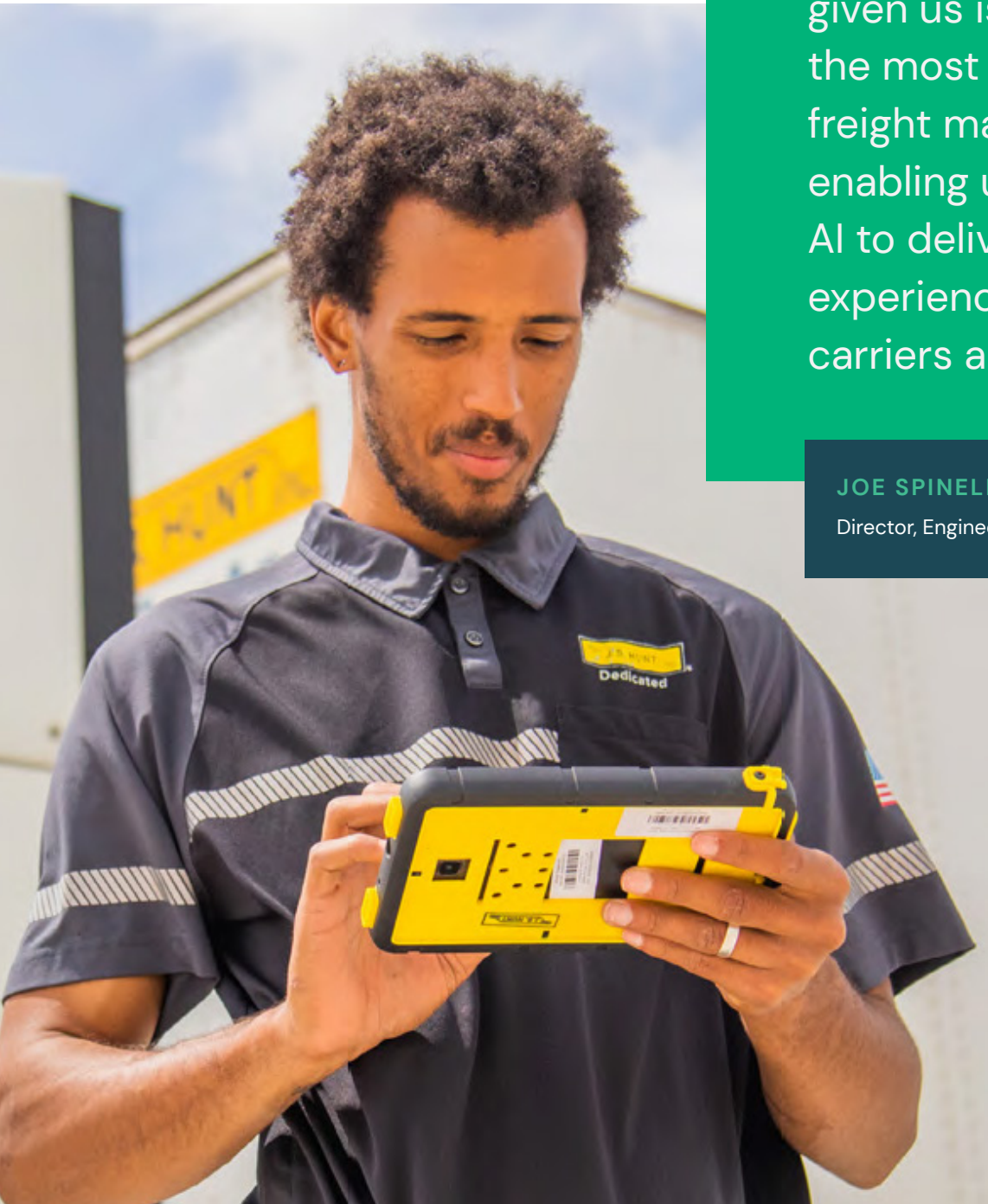


J.B. Hunt Takes Transportation to New Frontiers With Data





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JOE SPINELLE

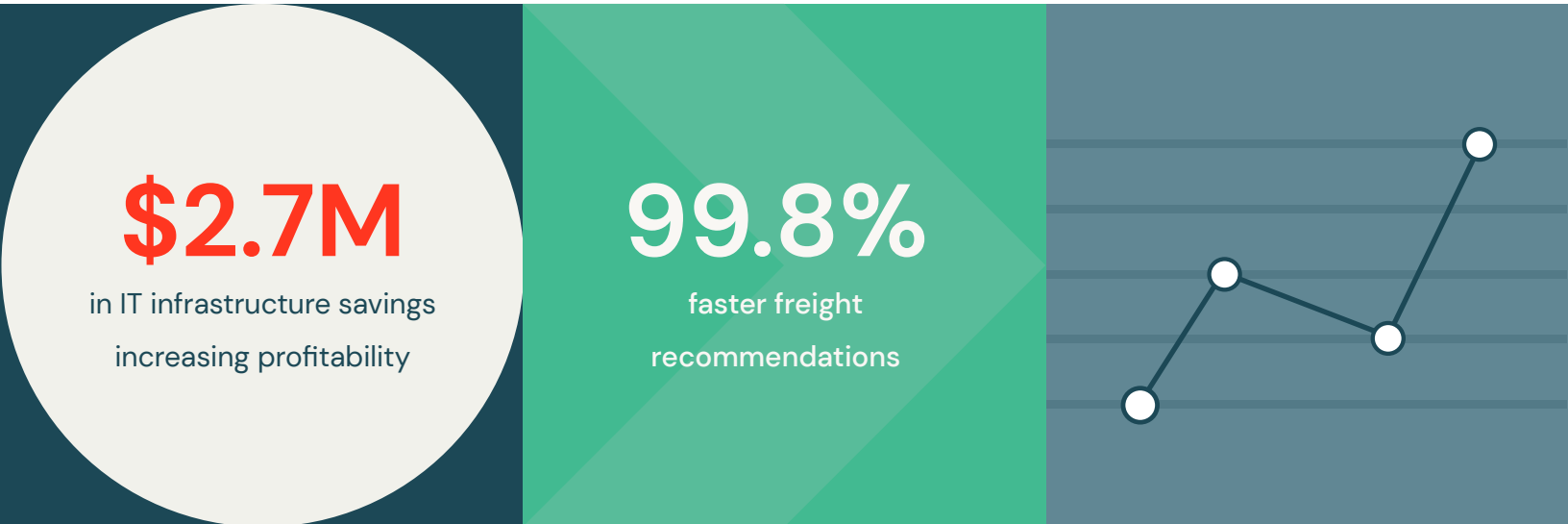
Director, Engineering and Technology at J.B. Hunt

Driving freight transportation into the future

J.B. Hunt uses Databricks Lakehouse to help it create the most secure and efficient freight marketplace in the industry — streamlining logistics, optimizing experiences and reducing costs.

In its mission to create the most efficient transportation network in North America, J.B. Hunt ran into significant roadblocks caused by legacy architecture, rapid growth in data, and limited AI capabilities. After implementing Databricks Lakehouse and Immuta, J.B. Hunt is now able to deliver operational solutions from improving supply chain efficiencies to boosting productivity, resulting in significant IT infrastructure savings.

| INDUSTRY |
|---|
| Transportation |
| SOLUTION |
| <ul style="list-style-type: none">• Freight logistics• Recommendation engine |
| TECHNICAL USE CASES |
| <ul style="list-style-type: none">• Data ingest and ETL• Machine learning |



The impossibility of progress without unified data

In order to fulfill its mission of creating the most efficient transportation network in North America, J.B. Hunt Transport, Inc. offers asset- and non-asset-based transportation solutions, including dynamic freight matching. This involves connecting a business’s specific shipping needs with available carrier capacity, taking into consideration details such as price, weight and location. The problem?

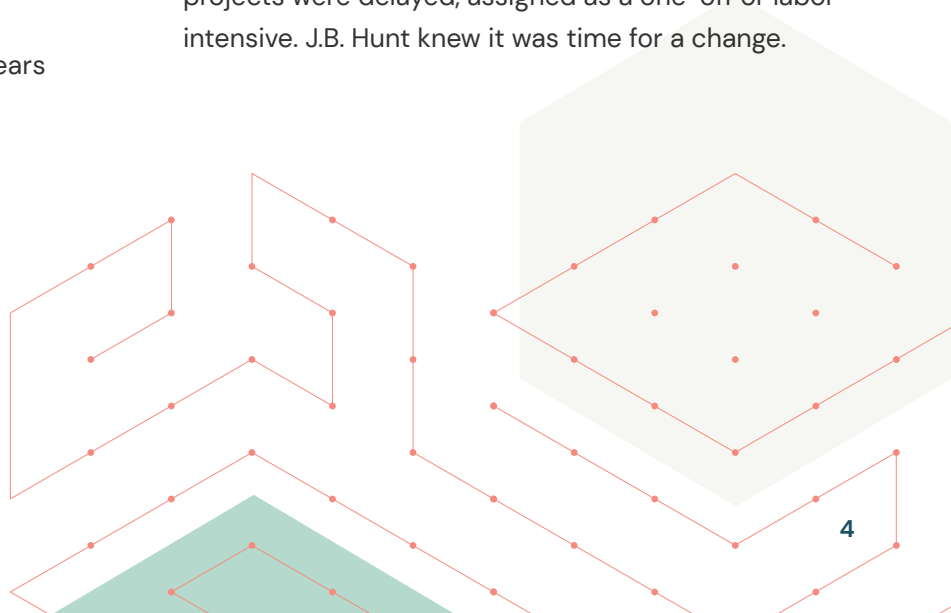
The carrier world is deeply fragmented, with an estimated **3.5 million** drivers across the industry. Improving upon a matching system that considers that much fragmentation requires real-time data and meaningful analytics.

“What we’re doing from a data science point of view is building pricing models and load recommendation models to improve operations,” explained Douglas Mettenburg, Vice President of Engineering & Technology at J.B. Hunt. “But in my nearly 20 years

here, data refreshes have only been, at best, every night, and that’s the case across our industry. The problem is, trucks move. Having to wait overnight for data made a lot of what we wanted to provide around tracking and modeling impossible.”

Prior to Databricks, J.B. Hunt locked its data in legacy enterprise data warehouse (EDW) platforms, limiting its usability for real-time decision making across the organization. Its systems struggled to process and store the massive data generated from location pings every 15 minutes from hundreds-of-thousands of loads being moved. It also required high levels of data security to ensure the right users had access to sensitive data. Finally, it needed the ability to support data streams generated by IoT sensors on trucks and containers that are typically not owned by the company. This made telemetry-based use cases leveraging machine learning (ML) and AI nearly impossible.

These challenges collectively slowed progress as projects were delayed, assigned as a one-off or labor-intensive. J.B. Hunt knew it was time for a change.



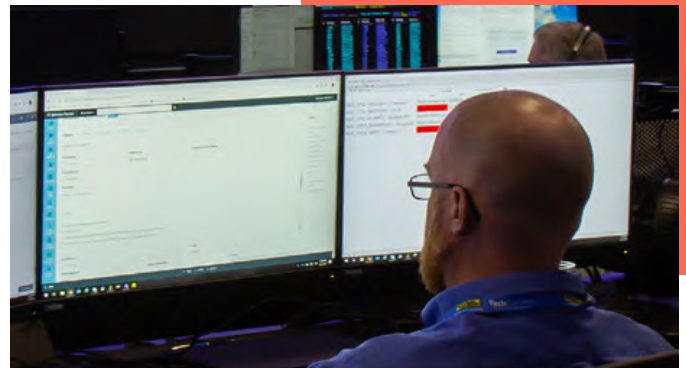
Building an open, scalable, and unified lakehouse architecture

In order to achieve its goal of modernizing its data infrastructure to better support business objectives, J.B. Hunt ultimately chose to work with Google Cloud and Databricks Lakehouse to create a unified BI and AI platform that could capture all forms of data and support real-time analytics for data engineers, scientists, and others across the business.

With Databricks and Google Cloud, J.B. Hunt successfully created an open, interoperable, and rapid data platform for J.B. Hunt 360[®]. The platform enables the company to offer customers unmatched transportation services to maintain its leading position in North America. “As we look towards expanding our ML and real-time analytics capabilities, it was critical that we built upon a platform that provides the flexibility to quickly deploy use cases regardless of which cloud or toolsets are being leveraged across our diverse operations — and that’s what Databricks provided us,” said Joe Spinelle, Director, Engineering & Technology at J.B. Hunt.

With Delta Lake, J.B. Hunt not only has the ability to put all of its data in one place for easy access across the organization, but also to ensure the performance and reliability of streaming data pipelines at any scale. The support for Delta Lake as the open storage layer brought efficiency and portability to its teams as it moved terabytes of its existing data onto the platform.

By streaming real-time to Delta Lake, with web, mobile, location, IoT and other application data, J.B. Hunt can analyze larger, complete datasets to run analytics and ML faster than ever. With MLflow, the data science team is now able to establish reproducibility of code and experiments to ensure it is reusable by multiple data scientists.



“ Before Databricks, our data teams didn’t really understand the models, and couldn’t query our data in order to remedy an issue. **But now, we’re able to ask all kinds of questions of the data from various business unit perspectives, which has helped us make much needed improvements.** ”

JOE SPINELLE
Director, Engineering and Technology at J.B. Hunt

Automating data governance across the enterprise

Databricks is also being used in conjunction with Immuta, an automated data governance platform. “Databricks opens up many opportunities for self-service data analytics, data science, and enterprise reporting,” explained Tina Headrick, Senior Manager of Engineering and Technology at J.B. Hunt. “Paired with Immuta, we can make our data available to all types of business analysts, data scientists and data engineers.”

From a security standpoint, Immuta has added a level of data security that extended the security capabilities of its legacy EDW. It is now able to automate the data governance process to ensure the appropriate users have access to the data needed to make important business decisions. This is achieved through columnar level data masking, which provides fine-grained security beyond traditional role-based

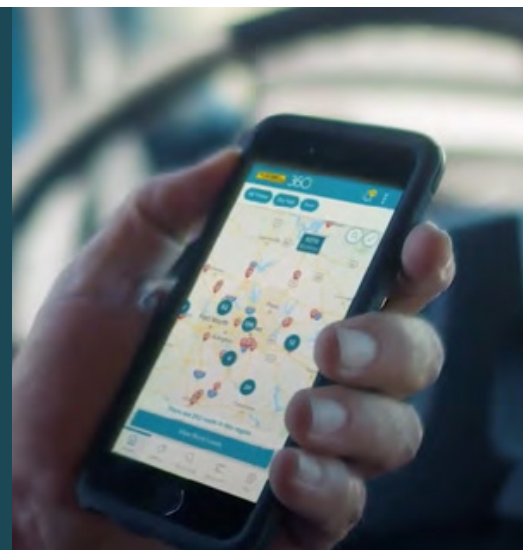
access controls, the ability to establish global and local security policies, and full auditing on who has access to what data and how the data is being used.

As a result, J.B. Hunt has been able to securely fast-track improvements to its various applications, including a new platform capability called virtual track and trace, which feeds into a data science model called predicted time of arrivals. Databricks has also enabled the creation of web services that can then be served up to the application platform and the real-time ingestion of data for meaningful analytics. And Immuta helps protect any sensitive data from unauthorized access. With the help of Databricks and Immuta, J.B. Hunt teams can more easily and safely analyze their data to see if there are issues that need to be addressed immediately.



By combining the two solutions, we have the level of flexible data security needed to **enable users to have access to reporting without the worry of sensitive data being accessed.**

TINA HEADRICK
Senior Manager of Enterprise
Data Management at J.B. Hunt



A single source of truth that delivers operational efficiency

In terms of collaboration, Databricks has succeeded in bringing the various data teams together to accelerate data science productivity. “With Databricks, everything is in the same repository, the same notebook structure, the same language, and the same version, which is key,” explained Doug. “It has enabled us to do a lot more aggressive machine learning.”

“What Databricks has really given us is a foundation for the most innovative digital freight marketplace by enabling us to leverage AI to deliver the best experience possible for carriers and shippers. Without Databricks, we’d be stuck in a very manual, very labor-intensive world that would really hamper analytics and data science,” added Joe.

The success of Databricks and Immuta at J.B. Hunt is reflected in its phenomenal performance gains, including the ability to train thousands of ML models in less than four hours and the ability to deliver freight recommendations to carriers 99.8% faster than before.

J.B. Hunt has also experienced a significant impact on its business operations, realizing **\$2.7M** in infrastructure savings and productivity gains. In the next year, the data team at J.B. Hunt will continue to scale its usage of Databricks across the enterprise with Immuta serving as its data security and governance layer.

“Ultimately, Databricks is now a source of transparency for J.B. Hunt,” added Doug. “It’s showing the real value of that data and technology can deliver for the entire company. And paired with Immuta, we’ll be able to securely democratize the data to create more AI solutions that greatly impact our business.”



About Databricks

Databricks is the data and AI company. More than 5,000 organizations worldwide — including Comcast, Condé Nast, H&M, and over 40% of the Fortune 500 — rely on the Databricks Lakehouse Platform to unify their data, analytics and AI. Databricks is headquartered in San Francisco, with offices around the globe. Founded by the original creators of Apache Spark™, Delta Lake and MLflow, Databricks is on a mission to help data teams solve the world's toughest problems. To learn more, follow Databricks on [Twitter](#), [LinkedIn](#) and [Facebook](#).



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