



LETI EXTENDS COLLABORATION WITH QUALCOMM ON COOLCUBE™ 3D INTEGRATION TECHNOLOGY FOR HIGH-DENSITY, HIGH-PERFORMANCE ICs

Collaboration Goals Include Building an Ecosystem To Take the Chip-stacking Technology from Design to Fabrication

GRENOBLE, France – April 12, 2016 – Leti, an institute of CEA Tech, today announced the continuation of its collaboration with Qualcomm Technologies, Inc., a subsidiary of Qualcomm Incorporated, to develop CoolCube™, Leti's new sequential integration technology that eliminates the need for through-silicon vias (TSVs) and enables the stacking of active layers of transistors in the third dimension.

The extended project's goals include building a complete CoolCube™ ecosystem that takes the technology from design to fabrication.

CoolCube™ was created by Leti as a unique and innovative device scale-stacking technology that allows the design and fabrication of very high-density and high-performance circuits.

By introducing an innovative stacking process combined with low-temperature transistor processing, the technology allows vertical integration of a transistor without degrading the performance of the transistors beneath or the metal interconnects between the layers of the transistors.

Mobile devices, in which minimal power consumption is key, are the primary segment for chips manufactured with the CoolCube™ technology. It also enables designers to include back-side imagers in chips, and co-integration of NEMS in a CMOS fabrication process.

Launched in 2014 so that Qualcomm Technologies could evaluate CoolCube's potential, the project achieved several breakthroughs and original design methodology that demonstrated that it can provide a concrete solution for true 3D chips.*

"The Qualcomm Technologies and Leti teams have demonstrated the potential of this technology for designing and fabricating high-density and high-performance chips for mobile devices," said Karim Arabi, vice president of engineering, Qualcomm Technologies, Inc. "We are optimistic that this technology could address some of the technology scaling issues and this is why we are extending our collaboration with Leti."

As part of the collaboration, Qualcomm Technologies and Leti are sharing the technology through flexible, multi-party collaboration programs that will accelerate adoption of the technology.

"This is a new wave that CoolCube™ is creating and it has been possible thanks to the interest and support of Qualcomm Technologies, which is pushing the technological development in a good direction and sending a strong signal to the microelectronics community," said Leti CEO Marie Semeria. "Together, we aim to build a complete ecosystem with foundries, equipment

suppliers, and EDA and design houses to assemble all the pieces of the puzzle and move the technology into the product-qualification phase.”

* See IEEE papers:

- [3DCoB: A new design approach for Monolithic 3D Integrated circuits](#)
- [A comprehensive study of Monolithic 3D cell on cell design using commercial 2D tool](#)

ABOUT LETI (FRANCE)

As one of three advanced-research institutes within CEA Tech, Leti serves as a bridge between basic research and production of micro- and nanotechnologies that improve the lives of people around the world. It is committed to creating innovation and transferring it to industry. Backed by its portfolio of 2,800 patents, Leti partners with large industrials, SMEs and startups to tailor advanced solutions that strengthen their competitive positions. It has launched 59 startups. Its 8,500m² of new-generation cleanroom space feature 200mm and 300mm wafer processing of micro and nano solutions for applications ranging from space to smart devices. With a staff of more than 1,900, Leti is based in Grenoble, France, and has offices in Silicon Valley, Calif., and Tokyo. Follow us on www.leti.fr and [@CEA_Leti](https://twitter.com/CEA_Leti).

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