



Auto Trader embraces digital transformation and the power of data

Case Study
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Looker rounds out digital transformation for UK automotive marketplace

Auto Trader is the UK's largest digital automotive marketplace. Originally a print magazine, today Auto Trader is one of the UK's largest websites. As of January 2020, Auto Trader was the UK's 16th most visited website, with an average of 50 million sessions per month and 4,000 website interactions per second. When shifting from print to digital, Auto Trader wanted to empower all of its employees to make data-driven decisions, while also surfacing insights to their retailers and consumers. By migrating and centralizing data in the cloud and deploying Looker on top, Auto Trader was able to embrace digital transformation and leverage data for their internal and external stakeholders.

Empowered external users to get more value from the platform with data

In 1977, Auto Trader started as a classified advertising magazine, the Thames Valley Trader. On June 28, 2013, Auto Trader published the very last issue of its iconic magazine and transitioned to a fully digital business serving the UK and Ireland. Auto Trader is now the UK's largest automotive marketplace with over 70% of all automotive classified site time spent on their site. Online interactions originate from multiple sources—Facebook, Instagram, Twitter, email, calls, online chat, APIs to third-party apps, and more—on computers and mobile phones. That activity has generated an enormous amount of data that everyone, from internal teams to automotive retailers to consumers, is eager to access and use to make better decisions.

The company's successful transformation from print to digital reflects a general trend in the automotive sector and in retail as a whole, driven by shifts in both technology and culture. Consumers no longer have to peruse a magazine, circle relevant ads with a pencil, and then spend their weekends visiting numerous dealerships to find the right vehicle for their needs. Today's buyers do their research online first and then typically visit an average of only one or possibly two dealerships before they make a purchase decision.

Key Takeaways

Auto Trader modernized their data stack and moved to the cloud to:

- Better manage their extensive amount of data from online traffic and channels
- Provide internal and external users with the access and insights they craved
- Meet increased security and privacy requirements

How do you satisfy data-hungry employees and customers?

In 2018, the company embarked on a journey to modernize their tech stack, centralize data, and provide self-service access to trusted metrics. The goal focused on empowering key stakeholders to find the answers they needed for making better, more timely decisions. As Edward Kent, a Principal Developer in the Data Engineering squad at Auto Trader, points out, “The volume of data and the variety of data that we’re collecting is ever-increasing. On top of that, the world that we live in is becoming more and more data hungry.”

Auto Trader needed to satisfy the data demands of both their internal stakeholders and external users. Retailers were eager to understand how much their cars were worth to consumers and how their adverts were performing. And consumers wanted to find the right products by being served up adverts relevant to their search based on parameters like types of vehicles, makes and models, price points, and other factors that shaped their buying decisions.

On the road to a cloud data architecture

Prior to Looker, Auto Trader used an ETL tool to aggregate data from multiple transactional databases and pipe it into their data warehouse, where all queries were run by data analysts in SQL. When stakeholders needed a new type of report or analysis, they had to work with the data warehouse team to identify and develop new data sets that served their purpose. As Kent explains, “this became a real bottleneck.”

With the additional requirements of GDPR, new issues arose around how to make personally identifiable information (PII) secure and compliant. As Auto Trader’s data volume grew from the shift online, they received increased internal and external requests for data. And as new security regulations provided new guidance for best practices, the Auto Trader team decided to shift from their on-premise data warehouse and manual reporting processes.

In 2018 Auto Trader set out to modernize and move their data stack to the cloud. The company envisioned a solution that would empower internal users to access and use data to make better decisions and to provide external retailers with the insights they were craving, while also offering intelligent recommendations to customers.

“We wanted to lower the bar to entry in terms of the technical skill set required to gain access to data. Rather than being an expert in writing SQL to navigate these complex databases, we wanted to make it as easy as possible for people to self-serve, gain access to the data they need, and interpret data using simple but quick visualizations. Simultaneously, we wanted to raise the ceiling on our capability by running complex machine learning models alongside the traditional ETL type processing that we were doing in the past,” says Kent.

Auto Trader identified several personas—data analysts, data scientists, product leads, developers, and customer-facing sales and support teams—who needed to access data in different ways. The key was to provide scalable, trusted, self-service data access to people with different skill sets and different requirements.

A cloud-based data architecture built with users in mind

Auto Trader data architects laid the groundwork for the company's digital transformation by building a modern multi-cloud data architecture that would meet everyone's needs. At its core, Auto Trader uses Google BigQuery as their modern data warehouse for performance and scalability. Auto Trader also relies on a data lake built on Amazon Simple Storage Service, (Amazon S3) and Apache Spark. Other tools include Apache Kafka for managing streaming data, Snowplow for consolidating event data, and Apache Airflow for orchestrating and managing DAGs (directed acyclic graphs).

The analytics stack consisting of Looker and Databricks sits on top of these layers. Databricks enables analysts and data scientists to experiment with data and machine learning models, schedule regular tasks, and build basic dashboards. Analysts use Looker to do deep exploration into the data and build dashboards that can be accessed and analysed company-wide. The data that runs through Looker and Databricks then goes through internally defined zones, so it can be tracked through different steps of refinement and for quality. Data ultimately ends up in the "trusted zone," which is available to everyone and used internally, as well as exported to Auto Trader's data-driven online products that include supply-and-demand forecasting for sellers, and buying recommendations for consumers.

"The big advantage of Looker is its data modeling layer, LookML, which serves as a single source of truth for the whole company. That's really important if you have a large team of analysts working across different business areas. Using the data modeling layer with Looker now means that everything gets committed to a repository where it's viewable by everyone. We can now do collaborative development using GitHub pull requests, so knowledge around how these models work is shared and never siloed," explains Kent.

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Another benefit is that Looker can quickly and seamlessly connect to various data sources, such as Google BigQuery. “With Looker, in a matter of weeks, we were able to go from nothing to useful dashboards built on a data model that had been created by multiple analysts,” notes Kent.

Looker sparks the transformation

Auto Trader carefully built their new data platform in a way that ensured people were trained properly. When Auto Trader started working with Looker, they initiated a one-month proof-of-concept (PoC). With the help of the Looker Professional Services team, Auto Trader built and tested a dashboard to understand how a new internal product called Vehicle Check was performing. This product allows retailers to run “background checks” for vehicles they are advertising and then publish the results so that consumers can have confidence that the vehicle they are interested in is trustworthy. The dashboard was designed to serve multiple internal groups with different interests and technical skills.

The PoC was a resounding success. Auto Trader incorporated Looker into its cloud data architecture and, in the process, gleaned some valuable insights that guided the full rollout. The data team identified additional personas, developed best practices for scaling their data model, and picked up some tips for leveraging Google BigQuery to ensure performance on their most in-demand queries.

Faster time to value for retail customers

Within months after Looker was fully implemented, Kent and his team built performance dashboards for the sales team to help them have conversations with Auto Trader’s retail customers regarding insights around their advertisement performance, and tips for increasing lead generation. These tools enable the sales team to analyse and visualise key performance indicators for adverts, including search appearances, adviews, quality, and leads, while empowering them to have better conversations and provide more value to their retail customers.

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“In a matter of weeks, we were able to go from nothing to something that was usable by our sales squads,” says Kent. “Most importantly, our data analysts were able to build these dashboards without the need for additional developer assets. Without Looker, the alternative would have been to set up a team with both back-end and front-end developers and build something that would have perhaps taken much longer.”

Here’s what a data culture looks like

The Looker deployment spurred a surge of internal interest and transformed Auto Trader into a data-driven organisation. Since the first year of deployment, the number of weekly active users jumped from zero to over one-third of Auto Trader’s employees. Today, approximately 100 employees use data to create their own dashboards and reports that can be shared across the organisation (quite the change from relying on the data team for all reports!).

To further encourage a data culture, Auto Trader has set up a data academy for its employees with the purpose of elevating skill sets. The courses, –which focus on tools, data access, and data relevance, –are based on employee roles and how they interact with data. Instruction targets a variety of personas: developers who build models, business users who want to become adept at Looker Explore in order to experiment with ad-hoc queries or do one-off calculations, and other internal users who want to view pre-built and curated dashboards to help them do their jobs better.

In addition to training, Auto Trader has launched an internal Looker Champion program to bring awareness of resources across the organisation by shining the spotlight on users who have successfully used Looker to advance the business, and can help with their colleagues’ initiatives and questions.

Moving from print to online was the first quantum leap for Auto Trader. Since 2013, the organisation has pushed the envelope of digital transformation as it embraces change and acts rapidly to ensure maximum efficiency. With a successful cloud-based architecture in place that pulls data from multiple sources, Auto Trader squads are

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continually learning and adjusting their best practices as they find creative ways to use Looker and other tools to increase business value to both automobile buyers and sellers. Because Looker is an open system, Auto Trader has the flexibility to deliver data to people and systems throughout their multi-cloud environment. At Auto Trader, digital and cultural transformation doesn't stop—it just keeps getting better with data guiding the journey.

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