

TCS Autoscape™ - Autonomous Vehicle Solutions

Manufacturing



In their endeavor to shape the future of mobility, global car manufacturers are racing to develop SAE level 5 autonomous vehicles (AV). To develop fully autonomous vehicles, manufacturers have to efficiently manage myriad technology and business challenges. Among these are collecting and analyzing petabyte-scale driving data. Technology teams then use the data to develop and deploy algorithms to guide Avs in the real world.

Facilitating the development of AVs is the TCS Autoscape™ - Autonomous Vehicle Solutions suite which uses leading-edge technologies such as artificial intelligence (AI) and machine learning (ML) to transform the car into an agile, customer-centric product, and improve the productivity and quality of vehicle data management services. Our proprietary Machine First Delivery Model™ (MFDM) helps our customers build complete AVs by accelerating time-to-market and optimizing capital expenditure.

Overview

To make L5 AVs a reality, manufacturers must harness the right data. To achieve this, engineering and IT teams need to:

- Seamlessly collect petabyte-scale autonomous driving data from in-vehicle recorders.
- Search, analyze, and interpret petabyte-scale data collected from autonomous vehicles across multiple test locations.
- Optimize the lifecycle management of AV data and ensure secure access to globally distributed teams.
- Curate perception data from sensors such as cameras, lidars, and radars.
- Ensure robust verification and validation of AV algorithms to ensure passenger safety.
- Securely deploy software updates to AVs in near real time

TCS Autoscape™ - Autonomous Vehicle Solutions leverage Business 4.0™ pillars (intelligent, agile, automated, and on the cloud) to offer end-to-end capabilities across vehicle engineering, algorithm development, application lifecycle and data management, and vehicle validation. With in-depth manufacturing experience and an extensive partner ecosystem, TCS is well-positioned to cater to bespoke customer needs in the AV space and drastically accelerate time-to-market.

Our Solution

TCS Autoscape™ Autonomous Vehicle Solutions comprise of the following:

- **Autonomous Vehicle Data Services:** Comprehensive compute infrastructure architecture, data management solution, AI workbench, and toolkits to accelerate AV development.
- **Application Lifecycle Management (ALM):** An ALM solution underpinned by TCS' ALM methodology, solutions, and industry-leading partner ALM solutions.
- **Data Annotation Studio:** Data curation solution with cost-effective workflow orchestration, model management, and best-in-class AI tools.
- **Autonomous Vehicle Validation:** A simulation-led validation platform that is coverage driven and enables AI enhanced test case and scenario generation, and true edge case identification. The solution accelerates time to market, significantly reduces cost, and enhances the validation process.

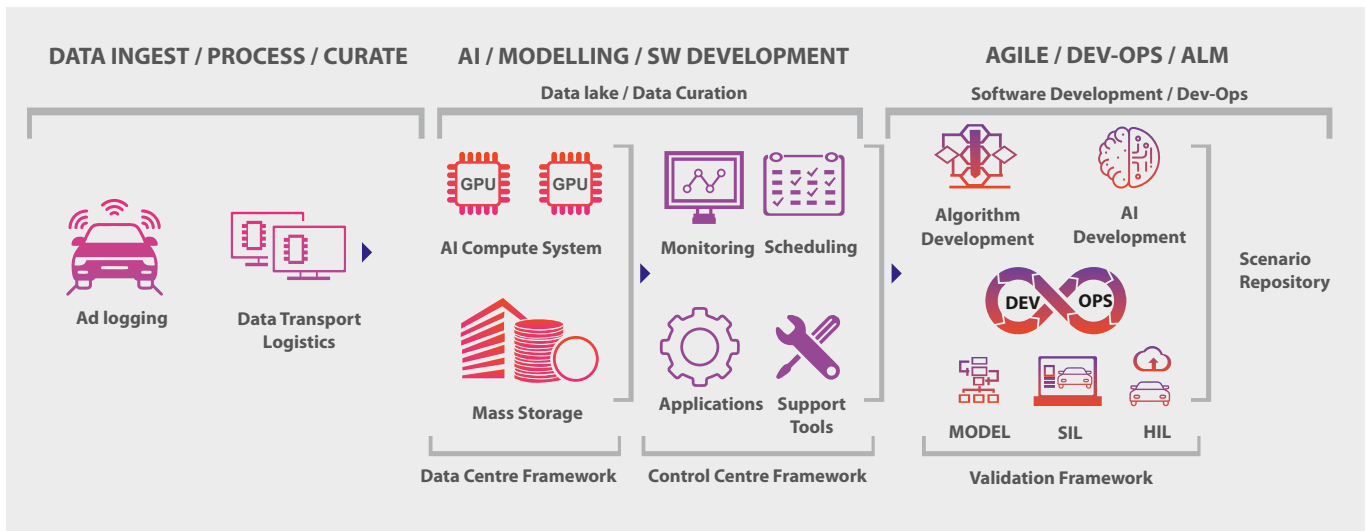


Figure 1: TCS Autoscape™ – Autonomous Vehicle Solutions

Benefits

The TCS Autoscape™ – Autonomous Vehicle Solutions suite provides vehicle manufacturers to –

- Reduce the total cost of operations through effective utilization and optimization of cloud infrastructure and resources.
- Leverage TCS' deep expertise in the AV industry with simulation techniques, AI and ML models, and agile execution to robustly test AV algorithms.
- Reduce capex and opex for autonomous components and feature development.
- Enable faster turnaround time on curated data for effective algorithm and model building, and improved productivity.
- Focus on DevOps deployment using TCS' solution accelerators and expertise in cloud computing infrastructure.
- Ensure end-to-end capability across the vehicle development lifecycle.
- Simulation-led and coverage-driven framework at scale to ensure thoroughness in validation testing.
- Catalog optimized solutions for robust data management and curation.

The TCS Advantage

By partnering with TCS, AV manufacturers gain numerous advantages, as illustrated below:

- **Leading domain and technology expertise:** TCS partners with leading global organizations across industries, helping customers blueprint and execute AV projects. TCS MFDM™ helps manufacturers adopt a shift-left approach for data and algorithm development. In addition, we offer a robust and mature validation framework leveraging our deep expertise in the AV industry with simulation techniques, AI and ML models, and agile test execution.
- **Industry partnership and alliance:** We lean into our strategic partnerships with hyperscale cloud, AV validation, and AV data pipeline management providers to develop industry-leading technology solutions backed by best-in-class frameworks.
- **Comprehensive autonomous vehicle portfolio:** TCS' range of proprietary industry-specific autonomous vehicle frameworks, tools, models, and accelerators are designed to help manufacturers accelerate their AV vision.

Awards & Recognition



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