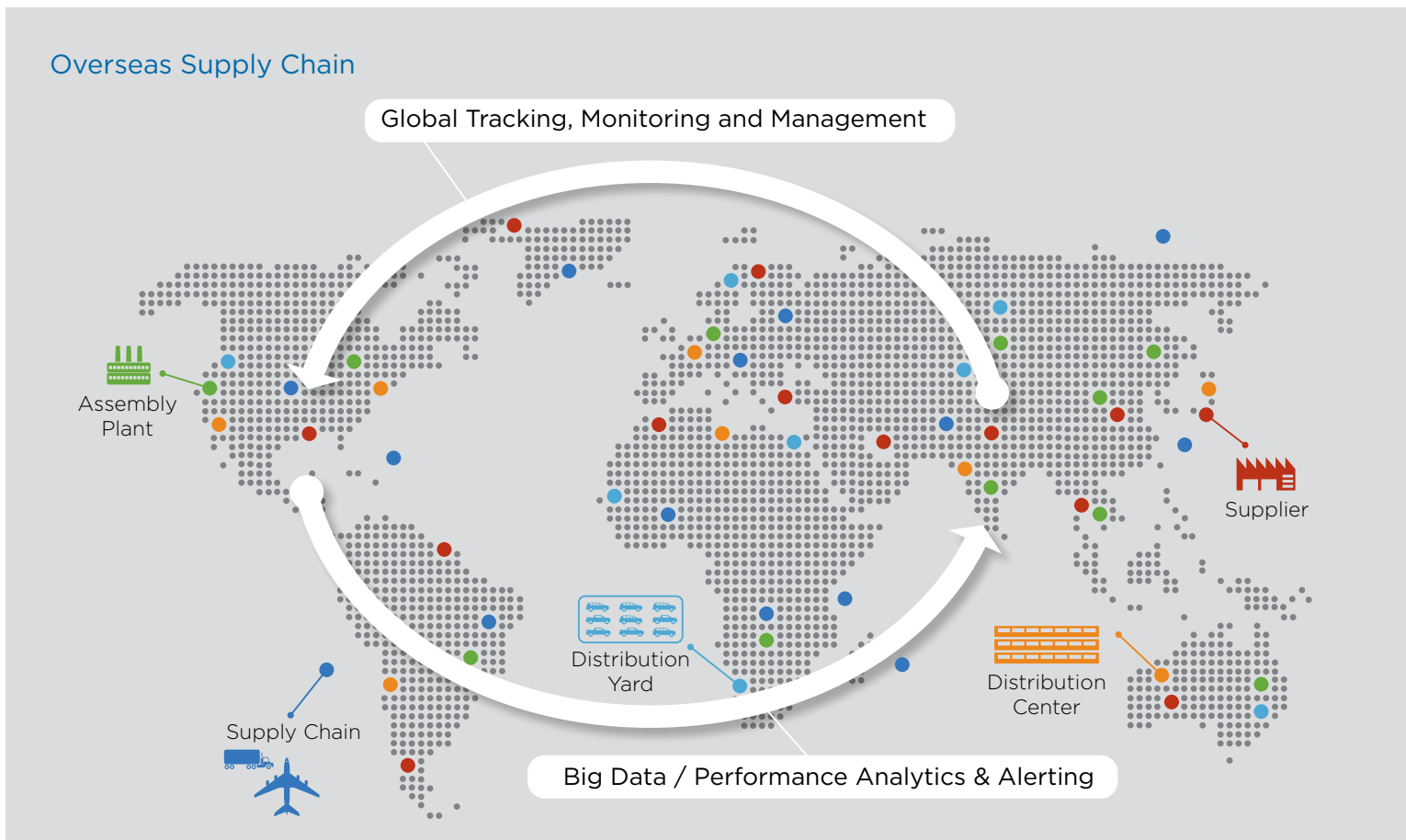
Tap Into the Teradata Advantage

Teradata empowers automotive manufacturers to bring innovation, service and new products to market quickly, collaborate more effectively with retail partners, help maintain profitable growth, and optimize both the manufacturing and the supply chain.

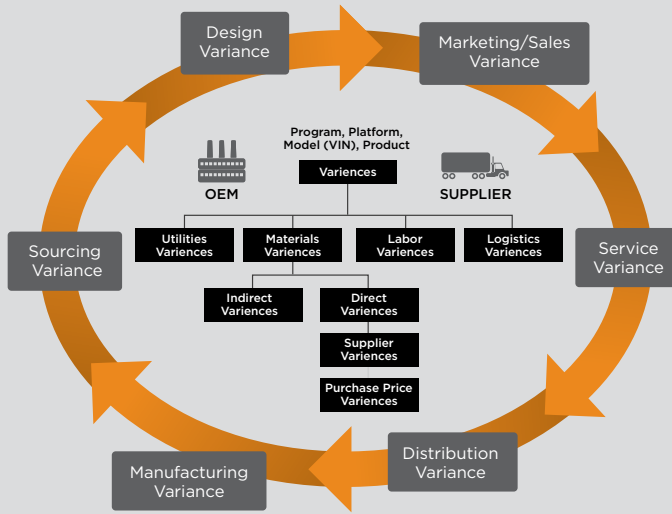
Teradata's capabilities are built upon the world's leading analytic data platform ecosystem, marketing and analytic applications, data modeling, and consulting services. Our integrated solutions are engineered to integrate and analyze massive amounts of data, yet designed for everyday use by the broadest constituency of business users.

Do More—Faster, With Expert Guidance

Teradata Services includes best-in-class business analytics consulting, technology and implementation expertise, and customer support services that can be uniquely tailored to your business strategy, initiatives and best practices. Teradata automotive industry experts know your business



VIN Profitability & Margin Analysis



An increase in your Profit Margin drops to the Bottom Line.

-- and can help you discover new insights that unlock the hidden value in your data.

Cross-functional business analytics at Volvo Cars

Working with Teradata, Volvo Cars has successfully integrated data from many different business functions. To accelerate the investment pay-off, they started up a cross-functional business analytics group, applying data science and supporting advances in analytics to big data integrated with their traditional data sources. Volvo Car's core analytics group is embedded in the business, works across functions and closely with the IT function to enable coordinated delivery and impact. Today, this group targets things like connecting with more consumers to understanding and realizing value of the connected car.

Data Models

Teradata's industry-specific Data Models enable automotive organizations to unleash their expertise and knowledge. Solution Modeling Building Blocks provide business-friendly access to integrated data, while helping to accelerate access layer design with pre-built semantic data models and building blocks. Data Integration Roadmaps leverage industry expertise for identifying cross functional benefits of integrated data. Business-focused Industry Data Models provide a customer proven blueprint for an integrated data platform by bringing together valuable business information that delivers a single, consistent view of customer activity and operational efficiency.

Master Your Data Within a Unified Ecosystem

Teradata Unified Data Architecture leverages the complementary value of best-in-class technologies from Teradata, Teradata Aster, and open source Apache™ Hadoop. It empowers every pre-approved decision-maker across your organization to ask any question, against any data, with any analytic, at any time. Teradata's UDA features a fast and flexible deployment and is built upon open standards.

The Automotive landscape is racing by at breakneck speeds with change being the only constant. The enormous volumes of data being generated from the vehicles and the environment today will increase exponentially in the future. Auto manufactures that are not prepared to manage and leverage the data with effective and efficient data management and analytical systems will drown in the data and lose their market leverage.

Teradata helps many of the world's most successful automotive companies transform data into insights, which leads to amazing outcomes. For more information, visit teradata.com/automotive.

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