

# Press Release

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## IHP - a significant partner for space technologies: From processor architectures to satellite communication technologies

**Shaping the future of European space technologies and technological independence**

**Frankfurt (Oder).** IHP - Leibniz Institute for High Performance Microelectronics, a leading institute for microelectronics and communications technology, is making an important contribution to the further development of European space capabilities with its research and solutions and thus contributes to the technological sovereignty of Germany and Europe. Several projects - Scale4Edge, COCHISA, MORAL and 6G-TakeOff - represent IHP's commitment to developing European capabilities in the space sector, from processor architectures up to satellite communications technologies.

The EU-funded project MORAL addresses the urgent need for radiation-hardened, fault-tolerant and ITAR-free (European International Traffic in Arms Regulations) microcontrollers for small satellites and other space applications, supporting mission control, navigation, and earth observation. Built on IHP's innovative PEAKTOP architecture, the MORAL microcontroller ensures adaptability and resilience in extreme space environments. This chip includes several space relevant interfaces, e.g. SpaceWire, as well as 12-bit ADC and DAC. The MORAL microcontroller manufactured in the IHP SG13RH has shown excellent reliability and radiation tolerance in tests and offers great potential for use in future space missions. The MORAL project has been recently finished very successfully and the following steps, towards market exploitation are currently under preparation.

The Scale4Edge project, funded by Federal Ministry of Education and Research (BMBF), aims to enhance the resilience and reliability of microprocessors for aerospace applications. Focused on developing fault-tolerant, RISC-V-based multiprocessor systems, Scale4Edge is creating highly dependable hardware for avionics, medical, nuclear, and space applications.

The European project COCHISA is addressing the rising need for high-data-rate satellite communications through the development of a European beamforming core-chip, scalable across frequency bands and adaptable for various satellite systems. By designing core-chips in the X-band (10 GHz) and Ka-band (28 GHz) frequencies, COCHISA enables efficient, high-throughput satellite infrastructure.

The BMBF-funded 6G-TakeOff initiative focuses on the future of connectivity by developing a holistic 3D communication network architecture. This new frame-



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work integrates flying network nodes with terrestrial and satellite-based components, ensuring continuous, secure and high-quality connectivity through redundancy and dynamic optimisation of the system.

“Through its research and projects, IHP is paving the way for Europe's strategic independence in space, supporting a resilient supply chain and setting new standards for high-performance, cost-effective space solutions. We are working jointly also with German Aerospace Center (DLR) and European Space Agency (ESA) towards evaluation of our next technologies for space. We expect that in 2025 the IHP technology SG13RH will be space evaluated” - says Prof Milos Krstic, who heads the Systems Architectures department at IHP, which is conducting the projects presented.

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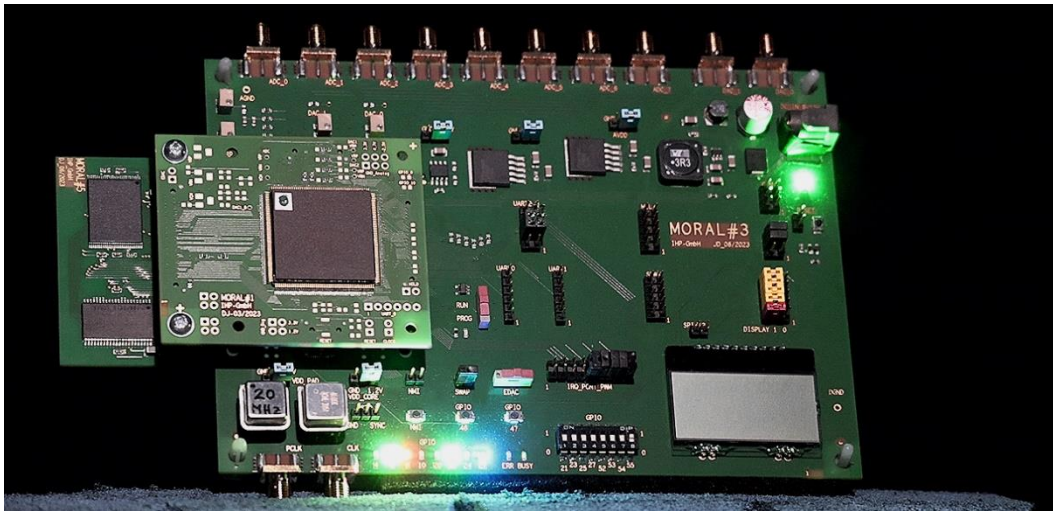
More information on the IHP space projects:

MORAL: <https://www.moral-project.eu>

Scale4Edge: <https://www.edacentrum.de/scale4edge/en>

COCHISA: <https://cochisa-project.eu>

6G-TakeOff: <https://www.6g-takeoff.de>



MORAL Demonstrator, ©IHP

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## About IHP:

The IHP is an institute of the Leibniz Association and conducts research and development of silicon-based systems and ultrahigh frequency circuits and technologies including new materials. It develops innovative solutions for application areas such as wireless and broadband communication, security, medical technology, industry 4.0, automotive industry, and aerospace. The IHP employs approximately 365 people. It operates a pilot line for technological developments and the preparation of high-speed circuits with 0.13/0.25  $\mu\text{m}$  SiGe BiCMOS technologies, located in a 1500 m<sup>2</sup> DIN EN ISO 14644-1 3 certified clean room.

[www.ihp-microelectronics.com](http://www.ihp-microelectronics.com)



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