Audi mastermind for piloted driving: the central driver assistance controller

- Central controller manages all systems for piloted driving
- High-end computing power on a surface the size of a tablet PC
- Series production within the next two years

Ingolstadt, March 31, 2015 — The central driver assistance controller (zFAS) is the core of future systems for piloted driving under development by Audi. This mastermind uses cutting-edge, high-performance processors and will work its way into the model range step by step in the foreseeable future. It is a key milestone on the road to new, automated driving functions and a demonstration of the pioneering role that Audi is assuming in the field of piloted driving. The technologies specialist Delphi has been awarded the contract for series productions.

Audi developed this elemental control center in collaboration with internationally leading technology partners. Under the direction of Audi, a team of specialists from TTTech, Mobileye, nVidia and Delphi jointly developed the various hardware and software components. Audi has chosen Delphi as the future system supplier for the zFAS electronics board.

A wide range of sensor information comes together in the zFAS. The controller uses this to quickly compute a complete model of the vehicle surroundings and makes this information available to the various assistance systems. It is thus the central interface for all piloted driving functions.

At the moment, most driver assistance systems are managed by spatially separated controllers. In the future, Audi will be the first automobile manufacturer to implement this function in a central domain architecture. Audi has taken a holistic approach to consolidate the portfolio of functions, the sensors necessary, the electronics hardware and the software architecture into a central system. From the very beginning, the primary focus was on the safety concept.
High-performance electronic components are a prerequisite for high-powered computing in a compact package. The zFAS board is equipped with both the EyeQ3 mobile processor from Mobileye and the new Tegra K1 from nVidia. The tremendous computing power provided by this solution corresponds to the complete electronics architecture of a well-equipped mid-size car. Thanks to the high degree of integration, the new board is barely the size of a tablet PC. Its modular concept makes the zFAS flexible scalable and thus future-proof in every respect.

Audi is also working with leading suppliers such as Bosch, Continental, Valeo and Delphi on the sensors and actuating elements, such as braking and steering systems. The objective is to develop common standards and offer customers modern driver assistance systems for greater safety, comfort and convenience on the road to fully automatic driving.

In the near future, Audi connect will enable the piloted cars from Audi to also learn continuously as they drive. The data computed by the zFAS board will be transferred via the cellular phone network — via LTE, where available — to an IT backend in the cloud. This will process these data using algorithms for machine learning and artificial intelligence before sending the data back to the car. The zFAS board will in this way continuously extend its capabilities to master even complex situations increasingly better. The piloted cars from Audi thus learn more every day and with each new situation they experience.

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In 2014, the Audi Group delivered approximately 1,741,100 cars of the Audi brand to its customers. The company achieved revenue of €53.8 billion and an operating profit of €5.15 billion in 2014. Audi operates globally in more than 100 markets and has production facilities in Ingolstadt and Neckarsulm (Germany), Győr (Hungary), Brussels (Belgium), Bratislava (Slovakia), Martorell (Spain), Kaluga (Russia), Aurangabad (India), Changchun and Foshan (China) and Jakarta (Indonesia). The brand with the Four Rings will start producing cars in Curitiba (Brazil) this year and in San José Chiapa (Mexico) in 2016. Wholly owned subsidiaries of AUDI AG include quattro GmbH (Neckarsulm), Automobili Lamborghini S.p.A. (Sant'Agata Bolognese, Italy) and sports motorcycle manufacturer Ducati Motor Holding S.p.A. (Bologna, Italy). The company currently employs approximately 80,000 people worldwide, thereof around 58,000 in Germany. Total investment of about €24 billion is planned from 2015 to 2019 — primarily in new products and sustainable technologies. Audi is committed to its corporate responsibility and has anchored the principle of sustainability for its products and processes in its strategy. The long-term goal is CO₂-neutral mobility.