TCS Automotive CASE Business Services & Solutions

Connected | Autonomous | Shared | Electric
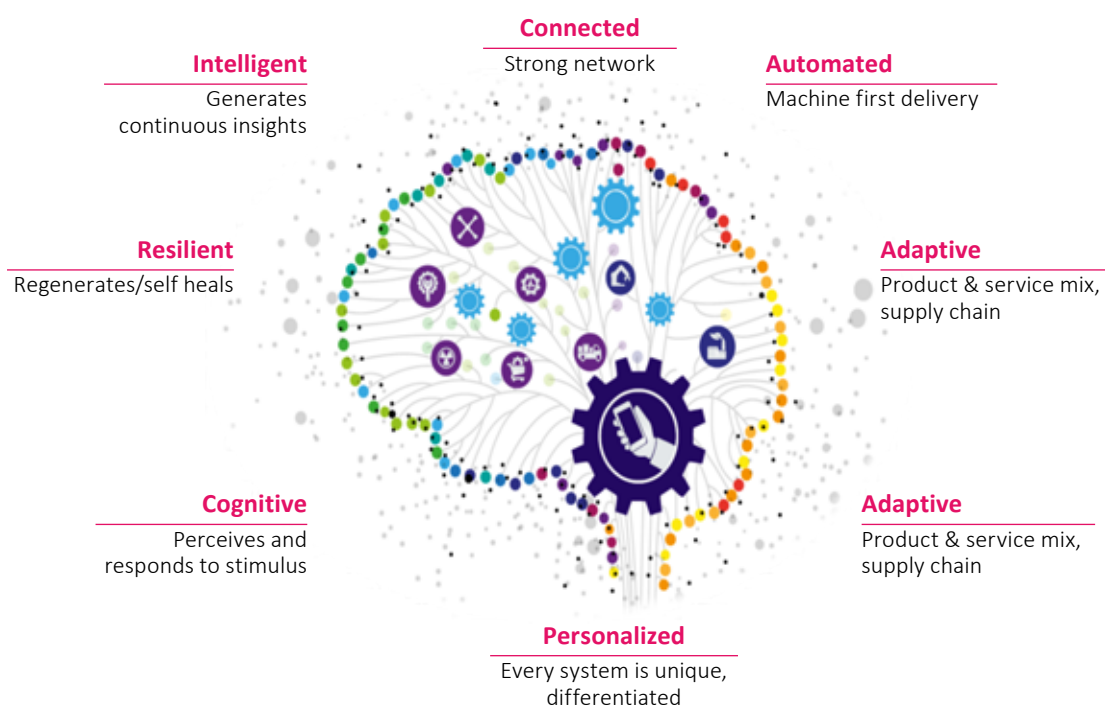
Automotive business reimagined

CASE Automotive is the buzzword of today for the change happening in the industry – Connected, Autonomous, Shared, and Electric vehicles business, enabled by an intensively 'Social Customer', a connected ecosystem, and a software-enabled product.

The automotive industry is being re-imagined on multiple fronts simultaneously. Firstly, on the product front, where we see the evolution of the automobile as a product from mechanically engineered design to a digital centric software platform. Secondly, in the way it's bought, with the impact of social influence and virtual car buying making the entire channel face off with obsolescence. And thirdly, the business models, including revenue & operating models. Vehicles, which were differentiated only as a product are shifting towards differentiating on services by forming communities of ecosystems, fulfilling the evolving needs of customers to ensure seamless, safe, sustainable, cost effective, and 'Time Efficient' movement from Point A to Point B.

TCS is creating unique market spaces in this increasingly software-driven CASE Automotive ecosystem by visualising and developing vehicle as a Data model and bringing the ecosystem together into a collaborative operating model. By creating vehicle as a 'Digital Experience Platform', TCS enables its customers to monetize both the data and the time spent in the car.
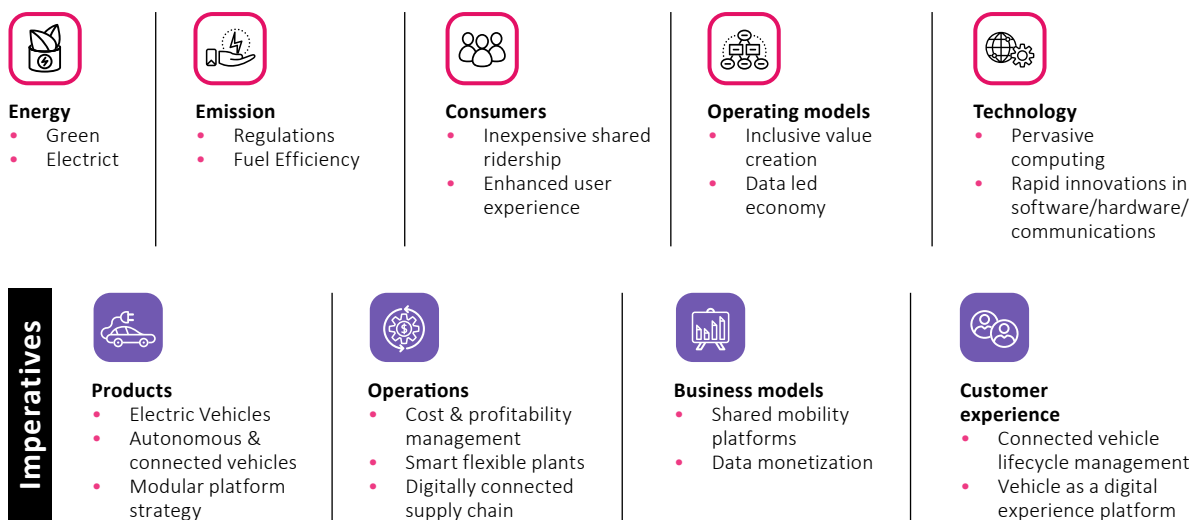
As the industry evolves, CASE Automotive business will thrive on the abundance of data – from vehicle, customer, and environment. The vehicle as a smart & intelligent agile platform, which leverages the immense possibilities of engaging with the ecosystem leveraging the cloud, provides potentially the best example of mass personalization. TCS calls this out as the Business 4.0™ economy, built around the vehicle, paving way for exponential value creation possibilities.

The future of CASE is Neural

Connected
Strong network

Intelligent
Generates
continuous insights

Automated
Machine first delivery

Resilient
Regenerates/self heals

Adaptive
Product & service mix,
supply chain

Cognitive
Perceives and
responds to stimulus

Adaptive
Product & service mix,
supply chain

Personalized
Every system is unique,
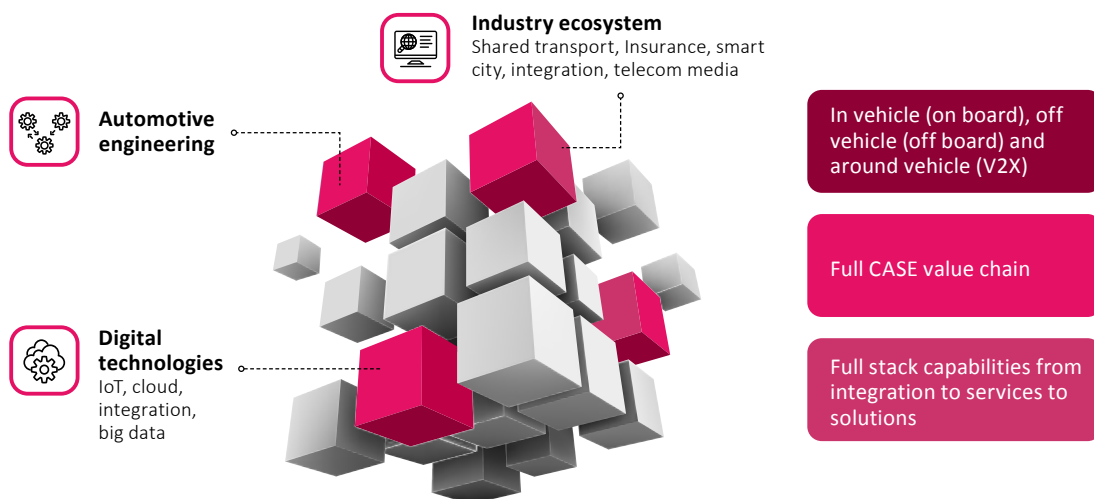differentiated

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Disruptive trends shaping the automotive industry

Automotive industry is embracing several trendsetting technologies to stay on road to growth. The innovative technologies for propulsion, autonomy, mobility, and connectivity are fueling faster pace of business model change and emergence of newer competition. While co-innovation is key, Automotive OEM's are repositioning their focus to remain dominant in the era of mobility. An interesting play between Auto OEM's, Tier 1 Technology and Parts supplier, Ecosystem players, and Software/Technology players is ensuing to change this inevitable industry beyond imagination.

Energy
- Green
- Electrict

Emission
- Regulations
- Fuel Efficiency

Consumers
- Inexpensive shared ridership
- Enhanced user experience

Operating models
- Inclusive value creation
- Data led economy

Technology
- Pervasive computing
- Rapid innovations in software/hardware/communications

Imperatives

Products
- Electric Vehicles
- Autonomous & connected vehicles
- Modular platform strategy

Operations
- Cost & profitability management
- Smart flexible plants
- Digitally connected supply chain

Business models
- Shared mobility platforms
- Data monetization

Customer experience
- Connected vehicle lifecycle management
- Vehicle as a digital experience platform

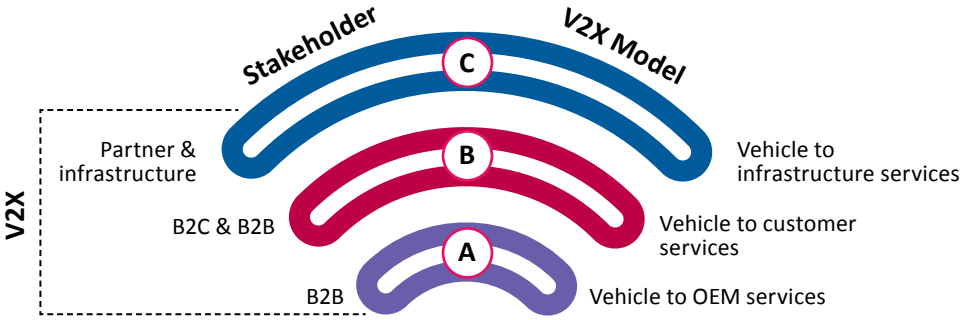# Unveiling TCS' three dimensional CASE automotive services

You can unlock the tremendous business potential of CASE Automotive by leveraging the TCS' '3D Engagement' ecosystem, which triangulates deep automotive domain expertise with digital technologies, driving convergence of industry adjacencies. From engaging in the design of CASE Automotive business and realizing the engineering in the physical product with the embedded software, to designing of integrated data models across the vehicle domains and developing open digital platforms, you can experience it all under one window.

Industry ecosystem
Shared transport, Insurance, smart city, integration, telecom media

Automotive engineering

Digital technologies
IoT, cloud, integration, big data

In vehicle (on board), off vehicle (off board) and around vehicle (V2X)

Full CASE value chain

Full stack capabilities from integration to services to solutions

3D Engagement Model: A triangulation of Product Development, Cross–Industry Capabilities & Digital Experiences

Experience 'full stack services' from TCS in CASE automotive business

TCS seeks to support your CASE Automotive Business and help you gain a competitive advantage in the evolving automotive industry by providing you with full stack capabilities across the CASE Automotive Value Chain. Our range of services touches all aspects of the connected vehicle system - In-Vehicle (On-Board), Off-Vehicle (Off-Board) and Around Vehicle (V2X), thereby providing a holistic model.

Off-board	Development, validation & verication	Data aggregation • Vehicle(s) • Ecosystem • Consumer	Analytics for customers & vehicles	Partner integration & data exchange	Services subscription management & fulfillment	Business services

On-board	Embedded software	Maps	Telematics	HMI
	Cyber security	Chipsets	AI & ML	OTA

Flagship business services and solutions

Consulting services: TCS offers key Business Advisory services across CASE Automotive value chain to help customers stay at the forefront of the CASE Automotive Business. Some of our flagship services include: CASE Design Thinking, User Experience Design, CASE Analytics, Agile DevOps for CASE Automotive, and Model-Based Systems Engineering (MBSE).

Custom solutions/SI: TCS offers CASE-specific customized solutions and system integration services around emerging technologies that help in achieving customer's business objectives by overcoming the complex challenges.

Frameworks: TCS offers unique CASE Automotive specific frameworks and methodologies that would help in product development ranging from conceptualization to integration in the areas of - Autonomous Vehicle Business, Connected Vehicle V2X Services, Connected Fleet Business, Electric Vehicle and Battery Management System, and Simulation and Validation Services.

TCS Autoscape™ – Suite of solutions for your CASE Automotive Business

- **Autonomous driving and vehicle development:** With our autonomous vehicle business solutions and services, you can reduce the cost of autonomous vehicle development, accelerate the time to market, and improve the productivity and quality of your vehicle data management services.

- **Connected vehicle business:** By leveraging the vehicle as a digital experience platform, you can provide differentiated customer experience in and out of vehicle.

- **Connected fleet and shared mobility:** With our connected fleet services and solutions, you can provide extreme service personalization to customers, improve the visibility and reduce the cost of your fleet operations.

- **EV and battery management:** With our differentiated EV Solutions and Platforms, you can build reliable and sustainable EV business models to stay ahead in the EV market and enhance your ROI in EV and Battery Management Systems.

- **Verification validation services:** With our verification and validation services and solutions, you can provide end to end integrated validation, test the Autonomous Vehicle Algorithm through simulation, accelerate the time to market, and improve the vehicle software quality.

Benefits

TCS partners with its customers throughout their CASE Automotive Transformation Journey and helps them quickly achieve their business goals and objectives, through a set of unique frameworks, products, solutions and services across CASE Automotive Ecosystem. By leveraging our services and solutions, the following benefits can be realized:

Vehicle as a data model - Enabling significant monetization opportunities to OEMs and transport service providers and also enable them to make better and smarter decisions in real time

360 degree view of customers, vehicles and their interfaces will provide highly personalized customer experience journeys

Going agile with Machine First Delivery Model (MFDM™) will benefit the OEMs and transport service providers immensely during autonomous feature development

Real time and actionable insights help in achieving operational optimization thereby improving time to market and boosting productivity

TCS' marquee experiences in CASE automotive business

Connected Vehicle Business:

- V2X service delivery platform design
- In-car infotainment system design & development
- Vehicle health monitoring & diagnostic system
- Usage based insurance & driver scoring algorithm
- Customer engagement design for customer insights and personalization

Autonomous vehicle business:

- TCS AV Data Services
- TCS Data Annotation Studio
- ADAS systems design
- SIL/HIL testing & verification/validation platform
- Software over the Air update system design & deploy
- Algorithm development for autonomousvehicle development
- Application lifecycle management (ALM), model based systems engineering

Connected fleet and shared mobility Busines:

- Fleet management system development
- Vehicle fleet diagnostics & service
- Fleet management strategy formulation
- AI conversational system pilot
- Target business operating model for fleet management system enabling fleet efficiency, visibility, reduced TCO and utilization

EV automotive business:

- Battery management system
- Vehicle to home charging system design for R&D
- Charging system & charging station design
- Agile platform design
- Innovative wireless electric vehicle charging platform

Verication validation services:

- TCS Smart validation Suite
- Validation as a service
- Scenario generation and ground truthing solution
- Test data management and test analytics

Business advisory services:

- Product cost management for predicting EBIT
- Vehicle actual margin reporting with cost drill down and decision driving analytics
- E-commerce platform and user portal design
- Social listening & crowdsourcing for automotive features planning
- Omni-channel CRM for creating 360 degree customer view for service desk
- Vehicle users app for connected cars program including owner's manual assistance and vehicle guide
- Autonomous Vehicle Development Maturity Assessment

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Awards and accolades

About Tata Consultancy Services Ltd (TCS)

Tata Consultancy Services is an IT services, consulting and business solutions organisation that has been partnering with many of the world's largest businesses in their transformation journeys for over 50 years. TCS offers a consulting-led, cognitive powered, integrated portfolio of business, technology and engineering services and solutions. This is delivered through its unique Location Independent Agile™ delivery model, recognised as a benchmark of excellence in software development.

A part of the Tata group, India's largest multinational business group, TCS has over 500,000 of the world's best-trained consultants in 46 countries. The company generated consolidated revenues of US $22.2 billion in the fiscal year ended March 31, 2021 and is listed on the BSE (formerly Bombay Stock Exchange) and the NSE (National Stock Exchange) in India. TCS' proactive stance on climate change and award-winning work with communities across the world have earned it a place in leading sustainability indices such as the MSCI Global Sustainability Index and the FTSE4Good Emerging Index.

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