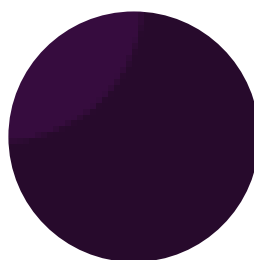
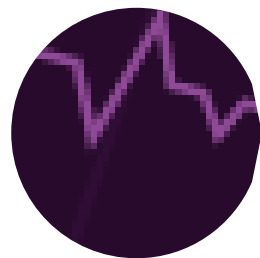
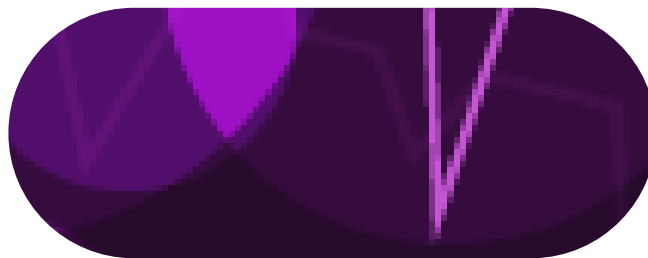
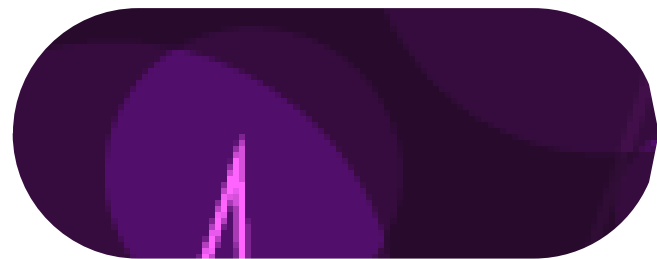
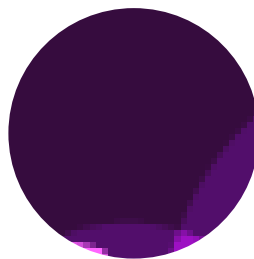


# AI In Automotive Industry: A Booming Market Opportunity

November 2023

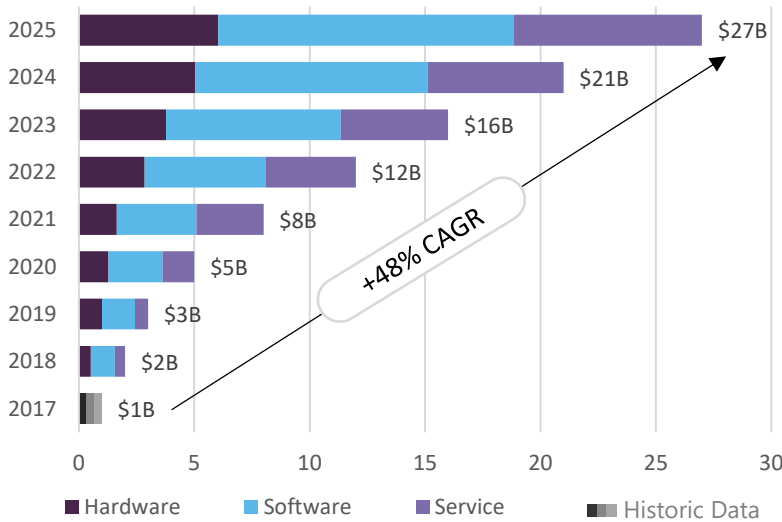


### What is AI in automotive?

The automobile business is no exception to the extent that AI has revolutionized countless other sectors. Artificial intelligence in the automobile industry spans a wide range of applications, ranging from advanced driver assistance systems (ADAS) that identify and address possible road dangers to voice recognition technology that assists drivers to stay connected while keeping their hands on the wheel.

### Global Automotive AI Market forecast

Automotive AI Market Size



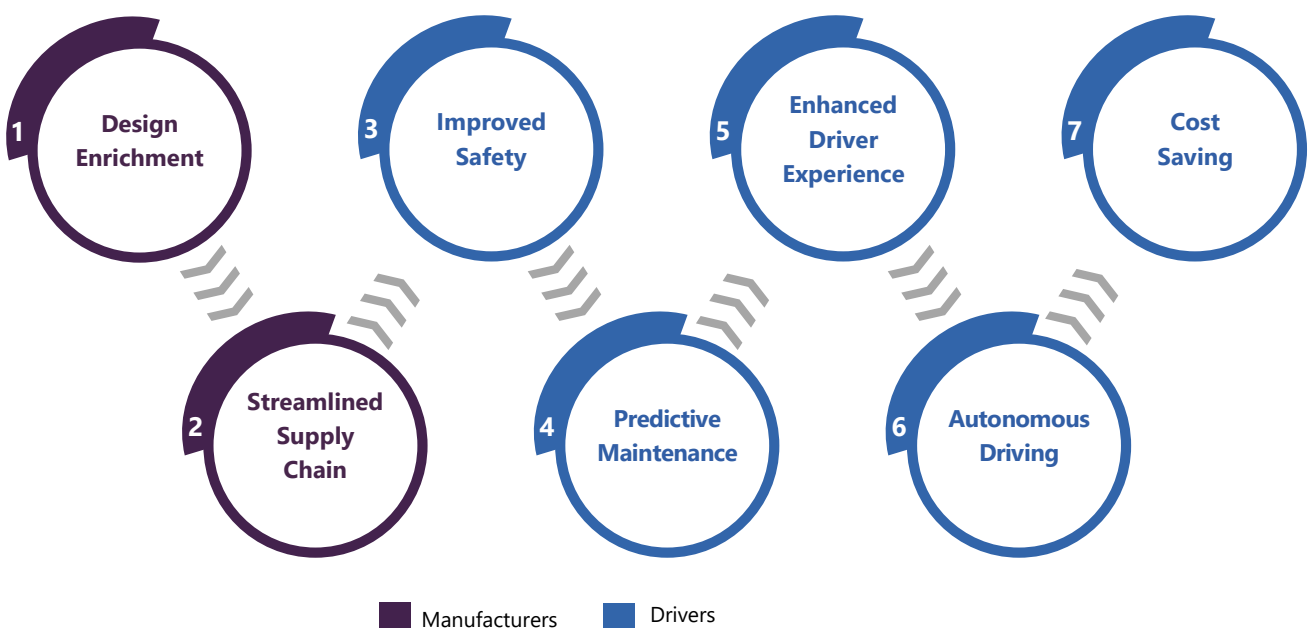
AI has changed the automobile sector in many ways, from self-driving cars to industrial robots in manufacturing plants. Because of this, major industry giants like Tesla, BMW, Mercedes-Benz, Toyota, and many more are aggressively implementing AI technology to enhance the consumer experience.

However, self-driving vehicles are neither the beginning nor the end of AI's promise in the automotive sector. It offers several aspects that open conveniences for everyone, including car manufacturers, drivers, and passengers.

Source: Deloitte.com—Autonomous Driving. Moonshot Project with Quantum Leap from Hardware to Software & AI Focus, 2019

Nevertheless, predictions per [IHS Markit](#) indicate that the worldwide autonomous vehicle sales to reach 33 million by 2040, indicating that the adoption of self-driving vehicles will expand significantly.

### How is AI Helping the Automotive Industry?








Source: Appinventiv

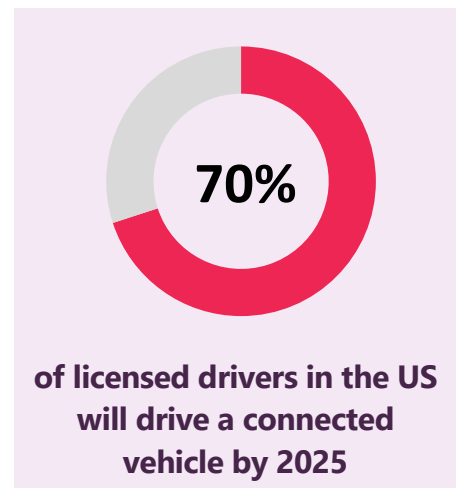
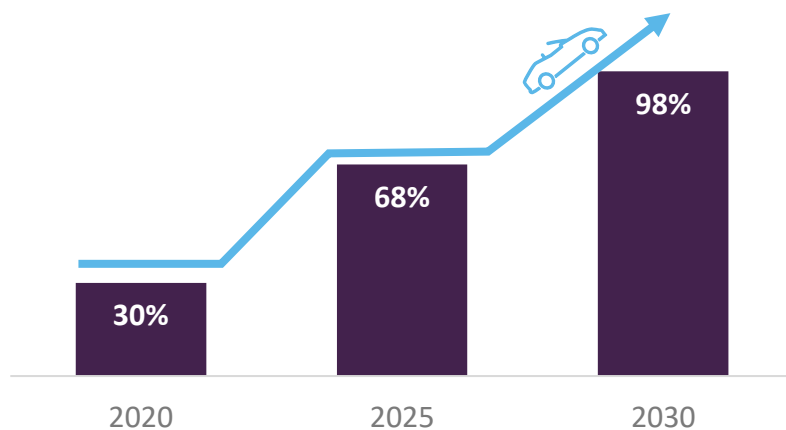
The utilization of AI technology in the automotive sector continues to grow as a means of improving workflows and enhancing overall vehicle performance. AI has radically revolutionized the modus operandi on how automobiles are manufactured, and operated by taking advantage of big data, IoT, AI, and ML in the auto industry.

### Which sectors are leveraging AI to take a leap forward?

Four transformative concepts, together referred to as ACES by the automotive industry, have gained traction in the past several years: autonomous driving (especially self-driving driverless cars), connectedness or connecting of cars, electrification of vehicles (emergence of electric vehicles), and shared mobility. The whole ACES idea drives growth in the automobile sector, and AI is the key factor.





 <p><b>Autonomous Vehicles</b></p>	 <p><b>Sensor Fusion and Perception Systems</b></p>	 <p><b>Advanced Driver Assistance Systems (ADAS)</b></p>
<p>Self-driving cars are now able to monitor traffic laws and drive independently with little to no human involvement owing deep learning and superior computer vision</p>	<p>Cameras, RADAR, LiDAR, and ultrasonic sensors develop &amp; analyze a complete awareness of a car’s 360° surroundings and combine it to recognize objects on the road, forecast pedestrian &amp; vehicle behaviour, and aid in real-time decision-making</p>	<p>AI leverages algorithms and sensors to offer lane-keeping assist, automatic emergency braking, adaptive cruise control, and parking assist</p>
 <p><b>Manufacturing &amp; Quality Control</b></p>	 <p><b>Insurance fraud</b></p>	
<p>Deep learning and computer vision-based quality control technologies may identify numerous flaws at once and go beyond simple anomaly detection; also, robotics &amp; automation can aid vehicle manufacturing with efficiency, precision, and particularly—cost-effectiveness</p>	<p>AI, with the help of Natural Language Processing and predictive data analytics tools, can spot &amp; flag suspicious patterns in claims, and estimate the fraud risk of policyholders based on their customer profiles to avoid fraudulent claims pay-outs</p>	

### Deployment of AI in the automotive industry from 2020 to 2030



Source: Appinventiv and eMarketer

What leading companies in the Automotive space are doing about this?

 <p>TESLA</p>		 <p>NVIDIA</p>	 <p>WAYMO</p>
<p>Autonomous Driving and Improved Safety</p> <p>+</p> <p>Advanced Driver Assistance systems</p>	<p>Connected Vehicle Technologies</p> <p>+</p> <p>Intelligent Personal (AI) Assistant</p>	<p>Sensor Fusion and Perception Systems</p> <p>+</p> <p>Real-time Driver Monitoring &amp; Diagnostics</p>	<p>Path Planning and Navigation</p> <p>+</p> <p>Surrounding Environment Response</p>
<p>Tesla uses AI to enable self-driving capabilities in its cars; recently, Tesla unveiled its new D1 chip that runs its supercomputer and can allegedly process camera imaging data four times faster than other computing systems</p>	<p>BMW realizes ~400 AI applications across its operations, including new vehicle development and energy management, in-vehicle personal assistants, power automated driving, etc.</p>	<p>Nvidia is a leading manufacturer of AI-enabled solutions in autonomous vehicles, which help process a vast trove of sensor data, allowing manufacturers to design new cars and enable driver monitoring</p>	<p>Formerly the Google self-driving car project and now an autonomous driving tech company, Waymo uses AI to power self-driving capabilities for navigation and responding to the surrounding environment in its taxis, delivery vans, and tractor-trailers</p>

Which factors are hindering this technology's growth?

While AI in the automotive industry has much to offer, businesses must consider a few potential dangers and roadblocks related to the technology's adoption:

**Data Privacy and Security**

Obtaining personal data, such as video footage from dashcams or geolocation data, which is necessary for AI-enabled driving, has been severely constrained by existing legislative frameworks like GDPR. Fortunately, market participants, including lawmakers and manufacturers, are actively revising the pertinent legislative frameworks, and coming up with a detailed plan to overcome them.

**Implementation costs and development times**

Despite major advancements in autonomous driving technology, safe and dependable AI systems still require massive volumes of data and further training, which is incredibly costly and time-consuming. For this reason, even well-known automakers with ample resources collaborate with independent AI companies to add AI to their vehicles.

## Conclusion

To conclude, future mobility using AI will be crucial because of its ability to transform transportation by tackling pressing issues including accessibility, urban planning, crowded roads, and ecological effects. Applications like autonomous driving, ADAS, and improved safety will only result in safer, more effective, and more sustainable transportation systems that enhance the quality of life for people. The global industry for electric vehicles is benefiting from developing technology, favourable legislative conditions, and continued investments in electrification by established automakers.

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