

# Innovative semiconductor and packaging technologies up to 6G

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**Supported by 43 partners, the SHIFT project (Sustainable Technologies Enabling Future Telecom Applications) aims to make important contributions to the "twin transition", through innovations in component and system technologies for advanced telecommunications.**

Palaiseau, 21 June 2023 – The KDT JU co-funded project SHIFT started on 1st December 2022 will develop innovative semiconductor and packaging technologies and their validation with demonstrators for telecommunication areas such as 5G NR (Beyond 5G) and 6G wireless network access and backhaul, ultra-high speed optical links between servers, satellite telecommunications, and Earth observation.

## SHIFT project objectives

- Develop new Semiconductor and packaging Technologies for very high frequencies, achieving better energy efficiency and output power;
- Develop new Semiconductor Technology platforms associated with these semiconductor technologies, with corresponding tests, characterization, and modelling methodologies needed for very high frequencies;
- Demonstrate the progress of the new semiconductor technologies by innovative and competitive System Demonstrators that will integrate MMICs designed with the developed and proposed semiconductor technologies, covering domains for:
  - Wireless (network access and backhaul) and Fiber optics Telecommunication systems;
  - Satellite telecommunication and Earth Observation systems;
- Demonstrate the economic and operational impact of these systems while reducing their environmental impact.

## An ambitious project and sustainable development for innovative European companies.

On one hand, SHIFT will contribute to environmental and societal concerns, with an analysis of the life cycle of telecommunications products, through their manufacturing chain, their operational use, and their recycling.

On the other hand, SHIFT project supports Europe's will for sovereignty in semiconductors, by accelerating the development and dissemination of new European technologies, and by enabling many young engineers and researchers to train, thanks to the most recent results.





Press release

## III-V Lab activities in the SHIFT project

With nearly 20 years of experience in the fabrication of InP HBT technology and integrated circuits for high speed analogue / digital interfaces for optical fiber communications, III-V Lab will be in charge of the design and fabrication of D-band (140-170GHz) power amplifiers in InP HBT Technology within the SHIFT project.

“This project is a real opportunity for us to contribute to such a challenging task”, says Bertrand Ardouin, responsible of the SHIFT project within III-V lab. “With the news challenges in terms of performance (operating frequency, power and energy efficiency) required by the emerging 6G use cases (i.e., in D-band), industrials and scientists are coming to the conclusion that III-V materials, and more specifically Indium Phosphide (InP) technology is a viable technical option for mm-wave front-end power amplifiers. This application, with potentially significant volume needs can play the role of a technology driver and be the first step towards subsequent developments to improve InP technology cost effectiveness, maturity and manufacturability. This is a very exciting time where we are reaching a technology cross-road. Taking one direction or another could lead to a significant breakthrough.”

## About SHIFT project

More information on <https://www.shiftkdt.eu/>.

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## About III-V Lab

III-V Lab is an Economic Interest Group (“Groupement d’Intérêt Economique”) between Nokia, Thales and CEA, dedicated to industrial research and development of optoelectronic and microelectronic components based on III-V semiconductors, and their integration with silicon circuits. Created in 2004, III-V Lab brings together 120 researchers in the Paris region and actively cooperates with CEA-LETI’s laboratories at Grenoble. III-V Lab has prototyping and production start-up resources to foster the emergence of high added-value component technologies which are then transferred to the industrial entities of the parent companies or their partners. [www.3-5lab.fr](http://www.3-5lab.fr)

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