Established over 50 years ago, the Toulouse site has gained recognised expertise with its products integrated in cars to make roads increasingly safe. Nowadays, every new car can contain up to 100 NXP products! NXP Toulouse is also active in the development of radio frequency technology and its RF amplifiers are used in a large portion of the world’s mobile transactions. It is also a 5G pioneer in collaboration with Ericsson, Nokia and Huawei.

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Pascale Diez, director of NXP Toulouse

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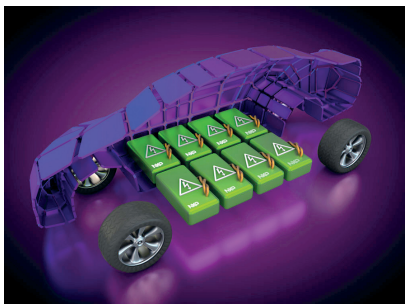
NXP automotive applications

Understanding the need for socially responsible mobility in the future, NXP Toulouse supports the three major industry changes currently underway: electrification, autonomous driving and vehicle connectivity. In terms of electrification, the site works on the battery management system (BMS) and power management IC to supply electric engines with direct current. BMS products provide safety, correct charging and control of battery ageing in large voltage fluctuations according to the ISO 26262 standard, which helps to keep the battery in an optimal condition.

For autonomy, NXP Toulouse is developing advanced driver assistance systems (ADAS). 77 GHz radar transceivers help detect other vehicles, pedestrians and any fixed or moving obstacles within a radius of 300 m to warn and avoid collisions. They also make it possible to monitor blind spots, manage lane changes etc. creating a safety cocoon around the vehicle. Safety is guaranteed by the digital imaging of its environment in order to provide the correct analyses to make decisions in the connected car.

Finally, in terms of connectivity, the teams at NXP Toulouse are studying 5G applications based on radio frequency power to connect 50 billion objects in a latency time reduced to one millisecond to allow immediate action/reaction. The car then becomes a connected object like any other and its embedded intelligence system is enhanced in the cloud to ensure autonomous driving.

NXP Toulouse is also concerned about the operational safety of applications with the adoption of the ISO 26262 standard up to the highest ASIL-D level. The aim is to make every operation predictable and free from any potential misinterpretation. It is Vision Zero: 0 accidents, 0 emissions, 0 lost time. With this in mind, NXP Toulouse has created a joint laboratory with the LAPLACE laboratory: the SEMA (Embedded Systems for Autonomous Mobility) to work on the safety of power electronics operation. In 2019 this collaboration won the “Remarkable Partnership” award presented by the SATT Toulouse Tech Transfer.



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Battery

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NXP Toulouse R&D laboratory

NXP Toulouse is also committed to the 3IA ANITI and its hybrid AI concept. The project to design critical autonomous systems with strong safety guarantees, its dynamic ecosystem, bringing together major players in air and land transport and numerous research laboratories, and the desire to share intellectual property between academic and industrial players in the application fields is of particular interest to NXP.

The collaboration with ANITI has resulted in 4 PhD theses on radar interference for “vehicle to everything” communication via AI; collective perception (definition of sensor data processing methods to understand the vehicle environment); radar image improvement; and the intrinsic safety of hybrid AI applications for the automotive industry. NXP is also involved in the 3IA Côte d’Azur through the development of applications for the environment and IoT.

Today, NXP Toulouse is banking on the development of the three megatrends and is strengthening its teams in these areas, as well as consolidating the functional safety team which will be a critical parameter in future applications. Furthermore, it continues to develop new concepts with AI applications. There are great challenges ahead!

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