

## The software engineer will fix your car now

As sales of electric vehicles soar, spare a thought for the mechanics

**THE EDITORIAL BOARD**



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It is 2030 and your electric VW has developed an annoying habit of pulling to the right. A few years back, when your last petrol car started doing something similar, a local mechanic in overalls spent half an hour wrestling underneath it with a torque wrench and a few muttered expletives. Today, you link to the car's control system from your tablet at the breakfast table and talk through an online portal to a VW technician in Hyderabad. Sure enough, it's a software glitch. A patch is sent over the internet, and the repair is done.

As a [Financial Times series](#) has highlighted this week, demand is surging for electric vehicles as the world accelerates towards an epochal industrial shift. Since Henry Ford installed the first moving assembly line for mass production of an entire automobile [in 1913](#), the internal combustion engine car has been a mainspring of industrialisation and globalisation. Today, almost everything modern economies produce ends up in cars in some form: copper for the wiring, rubber for the tyres, steel for the frame, and silicon chips for the computerised "brains".

Not all of that will change. Yet a striking feature of the re-engineering of the auto is the [reduction in moving parts](#), from some 2,000 in a petrol engine to about 20 in an EV drivetrain. A host of auto components familiar for up to a century will vanish. Some new ones will replace them, such as battery and charging systems, including brakes that partially recharge the battery. But the implications will be profound.

One area heavily affected will be the components industry. Germany's Mittelstand, where hundreds of manufacturers have for decades specialised in sometimes single parts for internal combustion engines, faces a particular challenge. Some will find new niches making components for electric drivetrains and other parts of EVs. After all, if auto manufacturers are less able to differentiate themselves by designing more powerful engines — especially as vehicles become self-driving — they will have to compete by making their cars more attractive places to be. That might encompass everything from seat design to entertainment systems.

Some auto manufacturers are already working with component producers on the transition, thinning out their core suppliers and helping others to find new product areas. But the shift in the technology and composition of autos will open opportunities for innovative companies in emerging markets — just as China's BYD has leveraged its success in [developing battery technology](#) to become a leading electric auto producer in its own right.

Also in the crosshairs of change are garages, mechanics and aftersales staff. Fewer moving parts should lessen the need for repairs and replacement. As autos become more like computers with wheels, repairs are likely to become a proprietary business run by manufacturers. The need for software engineers will increase. Many are likely to be in remote locations, giving a further boost to the work-from-anywhere world of “virtual” globalisation.

New opportunities will open up for local workers in installing and maintaining charging stations, and for garages and mechanics the change will be gradual — petrol and diesel cars will be around well into the 2030s — but will need careful handling.

Governments can help by attempting to get ahead of the curve and expanding training. As governments such as Britain's Conservatives pledge to invest in a more high-skill, high-wage economy, they must anticipate the extent to which the green revolution will reshape technology and industry. It is vital to equip workers for that new world, not just the current one.

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