

## TECHNICAL ANNEX

### Impact on production

The shortage has led to partial or complete production stoppages in motor vehicle manufacturing plants in Europe and elsewhere (with production either stopped or put on hold), affecting a considerable number of vehicles. Everything indicates that this shortage will persist for a long period of time, possibly stretching to 2022. As a result, car production volumes in Europe will likely be substantially lower than expected this year and next; and supply will not be in line with demand.

### Impact on sales

Since vehicle deliveries will need to be postponed, total sales volumes for 2021 and beyond may also end up below expectations. Manufacturers whose production has been halted and whose vehicles have remained unsold have already suffered a drop in sales figures so far this year.

### Impact on employment

Capacity utilisation and employment have been shrinking throughout the automotive value chain, at least temporarily. Although contracts have not been terminated, a significant number of employees have been affected. The instruments put in place vary strongly depending on production volume, individual situation, and the regional framework. For instance, during non-production periods flexible working time instruments have been implemented, such as working time accounts, vacation days, short-time work ('Kurzarbeit'), or temporary unemployment.

### Impact on systems and services / compliance with legislation

Most vehicle manufacturers have witnessed an impact on several services and systems/devices, sometimes leading to a situation where different legislative requirements in various markets around the world cannot be complied with. Those vehicles for which systems and services could not be produced are now being built on stock and will be re-worked before being delivered to those markets and to respected customers.

**ACEA**  
European Automobile  
Manufacturers' Association

Avenue des Nerviens 85  
1040 Brussels, Belgium  
+32 2 732 55 50  
info@acea.auto

In addition to the impact on connectivity, automated and electrification, below is a representative list of systems and services with an impact on type approval:

## ADAS (Advanced Driver Assistance System)

- Front collision avoidance assist (FCA)
- Camera and other advanced driver assistance systems:
- Adaptive cruise control (ACC), lane-keeping assist system (LKAS), advanced emergency braking system (AEBS)

## DAB Radio (Digital Audio Broadcasting)

- D-Audio
- AVN (Audio, Video and Navigation)

To mitigate the crisis, DAB had to be removed from some markets. However, DAB is a legal mandate through the European Electronic Communications Code (EECC).

## Safety and related systems

- Airbag control unit (ACU)
- Body control unit (BCU)
- Integrated body control unit (IBU)
- Vehicle stability assist (VSA), electric brake booster and active safety functions – anti-lock braking system (ABS), traction control system (TCS) and others
- Supplemental restraint system (SRS) unit and passive safety functions

## Other

- Engine control unit (ECU)
- Dosing control unit (DCU)
- Body control model (BCM) unit; connectivity services
- Electric park brake (EPB) unit
- Customer features: blind spot information system (BLIS)
- Non-customer features with strong volume impact: brake system, door control module, steering gear, central electronic module
- Comfort functions: non-contact tail gate opening, lordosis (seat function), thermo cupholder, wireless charging (phone)
- Cockpit, dashboard

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- HiFi systems / booster
- Parking assistant
- Air suspension
- Laser light
- Integrally active steering (IAS)
- Head-up display
- Several internal cameras
- Rear view digital mirrors (auto)

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