Low-co**s**t and energy-efficient hybrid **p**hotonic integrated circuits for fibe**r**-optic, free-space op**t**i**i**cal and mmWave commu**n**ication systems supporting **t**ime critical networking in industrial **e**nvi**r**onments

Project Launch

The implementation of SPRINTER project was officially inaugurated with the kick-off meeting that took place on 29th and 30th of September 2022. The twelve (12) members of the consortium participated in a two-day productive hybrid meeting which was held at the premises of Fraunhofer Heinrich-Hertz Institute (HHI), in Berlin. During the hybrid event, SPRINTER's workplan has been analyzed in depth, the role of each partner in the project's deployment specified in detail and the next actions towards the achievement of project's objectives defined.

SPRINTER is a Horizon Europe project funded by the EU coming as a pragmatic innovation action that will rely on well-proven photonic integration technologies in order to develop a complete solution tailored to the diverse needs of industrial networks underpinning the way towards the 4th Industrial Revolution (Industry 4.0).

SPRINTER will combine the best-of-breed optical components and methods from various powerful but complementary photonic integration platforms to develop a set of low-cost, energy-efficient, and ultra-dynamic optical transceivers and optical switching solutions to cope with the diverse needs of the industrial networks and expedite their truly digital transformation.

Within SPRINTER low-cost and energy-efficient 200 Gb/s optical transceivers, supporting high-capacity connectivity, will be developed. Additionally, SPRINTER will provide ultra-fast wavelength-tunable 10 Gb/s optical transceivers, enabling the development of an all-optical switching system, guaranteeing the reliability and time determinism required for time critical communication. In addition, leveraging well-proven integration techniques that allow for the fabrication of complex 3D photonic integrated circuits, the project will develop a disruptive reconfigurable optical add-drop multiplexer, optimized for operation within space-division multiplexing networks, assisting on the reduction of data congestion in communication systems and preventing the data loss and delay in data delivery.

Considering the ultra-dynamic nature of the industrial networks due to the deployment of remote nodes, SPRINTER will provide a set of groundbreaking photonics-enabled transceivers supporting wireless connectivity by means of a free-space optical or a mmWave channel. The transceivers will be able to operate reliably in both indoor and outdoor environments thanks to the complementary characteristics of the two channels. Moreover, the project will develop a unified network platform, providing the required methods and tools to support time-deterministic operation, and enable real-time communication with guaranteed service quality.

SPRINTER's developed technology will be evaluated within application scenarios that will be deployed in a relevant industrial environment incorporating a fully operational closed-loop control system.

Funded by the European Union

SPRINTER project comprises twelve (12) partners from ten (10) countries among which:

5 Large companies: NVIDIA (IL), LioniX International BV (NL), Intracom S.A. Telecom Solutions (GR), Ericsson Telecomunicazioni SpA (IT) and Fill Gesellschaft mbH (AT);

3 Industry-oriented research institutes: Fraunhofer Heinrich-Hertz Institute (DE), Interuniversitair Micro-Electronica Centrum (BE) and Centre Suisse d' Electronique et de Microtechnique SA* (CH);

2 SMEs: PHIX Photonics Assembly (NL) and Cumucore OY (FIN);

2 Academic organizations: Universidad Carlos III de Madrid (ES) and the Institute of Communications & Computer Systems of the National technical University of Athens (GR) that coordinates the action.

* *Funded by SERI*

Project facts

Topic: HORIZON-CL4-2021-DIGITAL-EMERGING-01-06 Advanced optical communication components
Project no: 101070581
Start date: 1 September 2022
Duration: 42 Months
Total cost: € 7,076,605.75, **EU contribution**: € 5,999,935.00
Beneficiaries: 12 Partners from 10 countries

For more info, visit SPRINTER website https://horizon-de-sprinter.eu/

Funded by the European Union