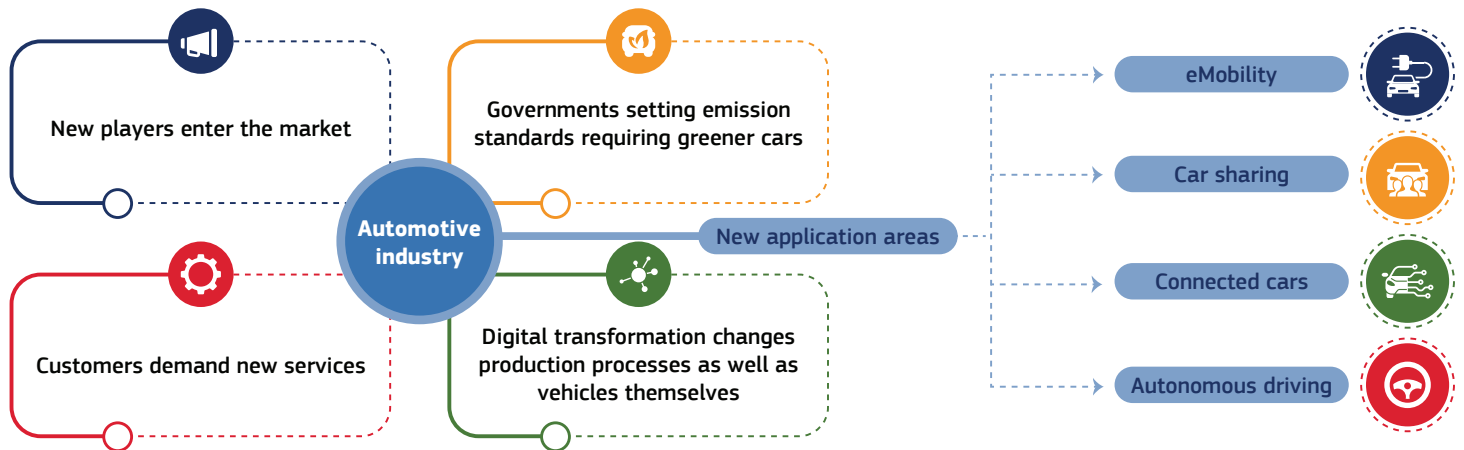European Commission

Transforming the automotive industry with advanced technologies
Sectoral Watch: Technological trends in the automotive industry

Though a small group of countries and regions are leading the world automotive production, the automotive value chain has been becoming increasingly complex and global. A growing number of players is involved, operating in different sectors and located in geographically distributed areas. Next to production and assembly, various activities (directly and indirectly linked) are hosted worldwide, e.g. design, testing or research and development (R&D). The traditional value chain which has been developed over time, evolves from vertical integration into a dispersed production network.

New players enter the market

Governments setting emission standards requiring greener cars

Automotive industry

New application areas

Customers demand new services

Digital transformation changes production processes as well as vehicles themselves

- eMobility
- Car sharing
- Connected cars
- Autonomous driving

The automotive industry shows growth trends in the electrification, automation and sharing of vehicles
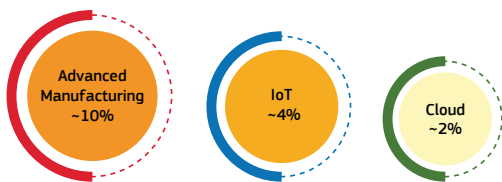
Advanced technologies can open up new possibilities for manufacturing resulting in enhanced performance, products and services. Thus, they play an important role in the future of automotive companies and create new innovation opportunities. Digital technologies like the Internet of Things (IoT), Robotics or Artificial Intelligence are used to make the production process more efficient and intelligent. At the same time, the advanced technologies are also built into the vehicles that are created by automotive manufacturers. For instance, advanced materials, photonics as well as the IoT/Big Data are crucial for building smart and connected vehicles.

Overview of technological trends shaping the automotive industry
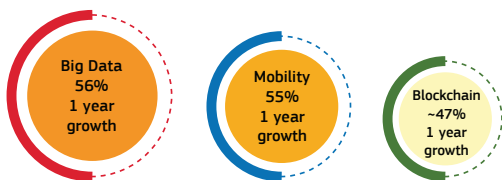
Automotive industry	Technological developments
Vehicle innovation Describes technological developments in the vehicle itself.	- Car connectivity - Autonomous driving
Production innovations Affect the production process of the automotive industry and are visible in technological developments regarding smart factories and Industry 4.0.	- Smart factories - Industry 4.0 applications
Innovative new business models Will also significantly reshape the general concept of car ownership and mobility in the future.	- After-sales services - New car-ownership models - On-demand mobility services

For more information, read the full Sectoral Watch report on the Technological trends in the Automotive Industry here:
https://ati.ec.europa.eu/reports/sectoral-watch/technological-trends-automotive-industry

The automotive industry is increasingly looking for a workforce that is skilled in general mobility technologies

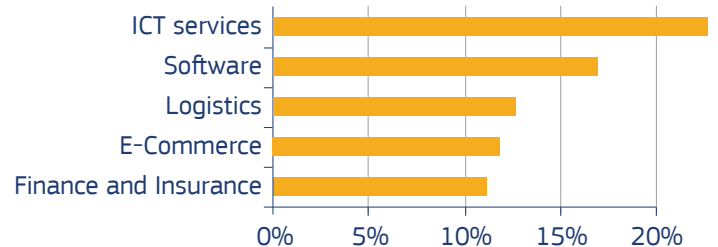**Most common advanced technological skills in the automotive sector:**

- Advanced Manufacturing ~10%
- IoT ~4%
- Cloud ~2%

Fastest growing advanced technological skills in the automotive sector:

- Big Data 56% 1 year growth
- Mobility 55% 1 year growth
- Blockchain ~47% 1 year growth

Start-ups represent the most recent trends of technology development in the industry and target a rapid response to industry needs. Beyond transportation solutions and manufacturing of automotive parts, start-ups focus most on automotive related ICT services and software development.

- ICT services
- Software
- Logistics
- E-Commerce
- Finance and Insurance

(0% — 5% — 10% — 15% — 20%)

While the traditional automotive industry continues to play an important role in the global economy, it has been facing a number of challenges in recent years

COVID-19
The COVID-19 crisis brought both automotive production and sales to a sudden halt in most of the EU - and globally.

Emission Regulations
New EU regulations on CO_2 emissions performance standards.

High investment needs
The automotive industry is the largest investor in research and development in the EU.

IT skills
The analysis of the EU27 skills competencies confirms a high demand for IT-related skills in the automotive industry.

System integration
The dependence on different suppliers who bring along individual software solutions and standards is a challenge for the integration of the different systems.

Developing markets
Increasing vehicle production in developing and emerging markets create the pressure to face global competition.

About the Advanced Technologies for Industry (ATI) project

The ATI project – funded by the European Commission – supports the **implementation** of Europe's new growth strategy with a systematic monitoring of **technological trends** and reliable, **up-to-date data** on advanced technologies.

Robotics Artificial Intelligence Connectivity Photonics Advanced Materials Security Advanced manufacturing Technology Internet of Things Micro- and Nanoelectronics Industrial Biotechnology Mobility Blockchain Cloud Computing Nanotechnology Big Data Augmented and Virtual Reality

The **Sectoral Watch** analyses trends in the generation and uptake of advanced technologies, related entrepreneurial activities and skills needs in a number of selected sectors. It interprets data from a list of data sources compiled to monitor advanced technologies and their applications in industry across Europe and key competitor economies. It allows policy makers, industries and intermediaries to contextualise the collected data on advanced technologies specific for the industries in focus.

For more information, read the full Sectoral Watch report on the Technological trends in the Automotive Industry here:
https://ati.ec.europa.eu/reports/sectoral-watch/technological-trends-automotive-industry