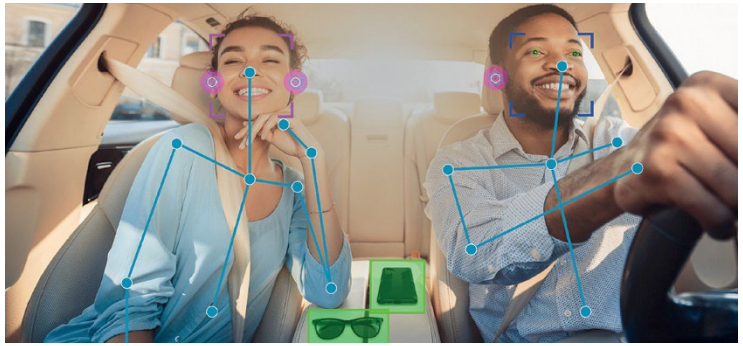
Technology Field 3: Smart sensors

Bosch – IPCEI empowered the First Industrial Deployment of the Dresden wafer fab as one of the world's most modern chip factories. It is Bosch's first AIoT factory. AIoT is the combination of artificial intelligence (AI) and the internet of things (IoT). The Integrated Circuits from Dresden combined the sensor elements from Bosch´s Reutlingen plant create smart IoTs .
In the 10,000-square-meter Dresden fab wafers are transported from machine to machine completely automatically. There is no longer any manual transportation at all.

ST Microelectronics -ST has been able to develop new technologies and devices to enable machine vision to a new level of accuracy in terms of resolution and depth sensing, as well as next generation MEMS intertial sensors and actuators. This allows, for instance, personal devices or vehicles to identify users with unprecedented precision. The 3D technologies developed thanks to the IPCEI ME will also enable more local processing, including sensors with local Artificial Intelligence, preserving privacy by keeping data locally, and saving communication bandwidth. Those technologies are supporting the growth of local manufacturing in France and Italy for 200 and 300 mm fabs.



TDK-Micronas has been a leader in Hall technology for more than 25 years
IPCEI enables TDK-Micronas to maintain its role as a global leader in the field
TDK-Micronas unique "all under one Roof" approach
The Freiburg site covers the complete supply chain: Frontend (Waferfab), Backend (Assembly, Packaging), Test (Wafer and Final Test)

IPCEI project focus is on innovations for vertical integration and Quality

- Differentiation through innovative packaging solutions
- Customized and flexible testing solutions

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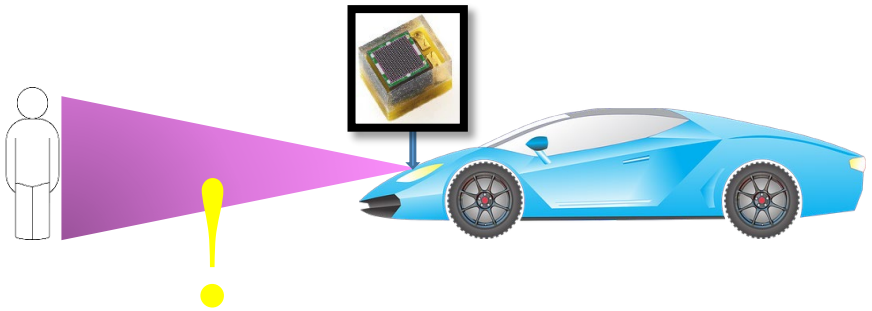
FBK: IPCEI based SiPM technology

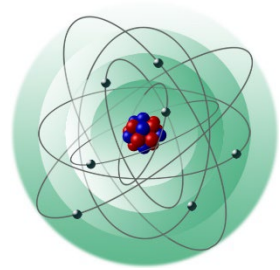
Autonomous and/or assisted driving will improve efficiency in car's energy consumption, becoming more environmentally friendly. What is behind "intelligent" cars? AI, but not only, also plenty of sensors among which the IPCEI based SiPM technology developed at FBK. These sensors enable LiDAR - light detection and ranging – cameras which are mounted on the car to recognize what is around it and prevent accidents.



How to better now about universe and its origin…..

Projects aiming to better understand the nature of the neutrino, rare events and the origins of matter in the universe, like DUNE and nEXO, are some of the physics experiments using extremely sensitive radiation sensors based on the state of the art SiPM/SPAD.

The most advanced results in 3D SiPM integration developed thanks to the IPCEI industrial application research bring science one step forward.



Infineon – Within the framework of IPCEI, a sensor project based on magneto-resistive (MR) effects has been conducted. The new magnetic multi-layer stack outperforms Hall sensors due to significant better magnetic sensitivity.

They empower more intelligence in application designs, thus paving the way for new and compelling applications offering more intuitive interaction and contextual awareness. Infineon joined forces with its ecosystem partners to jointly develop innovative, synergized use cases especially in emerging areas such as robotics, autonomous driving and building automation.