



# CYBERSECURITY

## HARDWARE AND SOFTWARE

Cybersecurity is not a new problem. Saltzer and Schroeder defined general principles for the protection of information in computer systems in 1974, at a time when PDP-11 computers were being used for advancing particle physics. What is new is the impact that cybersecurity has on society, amplified by the complexity and pervasiveness of modern systems. From the email servers of computer adopters in the 1990s, to the credit card information of consumers in the 2000s, to national critical infrastructure and the fundamental rights of citizens in the face of ubiquitous data collection in the 2010s, the security of digital systems has become a global societal challenge. The first responses have been chaotic. Local and domain-specific approaches have sought to patch holes and recover the situation. However, these short-term,

narrow efforts have quickly shown the need both for more fundamental ways to address the problem in the form of research and innovation programs, and for increased and more effective cooperation. Entrants in this race are using different strategies. Big, monolithic responses have been set up by superpowers, with thousands of contractors hired, centralized coordination, and massive expenditures. On the other hand, grassroots efforts such as the Chaos Computer Club, PoC||GTFO, or The Cavalry have leveraged online resources to connect and align ethical hacking communities.

At the intersection of both communities, teams at CEA Tech bring fresh outlooks and new possibilities, bridging excellence in electronics and informatics and a highly collaborative mindset.

## WHY A PHD RELATED TO CYBERSECURITY - HARDWARE & SOFTWARE - AT CEA TECH?



At CEA Tech, PhD candidates operate within research and innovation programs that range over the whole spectrum of digital systems, and cyber-threats. You will pioneer new research developments, with a mind towards operational and concrete solutions. You will be part of an institute that works in tandem with a large industrial and academic ecosystem, tackling hard problems in cybersecurity, and leveraging:

- Internationally recognized expertise and platforms. We have built a reputation in France, Europe, and abroad, for highly innovative developments on key components of the digital security chain – from hardware protection to software analysis, embedded cryptography, tools and de-

sign methodologies, network reaction and systems simulation;

- The identification, analysis and implementation of disruptive ideas. Teams from CEA Tech and its partners coordinate around structured projects, aimed at producing decisive and concrete results – for instance in producing new tools for cybersecurity evaluations, new security primitives and architectures, or in designing secure-by-design components.



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



40 ongoing PhD projects