

## ENSTA Bretagne selects IC'Alps for implementation of an Embedded Field-Programmable Gate Arrays (eFPGA) on silicon

**Meylan, FRANCE – September 04, 2020** - IC'Alps and ENSTA Bretagne – member of Lab-STICC, a multidisciplinary research laboratory – announced today successful implementation of an embedded FPGA (eFPGA) core on silicon. The development of this eFPGA is the result of a research program funded with the support of the European Union, Region Bretagne and local authorities, with the objective of strengthening the technical competencies of ENSTA Bretagne in the field of cyber defence.

An embedded FPGA (eFPGA) is a programmable IP core integrated into SoCs or custom ICs (ASIC). eFPGA technology is winning converts among system architects because market requirements are constantly changing and integrated circuits are becoming increasingly complex and expensive to develop. “Adding eFPGA functionality to ASIC designs brings the flexibility and performance of programmable logic without the cost, but with better power, performance, throughput and latency”, said Théotime Bollengier, IC architect at ENSTA Bretagne.

ENSTA Bretagne eFPGA includes the following features:

- 3200 4-inputs look-up tables (LUTs)
- Standard cell based to enable seamless generation from an RTL netlist
- Technology independent core (standard cell based)
- Fully integrated into standard RTL design flows
- Generated and programmed with ENSTA's ArGen framework

IC'Alps was handed the responsibility of silicon implementation and prototyping, both needed to make a first demonstrator of ENSTA's technology. The company was in charge of IC definition, foundry process selection, design (synthesis, floorplan, IO ring, place & route), design for testability, post layout simulations and verifications before launch in fabrication. IC'Alps took in charge the required supply chain management including selection of partners, fabrication, and package assembly.



“This integrated circuit made for ENSTA Bretagne is a proof of our expertise in digital physical implementation and our capability to set up and manage a complete supply chain”, said Jean-Luc Triouleyre, CEO of IC'Alps. “Our Team has supported ENSTA-Bretagne from ASIC specification, reached tape-out and delivered packaged dies on-time, even during this COVID period. Last but not least, the team demonstrated its implication to reach first silicon good silicon”.

IC'Alps' approach to collaborative working has given ENSTA Bretagne flexibility (inputs, implementation flow) and the security of opened discussions. A synergy of expertise has been an important factor to beat the challenge of quick realization of a functional first-silicon demonstrator. “We are happy to announce that the first demonstrator in TSMC 55 nm ULP process technology is back from fab and tested fully functional”, added Loïc Lagadec and Jean-Christophe Le Lann, both researchers at ENSTA Bretagne.



More information can be found: <https://www.icalps.com>

To discuss a potential ASIC project, please contact our business managers: [sales@icalps.com](mailto:sales@icalps.com)

You can also connect with us on our social channels  



#### About ENSTA

As a multidisciplinary graduate and postgraduate engineering school, ENSTA Bretagne delivers training in high level ICTs (information and communication technologies), mechanical sciences and human sciences. ENSTA Bretagne is also a research institute and a member of the Lab-STICC, a multidisciplinary research laboratory in the field of Information and communication science and technology.

#### About IC'Alps

IC'Alps is your one-stop shop ASIC partner. The company provides customers with a complete offering for Application Specific Integrated Circuits (ASIC) and Systems on Chip (SoC) development from circuit specification, mastering design in-house, up to the management of the entire production supply chain. From its technical centre in France (Grenoble area), IC'Alps supports multiple projects in the demanding medical, industrial, transport, IoT, and mil/aero sectors. The highly qualified engineering teams cover every expertise needed, and have a long experience of on-demand analog, mixed-signal and digital integrated circuits on technologies from 0.35  $\mu\text{m}$  down to 16 nm. Moreover, IC'Alps has a proven track record of success with sensor/MEMS AFE interfaces, low power consumption designs, high-resolution converters, signal processing, multiprocessors architectures, hardware accelerators, to name a few. Being a partner of major semiconductor foundries, IP providers, as well as packaging and test houses, IC'Alps is well placed to support customers with full life-cycle solutions. IC'Alps is also an Arm<sup>®</sup> Approved Design Partner, a program created by the world's leading semiconductor IP company. IC'Alps is ISO 9001, ISO 13485, EN 9100 certified.

#### Media contact

Elsa BERNARD-MOULIN  
elsa.bernard-moulin@icalps.com