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German-Korean research project enters second phase

Fraunhofer IPMS collaborates with Korean TSN Lab to further develop IP solutions for automotive and industrial connectivity

The Fraunhofer Institute for Photonic Microsystems IPMS is working with the Korean TSN Lab on new real-time solutions as part of the “Global Cooperative R&D” funding program. The aim is to develop a next generation of 10Base-T1S IP cores for automotive and industrial communication applications in order to address the growing demand for scalable and cost-efficient network infrastructures. The funding program is organized by the Korean Ministry of SMEs and Startups (MSS) and supported by the Korea Technology and Information Promotion Agency for SMEs (TIPA).

Following the successful completion of a six-month Phase 1 preliminary study led by TSN Lab, the project now enters its main development phase. Phase 1 validated the market potential of 10Base-T1S technology through comprehensive requirement analyses with domestic and international automotive manufacturers. The study also included functional and performance benchmarking of competitor semiconductor solutions.

Addressing the Future of Automotive and Industrial Connectivity

10Base-T1S is a low-speed Ethernet PHY standard and currently the only Ethernet technology supporting multi-drop connectivity. It is emerging as a key enabler for consolidating fragmented in-vehicle and industrial communication systems, including CAN and LIN networks. By significantly reducing cable complexity, cost, and vehicle weight, 10Base-T1S offers substantial advantages for automotive, industrial automation, and robotics applications.

Fraunhofer IPMS: Enabling Silicon-Proven Innovation

As a globally recognized research institute specializing in ASIC, FPGA, and SoC design, Fraunhofer IPMS brings more than 20 years of experience and over 200 international licenses to the collaboration. The institute will contribute its expertise in advanced

Editor

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microelectronics design, verification, and system integration to accelerate the realization of production-ready IP solutions.

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“The continuous advancement of our TSN IP core portfolio is key to scalable, real-time connectivity in automotive and industrial applications. Collaboration with the TSN Lab accelerates the delivery of a robust, silicon-proven 10Base-T1S IP solution and brings innovation into practical use faster,” says Alexander Noack, Division Director Data Communication and Computing at Fraunhofer IPMS.

Through this collaboration, Fraunhofer IPMS strengthens its commitment to supporting globally competitive semiconductor innovation and fostering cross-border R&D partnerships. The joint project aims to deliver a robust, silicon-proven 10Base-T1S IP solution tailored to the stringent requirements of next-generation automotive and industrial communication systems, with a clear focus on enabling adoption in international markets, including Europe.

About Fraunhofer IPMS

Fraunhofer IPMS is a leading international research and development service provider for electronic and photonic microsystems in the application fields of Smart Industrial Solutions, Bio and Health, Mobility as well as Green and Sustainable Microelectronics. Research focuses on customer-specific miniaturized sensors and actuators, MEMS systems, microdisplays and integrated circuits as well as wireless and wired data communication. The institute develops systems and components on 200 and 300 mm wafers in their state-of-the-art clean rooms. Services range from consulting and design to process development and pilot series production.

As an expert in secure data communication solutions, the Business Unit of Data Communication and Computing (DCC) develops innovative technologies in the future-oriented fields of IP cores, Li-Fi (light-based data transmission) and quantum technologies. These developments pave the way for new and secure communication solutions in key industries such as mobility, telecommunications, industrial automation and energy supply.

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Sungmin Kim, CEO of TSN Lab, and Alexander Noack, Head of Data Communication & Computing at Fraunhofer IPMS, are looking forward to working together on the German-Korean project.
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