transACT
TECHNOLOGY SOLUTIONS

Case Study: Halo

ABOUT THE CUSTOMER

Halo (drivehalo.com) is a leading innovator in the autonomous vehicle sector in the UK, developing AI technology for interpreting data from LiDAR and video inputs.

OUR RELATIONSHIP

The Halo team engaged transACT to design and deliver the AWS cloud architecture for data processing and training of core AI models.

BUSINESS CHALLENGES

- Large data volumes
- Limited budget and high-performance demands
- Cutting-edge AI training tasks

SERVICES USED

- Amazon S3
- AWS IoT Core
- AWS Lambda
- Amazon SageMaker
- Amazon ECR
- AWS Glue
- CloudWatch/SNS/IAM

OUTCOMES

- Effective architecture to drive AI training
- Highly efficient use of cloud compute and storage
- Real, granular clarity on usage and billing

> **The new cloud architecture that transACT delivered drives our mission to accelerate the development of autonomous vehicle technology in the UK**

Terry Sunny, Founder, Halo

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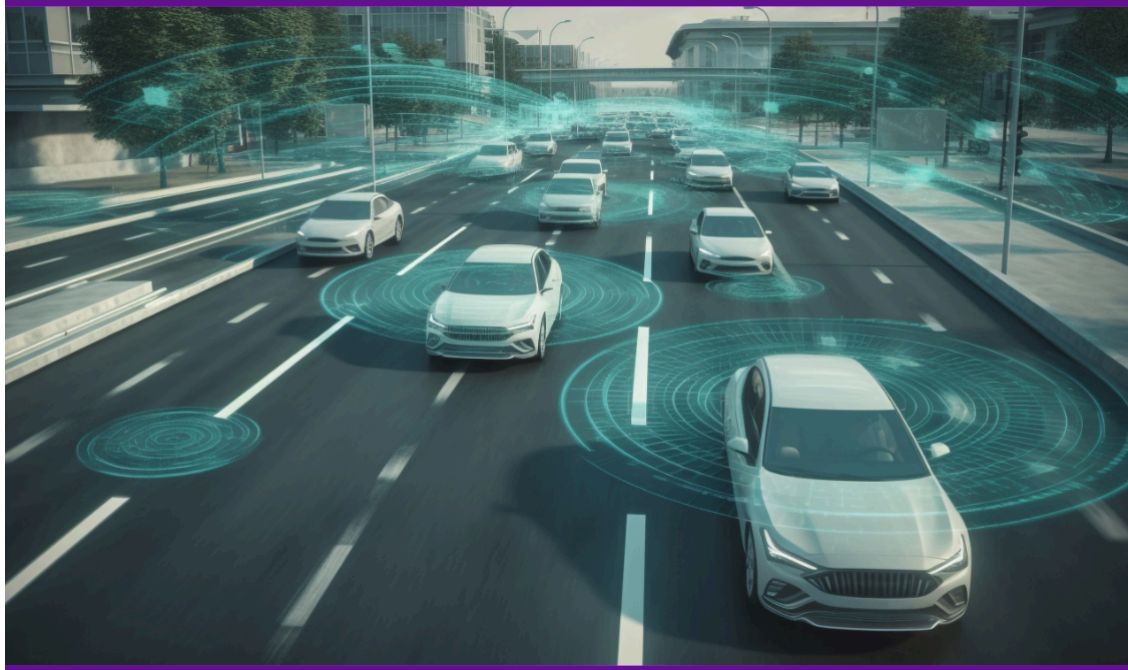
CUSTOMER Halo (drivehalo.com)

INDUSTRY Automotive Technology

SERVICE Cloud Computing Optimisation

How Halo self-driving AI technology is getting on the road with transACT



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> **transACT's cloud tools and services allows us to maximise the value we get from our investment in AWS**
>
> Terry Sunny, Founder, Halo

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Business Challenges

Autonomous vehicles are transforming the modern mobility landscape, offering the potential for major economic gains and significant improvements in road safety. While the sector has seen high-profile advancements from companies like Waymo, Wavye, Zoox, Nuro, Oxa, Tesla, Lucid Motors, Pony AI, and WeRide largely in the passenger vehicle domain—these developments have primarily relied on embodied AI models.

This approach is also reflected in the trucking and mass transit space, with companies such as Kodiak Robotics, Aurora, TORC Robotics, STACK AI, and Fusion Processing pushing boundaries. However, embodied AI often focuses narrowly on the vehicle itself, with limited integration of the wider ecosystem, including infrastructure and human inputs.

At Halo, we take a vehicle-aware AI approach one that incorporates connected infrastructure, surrounding vehicles, and people to influence how AI-driven systems learn and operate in the real world.

Good AI models are only as effective as the quality and diversity of the training data they are built on. To address this, Halo has signed data collection agreements with existing fleet operators, allowing access to vast quantities of real-world data from vehicles operating across different routes and conditions. This real-world data is essential but also highly unstructured. For effective AI training, this data needs to be collected, categorised, used to train models, and then securely deleted to maintain compliance and data hygiene.

Unlike traditional approaches that rely on expensive, repetitive surveys, Halo's method captures data passively during normal fleet operations. However, this creates a unique technical challenge: building a scalable architecture that allows multiple vehicles to stream raw data to a central platform that can manage ingestion, orchestration, and training processes seamlessly.

As a startup, Halo needed to achieve this efficiently and cost-effectively. To support these goals, Halo partnered with transACT to deploy a powerful AWS-based cloud architecture and data management platform tailored for this kind of high-throughput, multi-source data environment. .

Solutions

To meet the demands of Halo's innovative vehicle-aware AI platform, transACT worked closely with the Halo team to define their core operational and technical requirements. This included understanding the scale of data ingestion across a growing fleet, the variety and complexity of the sensor data, and the need for scalable, cost-effective cloud infrastructure that could support AI training workloads in near real-time.

transACT then designed and implemented a tailored AWS cloud architecture capable of handling data streams from hundreds of vehicles operating simultaneously. This architecture is optimised to efficiently ingest and categorise sensor data—such as high-definition video and LiDAR point cloud information—captured during routine fleet operations. By combining these data types, Halo creates highly detailed, dynamic representations of a vehicle's surrounding environment at any moment. These multi-modal datasets are essential for training AI models that will later be deployed on edge computing devices within the vehicles themselves, giving them the situational awareness needed for safe and intelligent autonomous navigation.

To ensure Halo could monitor and manage this new data ecosystem effectively, transACT also deployed its proprietary transACT Cloud Management Portal (TCMP). TCMP enhances native AWS monitoring capabilities with deeper visibility and analytics tools, offering real-time insights into performance, storage, and pipeline efficiency. This empowers Halo to quickly identify and address any issues, manage usage and costs more effectively, and continuously optimise their data workflows.

The result is a robust, scalable, and intelligent data management platform that supports Halo's mission to build safer, smarter, and more connected autonomous vehicle systems.

Outcomes

Outcome 1: Efficient use of cloud compute and storage

The cloud architecture developed by transACT has enabled Halo to maximise the utility of its AWS environment. Data is stored only for the time necessary to complete AI training processes, after which it is automatically and securely deleted. This lifecycle management ensures that high volumes of raw sensor data, often terabytes per day, do not accumulate unnecessarily. As a result, storage costs remain low, and processing workloads are optimally distributed. This efficient handling of transient data makes Halo's use of cloud resources exceptionally cost-effective, helping to stretch limited AWS credits and allowing the team to allocate budgets toward innovation instead of infrastructure overhead.

Outcome 2: Effective architecture for AI training

transACT's AWS cloud solution provides Halo with an end-to-end pipeline for ingesting, labelling, and orchestrating real-world data collected from vehicles in motion. This includes the integration of high-resolution video and LiDAR data from diverse environments and conditions. Once processed, the data is used to train Halo's vehicle-aware AI models, which go beyond basic perception. These models are designed to interpret context, such as identifying dynamic hazards, adapting to adverse weather, understanding human behaviour near roadways and reacting to unusual events. The architecture supports fast iteration and retraining, ensuring that Halo can continuously improve its AI stack to meet evolving real-world demands.

Outcome 3: Granular clarity on usage and billing

The implementation of the transACT Cloud Management Portal (TCMP) gives Halo full visibility into its cloud environment. Real-time dashboards provide detailed metrics on compute, storage, data transfer, and model training activities. This level of granularity enables Halo to accurately forecast operating costs under various deployment scenarios and expansion plans. It also supports budget transparency, allowing leadership to justify expenditure to investors and stakeholders. For a scaling startup like Halo, this clarity and control are essential in maintaining lean operations while confidently planning future growth.

Outcome 4: Scalable V2X platform deployment – Halo ViewPort on AWS

As part of its product ecosystem, Halo hosts ViewPort its proprietary V2X (Vehicle-to-Everything) platform on the same AWS architecture. ViewPort ingests live and historical data to optimise fleet routing, reduce cost per mile, and minimize carbon emissions. By operating in the cloud, ViewPort benefits from seamless scalability, real-time data processing, and secure integration with third-party systems. AWS provides the elasticity needed to manage varying data volumes from vehicle fleets, local infrastructure, and weather systems. Hosting ViewPort in this environment not only improves operational performance but also enhances Halo's ability to deploy its platform for fleet operators globally, without requiring custom infrastructure for each client.

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