Automaker wrangles massive amounts of data to deliver exceptional self-driving CX

Autonomous technology has quickly become a competitive market; it can make or break automotive reputations depending on how well it performs and how well it's received by the public. This puts automakers under intense pressure to deliver self-driving features that are not only extremely safe but also intuitively useable, reasonably priced, and quick to market. There is no room for failure.

Drowning in data

A major automaker that was working on an autonomous program recently found themselves with a persistent challenge. They were drowning in data from a large fleet of self-driving vehicles collecting terabytes of real-world driving data each day. Answering simple questions required pulling highly trained engineers away from program development for weeks at a time to sift through mountains of logs and data files.

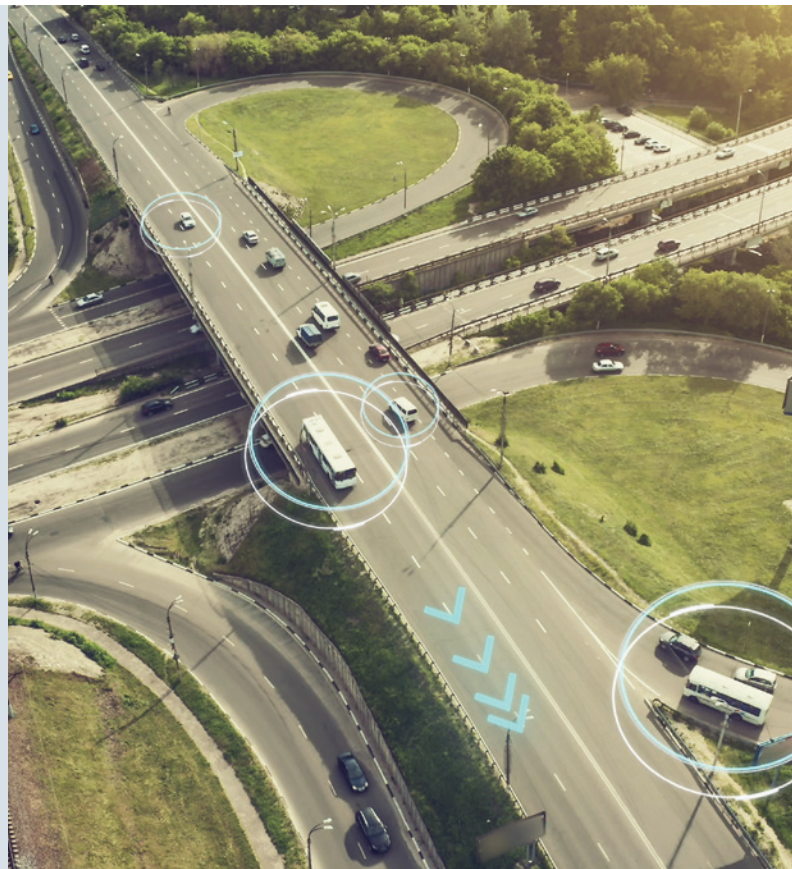These disruptions had a huge braking effect on the speed of the company's autonomous program. Even more critically, their inability to easily answer key questions about algorithm performance, real-world conditions, and design issues had the team making crucial decisions based on opinions rather than data. They knew this was an untenable position.

Simple analysis not enough

The self-driving team consulted with the corporate IT team about their data challenge. After over a year of trying to wrangle with the complexity of the problem, the IT department realized that they didn't have the expertise

SOLUTION OUTCOMES

- Significantly shorter software development cycles – from weeks to days.

- Structured and ad-hoc analysis to explore behavior across numerous dimensions of vehicles, driving scenarios, vehicle software versions, and driving conditions.

- Event analytics and metrics related to real-world complexities such as lane line degradation, road and traffic conditions, bright sun, nighttime visibility, variable weather, speed, etc.

- Instant project progress tracking and prioritization through viewing, filtering, sorting, and tagging real-world events.

- Storage and cataloging of real-world and simulation data for testing and refinement of autonomous corner cases.

"Incite's analytics tool has been incredibly helpful in developing every dimension of our self-driving product, from customer-facing challenges to safety-critical questions."

or the resources to solve it. The head of the self-driving team explains: "While we were doing physical tests and data collection, we needed the next level of quality. The comparatively simple analysis we were doing wasn't cutting it. Getting a grasp of the bigger data problem turned out to be a much bigger challenge than everyone expected."

As the immovable production deadline loomed overhead, the team became focused on urgent work and were unable to view the project critically or strategically. They not only needed to build a natural and humanistic interface that was safety-critical, but now they had to do it at break-neck speed.

Robust data analysis platform

IT leadership decided to bring in Incite, a data-analytics company with a unique approach to solving complex business challenges. Incite got to work right away, workshopping with the self-driving engineering team and management to fully understand the scope of the problem.

"If self-driving tech is a wild success, it could be amazing for our bottom-line. But if a customer gets in our car and doesn't have a positive experience, they won't come back. We had no choice but to succeed."

As a result of their extensive research and close cooperation with people at all levels of the organization, Incite created a custom analytics platform based on modern tools and methodologies. The platform was developed to continually digest the automaker's massive amounts of road-testing data and automatically organize it for flexible visualization and easy interpretation.

This allowed the autonomous team to catch their breath, step back from the engineering grind, and gain visibility into many subtle aspects of the complex problem of self-driving. It also gave their data analysis a higher level of fidelity and the entire team with a way to answer questions in a robust and statistically valid way.

"Until Incite helped us build our data analysis platform, we couldn't even appreciate the questions that were going unanswered and unanalyzed," says the team lead. "Our job was to realize a vision for the customer, and we absolutely couldn't have done that without properly analyzing the data."

More benefits than expected

Some of the automaker's early successes using the Incite platform involved solving specific problems. However, once these were dealt with, the company then used the analytics platform in many other constructive ways.

For example, they used the platform to fine-tune their entire engineering workflow, track down bugs, improve performance requirements, and perform root-cause analysis of issues. They leveraged it to make vital course corrections to improve the final product without wasting time in executing unnecessary tests, performing

PLATFORM FEATURES

> AI-powered schema creation that automatically labels and restructures new data without requiring human intervention.

> Dashboards and workbench tools that are easily used by technical and non-technical users alike.

> Platform that parses and manages hierarchical, time-series, and unstructured data, allowing both structured and ad-hoc analysis across all aspects of the data.

> Smart down-sampling that compresses data without impacting analysis.

> Signal purification and intelligent outage interpolation that delivers frequency harmonized time-series data for consistently valid comparisons of autonomous corner cases.
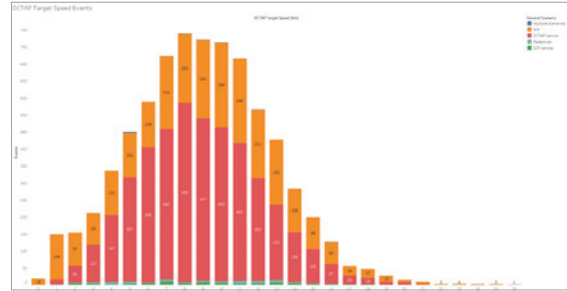
needless data collection, and following misguided opinions. And they regularly used the platform to communicate clear and confident progress to upper management.
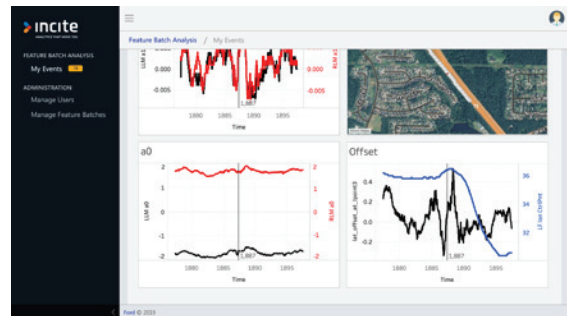
The end result was an autonomous program that was delivered on time and met the brand's reputation for superior safety and customer experience.

Streamlined programs throughout the company

The self-driving team credits the Incite platform for helping them deliver a definitive success and a positive return on investment. Since then, they've happily shared the tool with other development groups that have similar data wrangling issues, introducing more and more of the company to new, more modern ways of data management and analytics to streamline their programs.

The dashboard allows both technical and non-technical users to extract meaningful insights from masses of collected data.

The data analysis platform helps engineering and analysis teams visualize key metrics to expedite detect-to-correct cycles.