CEA SPEEDS UP EDA FOR RESEARCH

## POWERING R&D AT THE FRENCH ALTERNATIVE ENERGIES AND ATOMIC ENERGY COMMISSION

About the Customer

CEA Tech, the Grenoble-based technology research unit for the French Alternative Energies and Atomic Energy Commission (CEA), is a global leader in miniaturization technologies that enable smart digital systems and secure, energy-efficient solutions for industry. By improving companies' competitiveness through product performance and differentiation, CEA Tech catalyzes and accelerates innovation, pioneering micro- and nanotechnologies and tailoring solutions for global companies, small and medium-sized enterprises, and startups alike. Their multi-disciplinary team of experts tackles critical challenges in healthcare, energy, digital migration, and more in their world-class facilities.

> "Altair solutions help us manage our EDA tool resources efficiently and improve time to market. With such a smart mechanism for job preemption, the number of licenses seems to be unlimited.
>
> Youcef Fellah, CAD Manager, CEA, Grenoble, France

CEA Tech tackles critical challenges in fields including healthcare, energy, and digital migration.
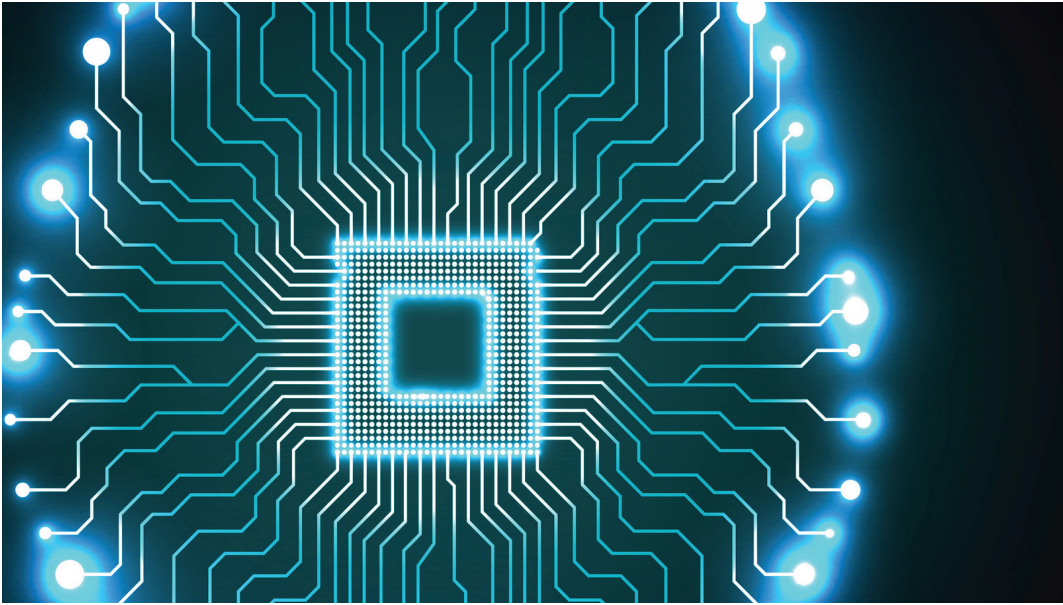
Their Challenge

As a research and development center, CEA Tech develops advanced technologies that require a **powerful, robust computing infrastructure**. They use various process design kits (PDKs) from multiple foundries for R&D designs, which include complex digital systems on a chip (SoCs), RF circuits, and analog and mixed-signal chips. EDA licenses are used throughout the design flow, with compute jobs varying in terms of run time and memory footprint. Because the design flows for circuits in advanced nodes are complex, it's critical to carefully manage licenses and job scheduling to shorten the design cycle. CEA Tech needed to **improve license utilization** and ensure that licenses are freed quickly to be made available to queued jobs.

Our Solution

The team at CEA Tech was already using Altair® Monitor™ for real-time EDA license monitoring and management when they evaluated three competing job schedulers to further optimize their design process — one open-source and two commercial solutions — and chose Altair® Accelerator™ because of its **scalability, superior visibility, and seamless integration** with existing tools. "Accelerator has several important strengths," said CAD manager Youcef Fellah. His team at CEA Tech utilizes two interfaces, one that lets them view job status and another that displays servers, running jobs, license resources, cores, RAM, and more. Accelerator calculates the right resources for interactive and batch jobs automatically, so designers don't need to worry about detailed resource specifications. Jobs run on the fastest servers based on time of day (e.g., workday, night, or weekend), and the system prioritizes critical jobs. "Ensuring jobs execute on the fastest available machines improves turnaround time and makes optimal use of available licenses," said Mr. Fellah.

One series of single-user simulations showed a **speed increase of more than 4.5x** using Accelerator without FairShare; and even when the team implemented FairShare to allow multi-user license access, performance was still an impressive 3.9x faster.

Results

Accelerator enables CEA Tech to schedule **hundreds of thousands** of jobs — including non-regression verification, logic synthesis, place and route, timing analysis, physical verification, SPICE, and electromagnetic simulation — each week. Rather than leaving users waiting due to job saturation, preemption with FairShare allows them to get critical licenses automatically. Jobs are completed optimally, in the fastest time with the right number of licenses. According to Mr. Fellah, "With such a smart mechanism **the number of licenses seems to be unlimited**. With chips becoming larger, design flows becoming increasingly complex, and the growing push for energy efficiency, having the right tools is more important than ever in order to carefully manage EDA budgets and optimize valuable compute resources."