

Digital Transformation of Automakers: Top 12 Trends



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Introduction

In an increasingly digital world, automobile manufacturers are constantly innovating to stay ahead of the competition.

In an increasingly digital world, automobile manufacturers are constantly innovating to stay ahead of the competition. The emergence of new players is putting pressure on traditional automakers to formulate digital strategies and to boost digital transformation across all areas of business:


R&D and product
development


Production and
manufacturing


Marketing
and sales


Management
processes and
internal workflows

This ebook will help you better understand how you can leverage digital transformation trends in the automotive industry to support business objectives. **Let's dive into 12 technology trends that are reshaping the automotive industry.**



TREND 1

The rise of new technologies

Innovative technologies such as augmented reality, artificial intelligence (AI), and the Internet of Things are already playing a major role within the industry, and their significance is only likely to increase. Here are just a few:

- **Unmanned aerial vehicles (UAV)** are gaining popularity in various applications ranging from traffic monitoring to 3D mapping;
- **Carmakers are adopting blockchain technology** to promote car data exchanges across manufacturers and suppliers;
- **IoT devices and dashcams** help drivers understand driving behavior through analysis of video recordings obtained from cameras installed inside or outside vehicles;
- **AI and Machine learning** improve autonomous vehicles' ability to sense the road and make driving decisions;

Various new technologies have emerged as potential substitutes for traditional vehicle design and manufacturing processes.

- **3D printing** can make precision metal parts without jigs or tools at an affordable cost;
- **Laser welding** technology eliminates the need for joining OEMs;
- **Light painting technology** allows complex components to be created easily using few light points;
- **Augmented reality** can eliminate the need for paper manuals by displaying instructions directly on the windshield.

And the list goes on...

Automobile OEMs will need to focus on adopting new technologies such as these to remain competitive in a digitized market by improving their products' quality, cost-effectiveness, and time-to-market.

Automated driving

Most major automakers and car part manufacturers are working on driverless cars, following the lead of tech companies like Tesla, Apple, Google & Uber, who have all announced ambitious plans to roll out self-driving capabilities over the next decade. Automated driving will continue to be the focus area for OEMs across all regions.

Artificial intelligence (AI) systems will play an important role in next-generation driver assistance systems. Automakers are investing heavily to develop robust and contextual decision-making capabilities for self-driving cars through deep learning algorithms used for image recognition, speech recognition, and natural language processing or NLP.



Automated driving includes three levels: semi-automated, highly automated, and driverless cars. The first two levels are already in use, while the third level hasn't been successfully commercialized yet.

Several OEMs, including Tesla, BMW, Ford, Toyota, and Volkswagen, are racing to develop fully autonomous vehicle technologies. Tech giants from Google's Waymo to Apple have also been testing self-driving systems.

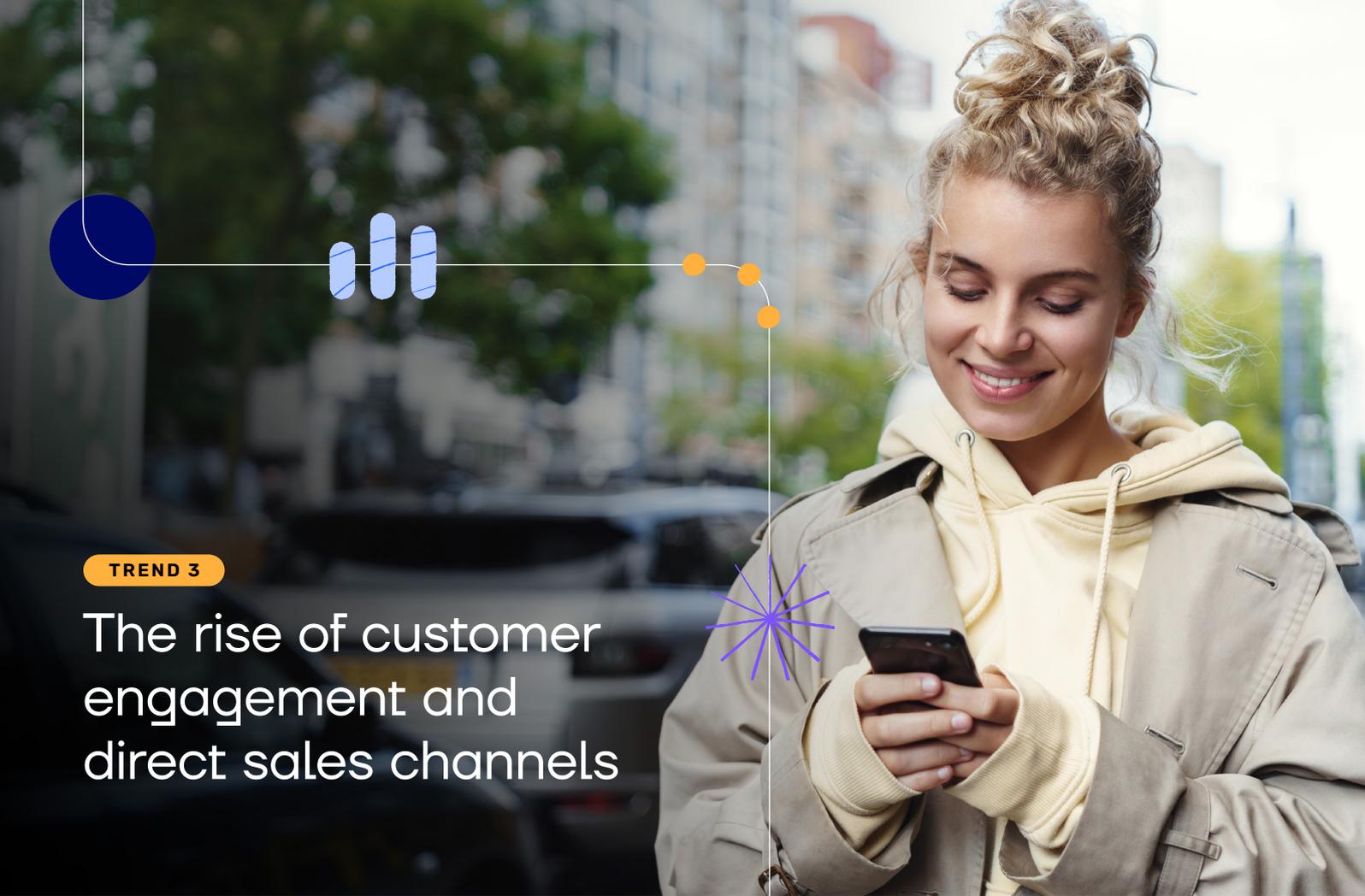
Automated driving will continue to be the focus area for OEMs across all regions.

No-code platforms can support the management of all aspects of a dealership:

- AI/ML
- GPS navigation
- Artificial vision
- Radar sensor for object detection and tracking
- LIDAR sensor for 3D mapping
- High-precision hardware, including computing power and high-performance sensors and cameras
- Improved networking capability via 5G networks, V2X, DSRC, LTE, etc.

There are still risks that need to be considered, such as liability issues in case of accidents and cyberattacks. To solve these problems, automakers' are doubling their R&D efforts, further promoting the development of automated driving technologies.

This trend is only likely to increase in the future, and fleets of partially or fully automated vehicles are likely to hit the roads in the foreseeable future.



TREND 3

The rise of customer engagement and direct sales channels

The shift to more digital customer engagement is likely going to garner much attention in the years ahead as brand promotion through dealer networks is becoming less effective.

Direct business models are disrupting the market and normalizing the use of e-commerce websites and owned showrooms, not dealerships, to sell cars. For example, Tesla sells directly to consumers, and China's emerging automaker NIO also relies on online channels to sell products.

OEMs operating as intermediaries in customer-dealer transactions will have difficulty building close relationships with end-users due to their limited interaction with them during the buying experience.

Direct sales will help eliminate the dealerships which act as physical touchpoints.

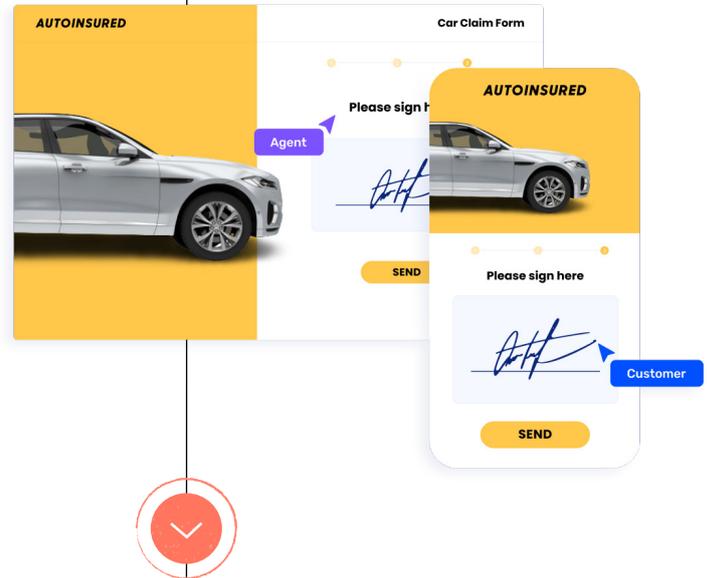
TREND 4

The primacy of digital experience

Buying cars online is becoming more common, and customers are expecting the same service experience on their mobile devices as they have on their PC or laptop.

What sets a company apart from its competitors is not just its brand value or customer service but the experience it offers to customers across all touchpoints, including online, mobile, social media, and retail outlets.

Customers expect their OEMs to use every possible channel to engage with them. However, automakers should not focus exclusively on online communication; rather, they need to communicate through multiple channels, including social media sites (Facebook, Twitter), live chats, and offline showrooms.



What sets a company apart from its competitors is the experience it offers to customers across all touchpoints.

For example, NIO's experiential digital marketing is widely praised. In terms of experience marketing, NIO covers eight aspects:

- ✓ Content experience
- ✓ Social experience
- ✓ Lifestyle experience
- ✓ Car purchase experience
- ✓ Driving experience
- ✓ Service experience
- ✓ Energy supplement experience
- ✓ Battery swap experience

TREND 5

The rise of new business models

Shared mobility is becoming mainstream. The traditional vehicle ownership model is evolving, with more consumers opting for shared mobility rather than car ownership.

Business models that combine autonomous cars with ride-sharing will offer a completely different way to get around. With Uber and Google leading the charge, other players such as Lyft, Didi Chuxing (formerly Didi Kuaidi), GrabTaxi, Ola Cabs, and Sidecar are following their lead.

And they won't stop there: Autonomous vehicles could very well end up being owned by the operator on behalf of customers who use them.

The increasing development of new technologies has turned vehicles into a gateway to a variety of new services. New value-added services will be created by fusing together various functions and systems in an intelligent way, ranging from traffic monitoring, parking management, green driving advisory system, vehicle logistic tracking, car rental reservation systems, and many more.

This shift will completely change the way cars are manufactured, sold, and serviced. It will also make automotive companies more customer-centric than ever before. To be competitive in the future, automotive manufacturers need to shift their focus from selling cars (hardware) to providing services.

TREND 6

The rise of electric vehicles

Carmakers are expanding their portfolios to include EVs while introducing hybrid versions of conventional vehicles as well as developing clean fuel alternatives such as biofuels or natural gas.

Several countries are phasing out diesel vehicles and transitioning to hybrids or electric counterparts. Assistance from state & federal governments through tax credits or zero-emission vehicle mandates requires automakers to produce certain numbers of low or zero-emissions vehicles per year in order to sell cars within a particular region.

This shift will create demand for charging stations, which in turn will open up new investment opportunities.



TREND 7

Technology-enabled R&D and product development

Product design is becoming more idea-based as opposed to being process-oriented because of automation technologies such as:

- Computer-Aided Design (CAD)
- 3D Printing
- Robotics
- Machine Learning (ML)
- Computer-Aided Manufacturing (CAM)

The digitalization of R&D is also affected by IoT, Big Data, and AI technologies. The application of these technologies will increase productivity and efficiency. As a result, it will reduce time to market and cost per vehicle as well as the product defect rate.



TREND 8

Digital supply chain management

Manufacturers take a lot of time to identify the component parts that need to be procured. With the help of IoT and big data, they will be able to check availability in real-time, which has not been possible earlier. This will result in effective management of inventory and procurement costs.

Procurement approach adoption is increasing because the automotive industry supply chain is fragmented & traditionally supply chain process involved a lot of manual processing resulting in long cycle times, manual data gathering, and reporting. Pandemic-related supply chain disruption made the need to transform apparent.

When this approach matures further, the need for direct supplier integration & closer collaboration between OEMs & suppliers, partners, and customers will evolve into an end-to-end supply chain ecosystem. This will ensure that the supply chain can cope with huge demand fluctuations during launch events.

Analytics and forecasting powered by data ecosystems

Data in OEM has multiple sources, all of which will be brought together to power data-driven decision-making. Big data can empower automakers to gain insight into marketing efforts, supply chain management, revenue forecasting, and the development speed of new products.

Data collected from digital tools

OEMs need to analyze UX and digital data to design a service that addresses customer needs and delivers customer value. This requires collecting, analyzing, and applying digital intelligence in order to understand customers' online behaviors. It has become easier for automakers to analyze customer data such as:



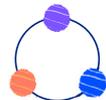
Buying patterns



Behavioral patterns and trends

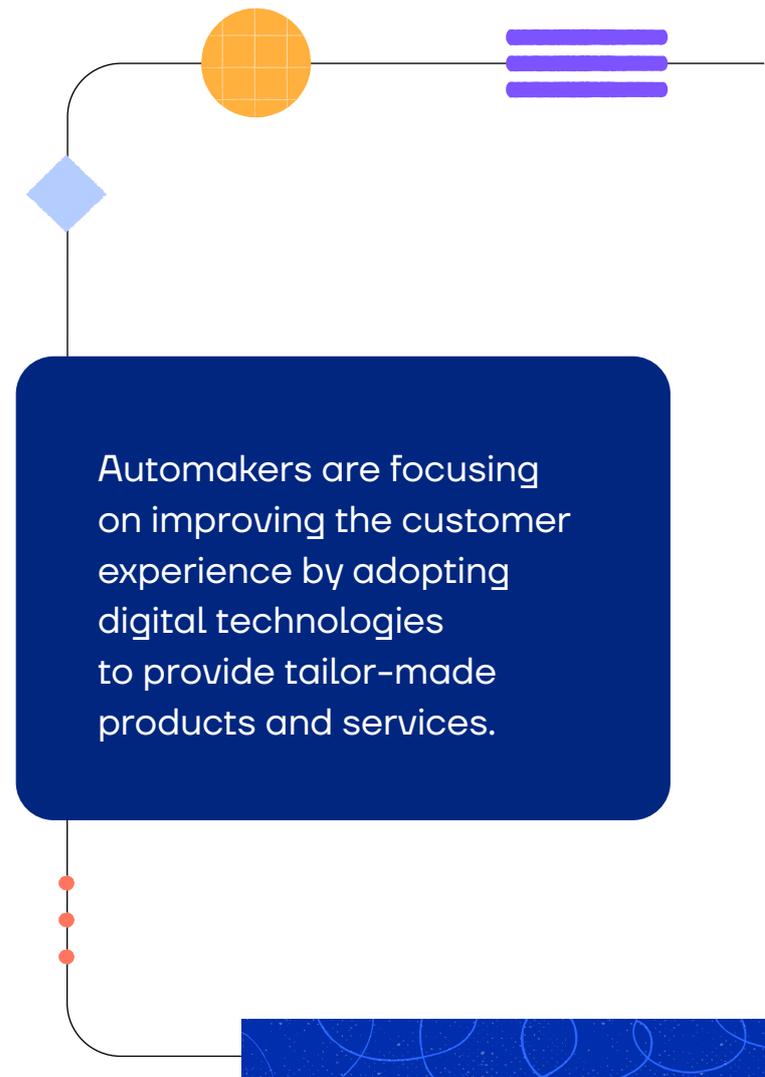


Service history



Referrals

Automakers can utilize data they collect in order to create an online & offline user-centric digital marketing model. Automakers are focusing on improving the customer experience by adopting digital technologies to provide tailor-made products and services to prospects and individual customers based on their online behaviors and usage patterns.



Automakers are focusing on improving the customer experience by adopting digital technologies to provide tailor-made products and services.

IoT data

The usage of internet-enabled vehicle sensors such as cameras, global positioning systems (GPS), radars, ultrasonic detectors, and LiDARs is increasing among automakers because they allow them to gain real-time information about a car's surroundings without human input.

The data generated by these devices can be collected, recorded, and stored in a centralized system in order to:

- 1 Improve ADAS efficiency and performance
- 2 Analyze crash alerts and warnings
- 3 Monitor individual components to diagnose malfunctions or damage during operation, thereby preventing accidents due to faulty parts
- 4 Make more accurate predictions regarding car maintenance & repair
- 5 Analyze vehicle usage patterns by different customers in order to understand customer requirements and expectations
- 6 Predictive analytics also makes it possible for companies to determine which parts require replacement at an earlier stage because drivers are prone to face issues with them when driving long distances
- 7 The number one goal for automakers is to make their products as safe as possible and provide protection for their passengers from accidents that may happen when driving or elsewhere. To accomplish this goal, automakers are rapidly developing proactive safety systems (PSS) that can predict a driver's future behavior based on historical driving patterns and detect the occurrence of accidents before they actually occur.

The ability to store data collected by IoT systems is a critical component of an effective IoT strategy since one has to analyze this data in order to devise appropriate action plans according to the business goals.

Data generated by HMI and ADAS connected vehicles

Highly automated driving cars (HADs) will generate massive volumes of data that will need to be analyzed in real-time to identify anomalies or equipment failures. Automakers can then use this information in taking proactive measures in car design and operation. Moreover, it enables manufacturers to collect valuable customer data such as preferences while also giving the customers control over how their data is used.



Data generated on the production floor

Real-time tracking of production lines provides insights into bottlenecks or breakdowns, thereby allowing manufacturers to take quick action. Data-driven optimization can help manufacturers reduce costs per vehicle as well as reduce lead times.



TREND 10

Augmented reality and virtual reality in designing cars

Augmented and virtual reality have gained wide popularity in the manufacturing sector. These technologies help automobile manufacturers to design a car from various angles while also experiencing it virtually, thereby facilitating a quick decision-making process. Augmented and virtual concepts enable automakers to test drive their cars virtually, which aids them in:

- 1 Ensuring that they are meeting customer expectations regarding features such as interior space, ergonomics, safety mechanisms, dashboard controls, etc
- 2 Ensuring that vehicle components are installed correctly during pre-production testing
- 3 Reducing overall product development costs by preventing costly changes during the production stage
- 4 Production line workers can create 3D mockups of an entire subsystem digitally using AR/ VR headsets and then change its position or orientation without actually needing to move it. This helps them in testing the usability of a component before moving it on the production line, thereby reducing the risk of physical damage

Automakers are focusing on improving the customer experience by adopting digital technologies to provide tailor-made products and services.

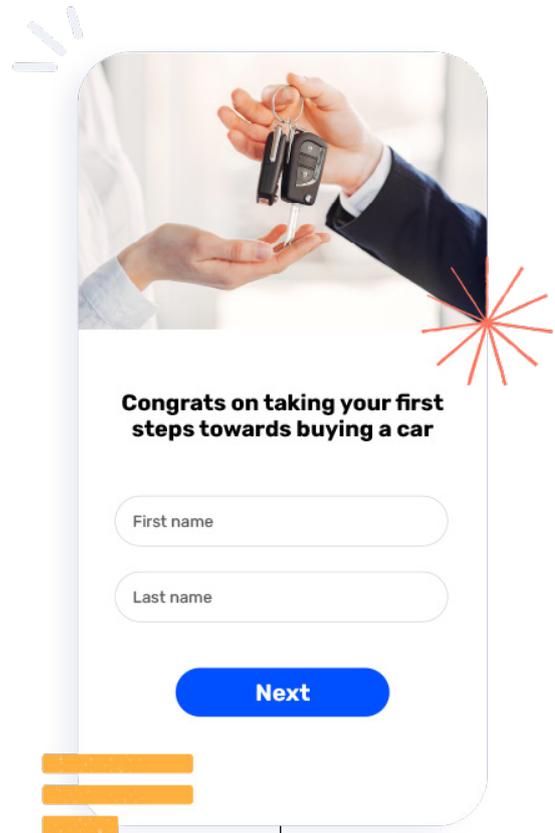
- 5 AR/VR enabled training workers with simulations enables automakers to spend less time and money on formal training sessions because they can learn new processes through simulations instead of performing trial-and-error drills that might prove expensive if mistakes are made during the real-world operations
- 6 Moreover, these technologies enable companies to reduce costs by minimizing repair time and providing customers with remote technical support services

Replacing paperwork with digital journeys

The more complex the sales process, the less likely customers are to convert, and if they do, they are less likely to become loyal to the brand. Digital journeys can transform paperwork-intensive processes in automaking such as:

Sales and service processes: Digital journeys can be used to generate vehicle delivery details, warranty claims, manage aftersales activities such as service bookings. Moreover, all these transactions can be performed either on the phone or PC so that no paperwork is required.

Car purchases and ownership: Car purchase paperwork is replaced with digital channels, including purchasing cars online via a website or application for further transactions using the same platform.



Maintenance checks could be scheduled through an application based on mileage and other parameters instead of contacting the manufacturer just in time when a problem arises from driving, such as excessive engine noise or malfunctioning of the air-conditioning unit.

Parts can be ordered digitally, which enables automakers to keep track of inventory in real-time, thereby eliminating waste and reducing costs.

Automobile loans: Automakers have started using digital channels such as ATMs and mobile apps for loan applications with an electronic signature required on the device used for filling up the online form. This eliminates the paperwork involved during the application process. Using digital channels for auto finance applications provides automakers with accurate customer data that helps them improve their marketing strategies while helping customers by introducing new vehicle models/features based on their preferences just when they are ready to purchase a new car.

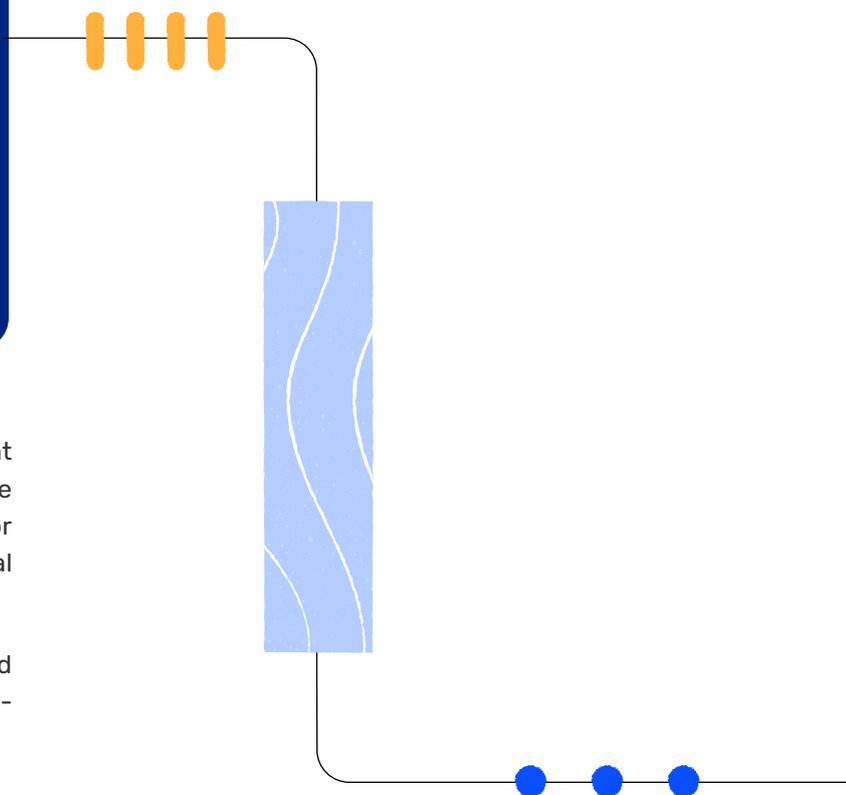
Bills of landing many international shipping companies have implemented the use of paperless bills of landing; it may be time for OEMs to follow suit. Bills of landing are manual, difficult and time-consuming to process. It involves a lot of intermediary financial companies such as freight forwarders and container deposit schemes, which increases the shipping cost. With digitization, paperless bills of landing can be created through digital journeys, which eliminates paperwork and reduces costs for automaker and shipping companies.

Manual workflows such as these can be replaced by digital journeys that streamline the process and improve customer experience. Automakers can also monitor the status and track the progress of agreements, applications, and other paperwork-intensive processes while collecting the data in a digitally native format.

Using digital channels for auto finance applications provides automakers with accurate customer data that helps them improve their marketing strategies.

OEM agreements are manual and difficult to implement as they involve multiple stakeholders. OEM license agreements have to follow complicated processes for approvals, which can easily be streamlined with digital tools.

Overseas manufacturing agreements can be digitized to help OEMs manage their global supply chain in real-time and make changes to optimize it.



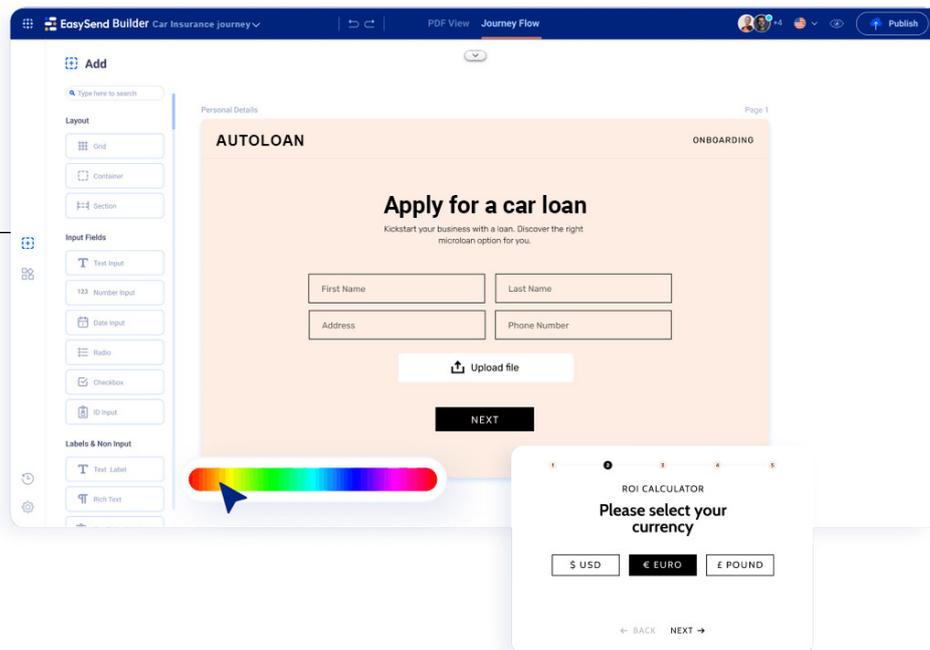
No-code tools in the automotive industry

Low-code/no-code development platforms can act as digital transformation amplifiers by empowering business users to develop digital applications without writing a single line of code.

This is important for automakers because they have limited in-house IT resources and often need to outsource digital transformation projects to their vendors or partners.

No-code empowers OEMs to develop and make changes to digital transformation projects faster. This is crucial for automakers because they need fast deployment of multiple new features while delivering customized solutions at the same time.

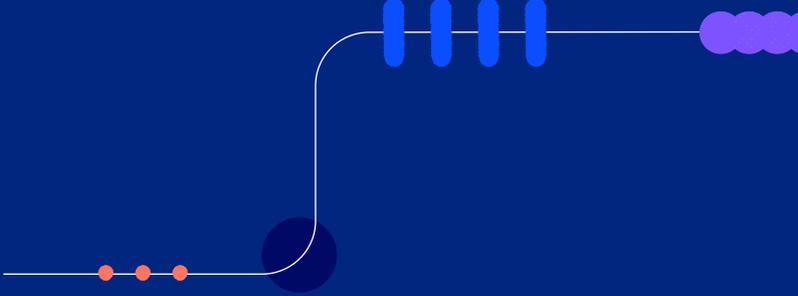
No-code tools enable automakers to implement new processes seamlessly that otherwise would have required lengthy trials during the implementation of new process change in the past.



No-code empowers OEMs to develop and make changes to digital transformation projects faster.



The bottom line



The future of digital transformation in the automotive industry looks promising as industries are continually working on new technologies and products.

Automakers need new technologies and marketing approaches to deal with disruptive trends, including shared mobility and self-driving cars. These will require automotive companies to rethink their business models rapidly and fundamentally change the way they interact with customers digitally.

The free flow of data between systems is the hallmark of the new digital age. Data is being collected in real-time in digital-native format by the Internet of Things (IoT) and big data technology, feeding the information systems that can be interlinked into a single ecosystem to support business objectives.

The future for automakers will depend on how they collect and analyze Big Data in order to develop high-performance vehicles with lower emissions using lightweight materials (i.e., plastics) that are cheaper and more durable while improving their customers' experiences by offering them personalized services.

No-code /low-code development platforms will act as digital transformation amplifiers by empowering corporations to develop and make changes to their digital transformation projects faster.

EasySend is a no-code platform that transforms any paperwork-intensive manual process in automaking into a digital customer journey, empowering OEMs to deliver outstanding digital experiences to their customers.