Globant ▶

AI Reinvention
Automotive Edition

How AI is steering the wheel toward seamless innovation.

Please
take me home, AI

Driving with smart technology feels like playing a perfectly tuned symphony, and you are the conductor, right? We all know driving is deeply personal, and when we drive, we want to experience enjoyment, comfort, and convenience to make every journey feel like a breeze. **Your vehicle today is your trusted assistant, with instant traffic updates, your favorite music, and perfectly adjusted climate control, tailoring every detail to your preferences.**

It's amazing and will get even better because the automotive industry is stepping up its game with AI. **It's not just about cars anymore; it's about empowering drivers with technology that safeguards lives and elevates every ride.** This report dives into how AI redefines what it means to hit the road.

AI Reinvention: Automotive Report

Facing facts:
AI is setting the wheels in motion

1. The Automotive Artificial Intelligence Market, currently valued at USD 2.3 billion, **is projected to reach <u>USD 16.2 billion by 2026</u>,** with an annual growth rate exceeding 30% during the forecast period of 2021-2026.

2. The Asia-Pacific region will have the **highest compound annual growth rate (CAGR) from <u>2024 to 2029.</u>**

3. In 2024 North America represents the most **significant automotive artificial intelligence market share.**

4. **By 2030, approximately 12% to 17% of all vehicle purchases will be autonomous vehicles.** Strict road safety regulations are prompting automotive manufacturers worldwide to invest in advanced driver assistance systems (ADAS), computer vision, and connected car technologies.

5. The number of connected cars **will increase to <u>400 million by 2025.</u>**

A finely tuned machine: AI is impacting the automotive industry and the whole value chain

You probably hear AI and vehicles and immediately think of self-driving cars because they're the flashy face of the tech. But there's a lot more happening behind the scenes. Let's break it down:

Production
In manufacturing, **AI plays a central role from design to production.** It's not just about creating cars; it's also about innovating tools and robots, like designers using AI-powered wearable exoskeletons for safer vehicles.

Driver programs and assistance
AI elevates the game here, as driver assist programs, autonomous driving, and risk assessments are the power moves. **AI can even monitor a driver's eye movements to prevent drowsiness.** It's like having a co-pilot who never sleeps, ensuring every journey is safer.

Service
In the service sector, AI is the endgame. It predicts maintenance needs and sends alerts about engine and battery performance, keeping your car in top shape. Plus, it's reshaping insurance by tracking driver behavior to assess risks and costs. It can also help car technicians access service manuals, technical documents, or repair guides quickly and easily through natural language queries, improving their response times and service quality standards. **It's like having a personal mechanic and financial advisor rolled into one.**

Digital Twins in Automotive Production

Creating and evaluating an automobile and all its components during production can represent significant costs and time commitments. Here is where digital twin technology truly shines.

Navigate Digital Twin is an AI platform that provides a virtual replica used for testing processes, products, and services, allowing exploration of real-world scenarios in safe, cost-effective virtual environments. In automotive production, it offers a more economical approach to testing vehicles or components, providing deeper insights into real-world performance and facilitating testing of fixes, modifications, or repairs.

Enhancing the driver's *journey*

While self-driving cars may seem futuristic, **AI offers immediate opportunities to enhance the driver experience.** Using computer vision, natural language processing, and robotic automation, manufacturers develop vehicles prioritizing safety and comfort, included in the following systems:

🚗 **Driver monitoring offers diverse services,** such as adjusting controls and detecting drowsiness through body position monitoring, enhancing safety.

🚗 **Driver assistance uses AI to monitor blind spots,** aid in steering and braking, and alert drivers to hazards, improving driving experience.

🚗 **Driver assessment analyzes driving history to predict potential issues,** enhancing proactive safety measures.

Wonder what **technology** makes driving feel so advanced these days? The answer is Gen AI

Gen AI is reinventing the wheel for OEMs, making everything more efficient, sustainable, and smarter. It's all about those crucial safety and convenience features: real-time traffic updates, collision detection, and automatic emergency braking. Gen AI is key to this process. The global generative AI market in the automotive industry is expected to reach approximately USD 3,146.10 million by 2033, and it's already contributing to these vital facets of the industry:

- **It tailors interfaces and infotainment,** ensuring passenger safety through innovative in-cabin monitoring and virtual assistants.

- **It transforms the car shopping experience** with personalized recommendations and virtual test drives. Tools like MagnifAI can help brands optimize and augment their visual testing strategy by applying computer vision models to achieve the best visual experience.

- **It streamlines the manufacturing process,** making it more efficient and sustainable. Generating synthetic data for machine learning and analyzing supply chain data improves quality control and reduces costs.

- **It revolutionizes service processes by enabling car repairs to quickly access technical documents, service manuals, or repair guides** through natural language queries. This improves response times and service quality, ensuring efficient customer support. Tools like **GeneXus Enterprise AI** accelerate the integration of Gen AI, connecting companies to LLMs in a monitored and cost-effective way. It enables the creation of future-proof Gen AI solutions that can easily integrate into enterprise systems.

> "When discussing physical experiences, **we must focus on guest and customer centricity, utilizing data analytics and AI for personalized and effective market strategies** related to revenue generation."

— **Tania Salarvand,**
Senior EVP at Globant, Hospitality & Entertainment.

Other technologies getting this show on the road

Various technologies are needed to create seamless automotive-connected experiences and build a comprehensive ecosystem. Here are a few of the main ones.

5G Connectivity: This technology enables instant vehicle communication, leading to real-time updates and a more responsive driving experience. According to Counterpoint, from 2024 to 2030, almost half of all connected cars sold will feature 5G technology.

Internet of Things (IoT): Connects cars to other vehicles, traffic lights, and homes, enhancing safety and efficiency through data sharing.

Advanced Driver Assistance Systems (ADAS): With features like adaptive cruise control and lane-keeping assistance, improving driving safety.

Cloud Computing: Stores and processes car data, enabling real-time analytics and remote software updates.

Augmented Reality (AR): Enhances driving experience with Head-Up Displays (HUDs) overlaying navigation prompts onto windshields.

Blockchain: Ensures secure and tamper-proof data sharing, building trust and reliability.

Data and Vehicle-to-Everything (V2X): This represents the full potential of automotive data, including Vehicle-to-Vehicle (V2V), Vehicle-to-Network (V2N), Vehicle-to-Infrastructure (V2I), etc.

Brands using AI technologies in the automotive industry

Several companies are advancing AI technology in the automotive world through research and development, product integration, or essential infrastructure and services. **These are some top examples:**

- **Waymo LLC (Alphabet Inc.):** Leads in self-driving tech, creating AI systems for safe navigation in autonomous cars.

- **Microsoft Corporation:** Offers AI solutions and cloud services vital for automotive AI, with Azure providing tools for data handling and machine learning.

- **Intel Corporation:** Supplies hardware and software for AI in cars, powering functions like object detection and decision-making in autonomous vehicles.

- **DiDi Chuxing Technology Co.:** Invests in AI for safer transportation, using algorithms to optimize routes and improve ride-hailing services.

- **BMW AG:** Integrates AI for advanced driver assistance, autonomous driving, and personalized experiences, with features like automated parking and adaptive cruise control.

- **Tesla:** Known for its electric cars and smart driving features, such as Autopilot and Full Self-Driving, powered by AI.

- **NVIDIA:** Provides AI tech for self-driving cars, using GPUs and chips to handle perception, planning, and control.

- **Baidu:** A top Chinese tech firm developing self-driving AI with platforms like Apollo and Baidu Brain.

- **Mobileye (Intel):** Specializes in AI-driven car safety systems, including collision avoidance and lane-keeping assistance.

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When we talk about integrating technology seamlessly, decision-makers ensure everything works smoothly, reliably, and efficiently to optimize car performance. **Personalizing and customizing experiences is key because it boosts customer satisfaction and engagement, which builds loyalty and strengthens the brand.** The main goal of these connected experiences is to drive revenue growth by implementing strategies and technologies that enhance customer value and strengthen business outcomes."

— **Marina Saint-Lary,**
Managing Director at Globant.

What does an AI-connected experience in the automotive world look like?

Companies are pushing the limits through a mix of innovative technology development, strategic partnerships, and customer-centric approaches. For example, Tesla's vehicles offer an immersive connected experience with over-the-air software updates, advanced driver assistance systems (ADAS) such as Autopilot, and a large touchscreen interface for navigation, media, and vehicle controls.

BMW's ConnectedDrive platform integrates various connected services into its vehicles, including real-time traffic information, remote vehicle monitoring, and control via smartphone apps, and personalized in-car infotainment features.

Mercedes-Benz offers the Mercedes Me Connect app, which allows drivers to remotely access their vehicle's status, lock/unlock doors, locate their car, and schedule service appointments through a smartphone app. It also includes features like in-car Wi-Fi and voice-activated virtual assistants.

Volvo's Sensus Connect system offers a comprehensive connected experience, with real-time traffic information, remote start, and climate control via a smartphone app, in-car apps for music streaming and navigation, and Volvo On Call services for emergency assistance and vehicle tracking.

Challenges for OEMs in the integration of AI

Data Complexity (DC): OEMs struggle with inconsistent data and complex IT setups, which impede AI integration. **A profound understanding of data intricacies, confidentiality, and compliance is crucial.**

Regulatory Compliance (RC): The automotive sector faces strict data privacy regulations similar to GDPR and CPRA in healthcare. **OEMs must navigate this legal landscape to avoid hefty penalties.**

Partnership Development (PD): Collaboration with tech giants like BMW's alliance with Microsoft is crucial for innovation. **It accelerates smart manufacturing and drives progress.**

Customer Experience (CE): Evolving customer expectations require seamless digital interactions during car-buying. **OEMs must reimagine touchpoints to meet these changing needs.**

Sales Process Redefinition (SPR): The distinction between online and offline car shopping is blurring. **OEMs must integrate digital platforms with physical dealerships for a unified sales approach.**

Gaming Integration (GI): Incorporating gaming tech into automotive systems enhances user experience but **necessitates seamless integration without compromising safety.**

Efficiency Optimization (EO): Maximizing connectivity is vital for improving vehicle performance and reducing environmental impact. **OEMs focus on optimizing fuel consumption and delivering real-time updates.**

Entertainment-Productivity Balance (EPB): Vehicles are becoming hubs for entertainment and productivity. **OEMs must provide in-car Wi-Fi and streaming services while ensuring passenger focus on road safety.**

Where Globant comes in:

The automotive industry eagerly awaits the seamless integration of AI technologies to enhance consumer convenience, safety, and accessibility. **This evolution involves reshaping mobility, business models, and operations to create the ultimate connected automotive experience, fostering customer loyalty and driving business success in the digital era.**

Partnering with **Globant's Automotive Studio** enriches this journey, leveraging AI tools and expertise to optimize supply chains, streamline production processes, and craft immersive digital experiences.

From mobile customer engagement solutions to vehicle infotainment, we unlock new revenue streams and deliver innovative experiences that redefine industry standards.

Our vehicle infotainment solutions also elevate in-car experiences, enhancing entertainment, education, and connectivity. We deliver innovative solutions that set new industry standards and create exceptional customer experiences. Ready to accelerate innovation with us?

About Globant

At Globant, we create the digitally-native products that people love. We bridge the gap between businesses and consumers through technology and creativity, leveraging our experience as an AI powerhouse. We dare to digitally transform organizations and strive to delight their customers.

- We have more than 29,100 employees and are present in 33 countries across 5 continents, working for companies like Google, Electronic Arts, and Santander, among others.

- We were named a Worldwide Leader in AI Services (2023) and a Worldwide Leader in CX Improvement Services (2020) by IDC MarketScape report.

- We are the fastest-growing IT brand and the 5th strongest IT brand globally (2024), according to Brand Finance.

- We were featured as a business case study at Harvard, MIT, and Stanford.

- We are active members of The Green Software Foundation (GSF) and the Cybersecurity Tech Accord.

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