A cyber physical system (CPS) associates intimately safe electronic and software functions (capture, process, transmit, interpret and retroact). A CPS allows a car, an airplane, a train, a large energy network, or even an agricultural tractor or a medical device to finely and continuously analyze its own state and its environment in order to optimize its performance, as man does through his senses, nervous system, brain and members.

Till recently, most of electronic subsystems were developed to operate independently of each other. The mass digitization change the game as it makes possible to consider the control of continuous links (connectivity, interaction) within the systems themselves, and between these systems and their environment which can be human, physical (infrastructure, machine, etc.) or digital. The major research and innovation topics are deterministic computing, interaction between continuous and discrete systems, autonomy, and connectivity.

Research in CPS is extremely selective as it requires the intimate integration of functions involving micro-components as well as electronics and software. CEA Tech is one of the few institutes able to carry competitively this type of R & D requiring multidisciplinary teams and know-hows, internally and with forefront partners.

Research in CPS strongly impact key industrial sectors (automotive, robotics, advanced manufacturing, health…) and the daily lives of our fellow citizens.

**WHY A PHD RELATED TO CYBER PHYSICAL SYSTEMS – SENSORS AND ACTUATORS AT CEA TECH?**

CEA Tech excellence research program combines electronic and software to tackle the development and correctly predict the behavior of such complex systems, ensuring both safety and security.

PhD students will find at CEA Tech:
The largest public micro-technology R&D infrastructure worldwide thanks to 3 complementary technology facilities : MEMS, photonics, CMOS. They may work with world class teams in sensors and actuators to cover imagers, power electronics (GaN / Si), display / lighting, MEMS-sensors, and RF technologies & components.

Differentiating software platforms for digital systems technologies, fueled by massive skills (800 researchers) and strong industrial partnerships. CEA Tech is a leading international player nurturing five core competencies: deterministic embedded computing, connectivity, intelligent sensor systems, cooperative systems, and design and modeling tools.

CEA-List Institute at Paris Saclay or CEA-Leti Institute in Grenoble Alpes

20-30 ongoing PhD projects