AI-Enhanced Fiber-Wireless Optical 6G Network in Support for Connected Mobility

6G EWOC

Newsletter

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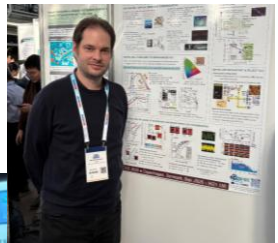
Strong presence at ICTON and ECOC 2025

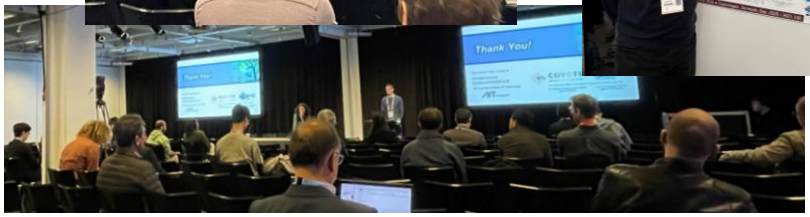
Several 6G-EWOC researchers were attending this year's anniversary edition of the ICTON conference in Barcelona, where our project-related findings were reported through three invited and two contributed papers. J.A. Lazaro from UPC presented the 6G-EWOC test-bed and work on a digital twin for 5G networks, as well as RaDAR to RaDAR communications to support integrated sensing and communication. J.M. Ramirez from III-V Lab discussed strategies for and challenges related to heterogeneous photonics integrated circuits, highlighting the quasi-coherent receiver of 6G-EWOC.

An in-depth discussion on the system-level performance for quasi-coherent reception was provided by J.A. Altabas from Bifrost Communications, who presented results towards metro, access and fronthaul. Finally, B. Schrenk from AIT shed some light on recent advances on beamforming-assisted free-space optical Fi-Wi-Fi links.

Showcasing Quasi-Coherent Technology in Copenhagen

6G-EWOC has been also well-represented at ECOC 2025 in Copenhagen, Europe's largest conference on optical telecommunications. Three contributed papers were presented by F. Honz and B. Schrenk from AIT, including hybrid radio / free-space optical communication using a shared-aperture air interface, beamforming assisted optical wireless communication between a mobile user and an optical hotspot, and the adoption of wavelength division multiplexing in visible-light communication, where white and thus colorless light-emitting diodes serve as data emitter. Besides the presentation of scientific papers, Bifrost Communications showcased its quasi-coherent transceiver pluggables in its exhibition booth, demonstrating high-speed fiber-optic communication through highly simplified coherent optics.





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Our Recent Publications

We are delighted to devote an entire page of our newsletter with our recent publications.

Journal Papers

- B. Schrenk, *"High-Flux VLC Emitters with Spectrally Tailored LED Drive in Support of Simple Baseband Signaling"*, Journal of Lightwave Technology, vol. 43, no. 17, pp. 8191-8199, Sept. 2025.
- F. Honz, and B. Schrenk, *"Alignment-Tolerant Optical Fi-Wi-Fi Bridge Assisted by a Focal Plane Array Beamformer as Air Interface"*, Journal of Lightwave Technology, vol. 43, no. 13, pp. 6231-6237, Jul. 2025.
- M. Wang, D. Li, J.R. Casas, and J. Ruiz-Hidalgo, *"Adaptive Fusion of LiDAR Features for 3D Object Detection in Autonomous Driving"*, Sensors, vol. 25, no. 13, p. 3865, Jun. 2025.

Conference Papers

- F. Honz, and B. Schrenk, *"Optical Wireless Access with Phased- / Focal-Plane Array Beamformers and Multi-Core Coupled APD Diversity Receiver"*, in Proc. Europ. Conf. Opt. Comm. (ECOC'25), Copenhagen, Denmark, Sep.-Oct. 2025, Tu.01.09.4.
- B. Schrenk, F. Honz, M. Hentschel, and F. Karinou, *"Hybrid Optical / RF Feeder for 6G Radio Access with Shared FSO / FR3 Aperture and ΣΔ-Modulation Switching"*, in Proc. Europ. Conf. Opt. Comm. (ECOC'25), Copenhagen, Denmark, Sep.-Oct. 2025, W.01.08.2.
- B. Schrenk, *"WDM Operation of High-Flux Phosphor-Converted White LEDs for Joint Illumination and Visible-Light Communication"*, in Proc. Europ. Conf. Opt. Comm. (ECOC'25), Copenhagen, Denmark, Sep.-Oct. 2025, W.02.01.158.
- J.A. Altabas, L. Amati, O. Düzgöl, C.H. Jorgensen, O. Gallardo, R. Shrinivas, M. Squartecchia, M.C. Temboury, A. Turhaner, J.B. Jensen, S. Duggan, C. Murphy, F. Smyth, J. Viklund, and Magnus Olson, *"Quasi Coherent PIC Transceiver Technologies for Metro, Access and Front-Haul Networks"*, in Proc. Int. Conf. on Transparent Opt. Netw. (ICTON'25), Barcelona, Spain, Jul. 2025, Mo.D7.5.
- A. Sánchez-Alcántara, F. Dios, J.A. Lázaro, J. Pinazo, and A. Lerín, *"Radar-to-Radar Communication for Connected Vehicles with Commercial Devices"*, in Proc. Int. Conf. on Transparent Opt. Netw. (ICTON'25), Barcelona, Spain, Jul. 2025, Mo.B3.6.
- B. Schrenk, and F. Honz, *"Spectral Aggregation of Turbulence-Resilient Free-Space Optical Links as Transparent Feeders for Capillary Access Networks"*, in Proc. Int. Conf. on Transparent Opt. Netw. (ICTON'25), Barcelona, Spain, Jul. 2025, We.C2.4.
- C.J. Rodrigues D.S., I. Mateos, J.A. Lazaro, J. Anguera, and A. Umbert, *"Open-Source 5G Digital Twin: Virtualizing Core and RAN for Network Replication"*, in Proc. Int. Conf. on Transparent Opt. Netw. (ICTON'25), Barcelona, Spain, Jul. 2025, Mo.B2.3.
- J.M. Ramirez, *"Heterogeneous Photonics Integrated Circuits: Roadmap and challenges"*, Int. Conf. on Transparent Opt. Netw. (ICTON'25), Barcelona, Spain, Jul. 2025, talk We.C7.1.

Get in Touch

Project Coordinator:
Dr. Jose Antonio Lázaro
Universitat Politècnica de Catalunya

✉ jose.antonio.lazaro@upc.edu
☎ +34 934 017 348

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