

#EUSpaceResearch

# EUROPEAN SPACE TECHNOLOGY NON-DEPENDENCY

**SUPPORTING THE  
DEVELOPMENT**

OF CRITICAL SPACE COMPONENTS,  
SYSTEMS AND TECHNOLOGIES

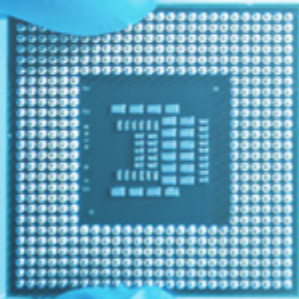


Horizon Europe,  
a programme of the  
European Union





Horizon Europe,  
a programme of the  
European Union



#EUSpaceResearch

# EUROPEAN SPACE NON-DEPENDENCY

Supporting the development  
of critical space components,  
systems and technologies

## About space technology non-dependency and why it is so crucial for the European space industry

Space is a strategic sector for the economy as well as for EU's security and defence. It increasingly represents an invaluable asset in many sensitive and high-stakes matters. Europe needs to master certain space technologies to be non-dependent from other parts of the world. This is why the European Commission is focussing part of the space research programme on the **development of critical space technologies**, with the objective to allocate €20 million on a yearly basis.

## Towards the future:

What are the next steps to achieve non-dependency?

Europe will further **prioritise the critical technologies** needed to achieve non-EU dependency and secure their supply chains. These technologies are focused on space Electrical, Electronic and Electro-mechanical (EEE) components, such as Radio Frequency (RF) and Power components, GaN based components, passive components, photonics components, SoCs (system on chip), microelectronics based on advanced technology nodes, very high-speed serial interfaces, and also include e.g. solar cells for space applications, advanced assemblies, PCB (Printed Circuit Board), large deployable structures and antennas and space-qualified carbon fibre material sources for launchers and satellite subsystems.

With the support of the Horizon funding programme, many critical space technology projects have increased technological readiness levels (TRL), allowing products to reach the space market. With Horizon Europe, over 2021-2027, the European Commission will **enhance its support to the development of critical space technologies** for European non-dependence.

The European Commission closely cooperates in this field with the European Space Agency and the European Defence Agency through a Joint Task Force.

## Current efforts and achievements

toward an autonomous European space industry

Space-grade electronic devices and other space systems are often subject to restrictive trade rules, such as the US International Traffic in Arms Regulations (ITAR). To be non-dependent, Europe should develop its **own domestic production of critical technologies**. Significant areas of R&D, evaluation/qualification and EU investments in the last years include:

- The development of the first radiation hard **FPGA (Field Programmable Gate Array)** supply chain in the EU that will be able to cover different families of FPGAs. The European Commission funded projects covering the design, manufacturing, validation and space qualification. These components will be used in multiple space missions, including Galileo.
- **GaN (Gallium nitride) technology**  
The European Commission funded several projects aimed at maturing and evaluating the GaN microwave foundry production process. This domain has also recently supported projects targeting the development of EU based GaN technology for power applications, covering both low voltages (<50V) and high voltages of up to 650V.
- **Advanced high dissipative packages**  
with high thermal dissipation based on diamond and high dissipation with large pin count have been developed and evaluated for space.
- The first EU-developed and manufactured space driven, radiation-hardened **System on Chips (SoC)** based on 28nm architecture.

These efforts will boost European competitiveness and non-dependency especially in space electronics, as well as improve resilience of space-related supply chains and technological performance.

## Introducing current space R&I projects

Examples of Horizon 2020 projects

**Project INTERSTELLAR** (Multichannel High-speed analogue-to-digital ADC and digital-to-analogue data converters DAC) builds the next generation of high-speed data converters to strengthen European excellence and competitiveness in space applications and beyond.

**Project HEATPACK** aims to develop the next generation of low thermal resistance packages for space applications, in particular thanks to the implementation of state-of-the-art diamond based composite materials and disruptive new heat sinking solutions.



### Boosting innovative R&I

Funds in the order of €105 million have been provided under H2020 for critical space technologies for European non-dependence



### Shaping solutions

By strategically funding European space technologies



### Supporting EU objectives

By ensuring a globally competitive and non-dependant European space sector



## Be part of the EU-funded space R&I

Horizon Europe is the EU's key funding programme for research and innovation, with a budget of around €95 billion over 2021-2027, of which close to €1.6 billion is dedicated to space research. The space R&I is managed by the **Health and Digital Executive Agency (HaDEA)**, the **EU Agency for the Space Programme (EUSPA)**, the **European Space Agency (ESA)** and the **European Commission** itself. Most calls are also published on the **EC Funding and Tenders participant portal**.

