

Press release

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Leibniz Institute
for High
Performance
Microelectronics

“Research and Innovation Factory for AI & Microelectronics” – first approved module AI-DISCO begins work.

BMFTR funds AI-DISCO with €15 million – open platform aims to bring AI to where data is generated in an energy-efficient manner

Frankfurt (Oder): The Federal Ministry of Research, Technology, and Space (BMFTR) has approved €15 million in funding for the AI-DISCO project – Edge/Cloud AI for Distributed Sensing & Computing. AI-DISCO is the first module of the R+I Factory (Research and Innovation Factory AI & Microelectronics), a nationwide novel, modular research and innovation structure at the interface of artificial intelligence and microelectronics. The consortium leader is IHP – Leibniz Institute for High Performance Microelectronics.

Modern applications increasingly use real-time data analysis – in smart cities, critical infrastructure, Industry 4.0, and energy supply. At the same time, energy requirements are rising sharply when large amounts of data are transferred between applications and data centers. This is exactly where AI-DISCO comes in: The project is developing an open, reconfigurable platform for energy-efficient, distributed AI processing at the interconnection between edge and cloud.

The idea is simple: intelligent edge nodes process sensor data, for example, directly where it is generated – locally, in real time, and without unnecessary data transfer. This allows the system to save energy, reduce latency, and better protect sensitive data. Only the essentials are shared with the cloud. AI-DISCO builds on various preliminary work and developments, including HARMMONAI AI accelerator circuit, an RRAM-based AI accelerator, and a novel spiking neural network architecture. The technical basis includes RISC-V-based edge hardware, which is enhanced with energy-efficient AI accelerators, as well as methods such as federated learning (distributed learning, i.e., AI learning without central data collection) and approaches from neuromorphic AI. Topics such as integrated communication and sensor technology (ISAC/6G) are also addressed as application cases.

Prof. Dr. Milos Krstic, AI-DISCO project manager, IHP:

"AI-DISCO is more than a research project – it is the starting signal for a new way of thinking about AI and microelectronics together. We are building the technological foundation for this in Lusatia."

The AI-DISCO project is the first approved module of the R+I Factory – a modular research and innovation project that strategically promotes the combination of artificial intelligence and microelectronics, while also explicitly addressing economic value creation and location development in the region. The initiative



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contributes to strengthening Cottbus as a research location by merging expertise, facilitating cooperation between science and industry, and enabling application-oriented developments for regional companies and infrastructures. The AI-DISCO consortium consists of IHP (Frankfurt (Oder) and Cottbus), the BTU Cottbus-Senftenberg, the German Research Center for Artificial Intelligence GmbH (DFKI), the Fraunhofer Institute for Photonic Microsystems IPMS, and the Leibniz Institute for Neurobiology (LIN), as well as industry partners ABB, ENERTRAG, and Perinet. Strategically, the R+I Factory is designed so that future modules can address other key areas at the interconnection between AI and microelectronics—such as AI for microelectronics manufacturing, AI for circuit and algorithm design, energy-efficient microelectronics for AI applications, and time-critical systems.

Prof. Dr. Gerhard Kahmen, Scientific Director, IHP:

"With AI-DISCO, the first module of the Research and Innovation Factory, we are bringing microelectronics and artificial intelligence together in a targeted manner. The aim is to create unique technological selling points and new application potential for the regional and national economy. Together with partners already located in Lusatia and new ones settling there, we are contributing to the further dynamization of Cottbus as a research location with the R+I Factory."

Microelectronics and artificial intelligence are key technologies that the German government is specifically pursuing in its High-Tech Agenda published in July 2025. The R+I Factory thus contributes to achieving the goals defined therein, such as technological sovereignty and the rapid transfer of research into application.

About the R+I Factory:

The R+I Factory (Research and Innovation Factory AI & Microelectronics) is a modular research and innovation project at the interface between AI and microelectronics in Lusatia. AI-DISCO is the first approved module.

About IHP:

Based in Frankfurt (Oder) and Cottbus, the IHP – Leibniz Institute for High Performance Microelectronics conducts research into silicon-based systems, high-frequency circuits, and new materials for micro- and nanoelectronics. Its developments are used in wireless communication, medical technology, Industry 4.0, mobility, and space travel. With over 400 employees from more than 30 countries, IHP is one of the world's leading research institutions in the field of applied microelectronics. The institute is jointly funded by the German federal government and the state of Brandenburg with approximately 35 million euros annually.

www.ihp-microelectronics.com



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Terms explained briefly:

RISC-V: Open processor architecture as the basis for chip designs.

Edge hardware: Computing hardware close to the data source (compact, robust, energy-efficient).

AI accelerator: Specialized hardware that makes AI computations faster and more energy-efficient.



Chip photo: HARMMONAI – AI acceleration circuit from the team of Prof. Krstic (University of Potsdam) and IHP.

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Prof. Dr. Gerhard Kahmen (IHP), Scientific Director

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