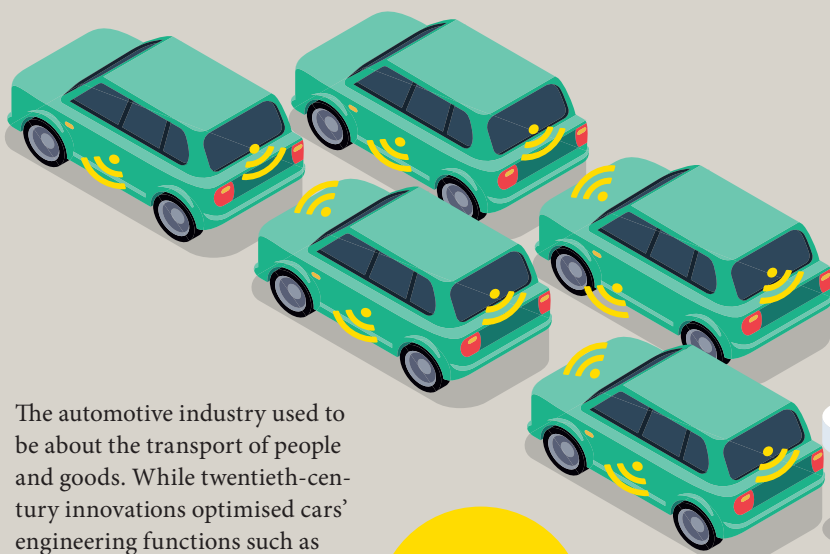# "Cars will become living spaces"

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Inma Martinez was a speaker at IAA 2019 on "New Transformers versus Reinvented Establishment" with her keynote "Brave New Digital World: The Future of Mobility in an AI, Data-Driven Society"
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The automotive industry used to be about the transport of people and goods. While twentieth-century innovations optimised cars' engineering functions such as fuel efficiency, safety, crash and thermodynamics, early 2000s' cars were disrupted by the exponential rise of software, sensors and the notion of the "connected car". The "in-car experience", a paradigm that endeavoured to integrate the cars' operations with smartphones and telecommunications, has turned cars into secondary work desks, and dashboards into mission control panels for navigation, in-car entertainment and communications. By 2021, 94 million connected cars are expected to be shipped globally each year, but as of 2025 we will be leaping forward towards an even more daring disruption: a true machine-to-machine environment where cars, powered by AI, will carry out automated tasks. The automotive sector will go beyond moving cargoes from A to B, or synchronising your smartphones, and will target a greater challenge: to solve the problems and needs of the 2030 society – to offer solutions that will expand beyond the core notion of driving and will address not just energy consumption and the switch to clean technologies, but real life in smart cities, the ageing population, mental health, oxygen deprivation and pollution in large urban centres, and even digital identity theft.

1.

Automotive situational awareness

V2V, or vehicle-to-vehicle connectivity, will allow cars to increase road safety levels by identifying potential nearby collisions, or by connecting to traffic management systems – rather than geolocation satellite data, which only delivers the number of mobiles connected to a given telecom call. V2I (vehicle-to-infrastructure) will optimise routes within traffic flows, identifying real road hazards and delivering other traffic-specific data that will allow cars to offer improved re-routing. Oxygen deprivation and harmful levels of pollution will also factor into the decisions taken by cars when planning routes or avoiding areas at particular times. Sensors detecting environmental harm will allow vehicles to suggest best times for commuting based on health issues, rather than just traffic.

2.

Advanced diagnostics & driver management

Proactive approaches to wear-and-tear and needs such as software updates will expand to encompass driver skills monitoring, prevention of traffic violations and the build-up of a trusted relationship between driver and machine where rewards such as increased safety and lower car insurance will encourage drivers to "obey" car indications. Cars will not only monitor themselves but also our own interactions with them and with road traffic. The concept of a car will evolve to one where the machine will offer opportunities to save money and energy, reduce stress and increase convenience over other means of transport.

3.

Driver digital identity

In the AI-led society, the need to improve the digital footprint of every human will also encompass the use of sensor-based and connected objects in our daily lives. How we prove that we are who or what we say we are during digital transactions and interactions is set to become one of the defining features of the next stage of the human digital transformation. In the 2020 era of hyper-connectivity, our devices will act for us and digital services will blend seamlessly into our daily lives; therefore, the need to identify oneself will put enormous pressure on analogue methods of passport information and even biometric data. Our future digital identities will have to solve the data

puzzle of merging a wide variety of personal data ledgers, which will include our use of IoT-connected machines. Along with our current practices of Authentication Taxonomy (something you own [phone] – something you know [password] – something you are [fingerprint]), 2020 society will add a layer of "something particular to your life", which will be represented by our IoT machines and our use of them, as well as other items of our digital behaviour very specific to our lives, such as the "always on" items in our online grocery basket, our "most used ATM location", or the postcode of our work, gym or our kids' sports practice on Saturdays. Cars will be fitted with individual driver logins so that the data of each user will be allocated to the correct driver profile, and to our individual digital identity.

4.

Driver well-being

In 2050 society, up to 60% of the world's population is expected to live in urban centres exceeding tens of millions of inhabitants. The mega-cities of the future will have to address a large list of challenges, which will include needs beyond transportation issues, re-fuelling and re-charging of vehicles, parking and traffic management. Even when cars are expected to increase their level of autonomy in regular inner-city routes or on highways, people will be sat inside their cabins and will have to sustain whatever eventualities emerge from the traffic congestions, road hazards and flow of movement. Car seats will be fitted with sensors that will monitor body temperature, and abnormal body movements such as uncontrollable shaking, spasms, fainting episodes and other physical signs will be picked up by accelerometers. Beyond this, and progressing from the current 2019 IAA expo car models exhibited, voice commands will not only become a regular mode of activating car functions but will

5.

Adaptability to multi-functions

The modular car is a concept that will allow a single vehicle to be fitted with diverse components according to changes in lifestyle or drivers' use. Taking a LEGO approach to interiors, every inch will be able to be re-fitted and re-purposed beyond the basic modes of today. Telecommuters may wish to host working sessions with colleagues and conduct conference calls while on route; additional seats and containers may be put in the cargo areas for either people or groceries; smartphones and tablets may find themselves plugged into car-specific charging cradles for each passenger. Cars will lend themselves to being adaptable to all life circumstances because they will become "living spaces", not just transporters, and our digital lives will seamlessly migrate inside these new car interiors because they will provide versatility of interactions, all sustained by their ability to provide the same "always-on" digital connection while in motion. Upgrading individual components such as engines, electric battery power and other main engineering pieces will not just be more eco-friendly, but will offer improved bespoke approaches that customers will adopt with a deeper brand loyalty.

In the next ten years, cars will evolve to become what computers became in the 1990s: personal, multi-purpose, enablers, enhancers, providers of freedoms we are yet to comprehend, and above all this, digital spaces of human existence.

also allow the car to become aware of mental health issues by monitoring tonality, depth and other vocal signs of stress, change of mood and depression. Mental health is the 21st century cancer, and an increasing concern for governments who spend billions each year in addressing psychic dysfunctional behaviours and the effects of stress on alienated individuals. Sitting in our cars in the next ten years will allow us to perform basic stress level check-ups as well as set up automatic protocols for what should be done in the case of a driver emergency.