

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

6GEWOC

Newsletter
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A Concerted European Effort: Our Athens Plenary

In November, we held our third plenary meeting. This event was devoted to the current developments in the technology work-packages, which have finalized a first design for the constituent components of our 6G network architecture.

A major discussion point were the demos that have been scheduled for the second project phase and to which technologies on multiple domains (optical wireless, fronthaul and data processing) will seamlessly contribute.

A big thanks goes to OTE for hosting this very productive event!



Focus: How 6G-EWOC Contributes to... Democratized Safety on the Road

The migration to advanced mobile and road infrastructure networks as well as data processing systems with improved performance and reliability supports fully-autonomous vehicles with collective perception capabilities. Through this, 6G-EWOC addresses selected use-cases concerning transportation on the road. One of these aims at improved safety for all traffic participants.

Navigation of autonomous vehicles through complex and busy intersections shall be seamless and collision-free, despite the presence of other road participants including vehicles with similar, lower or no autonomy, vulnerable road-users such as pedestrians, cyclists or e-scooters, and obstacles – in a dynamically changing environment. 6G supports this as it enables traffic participants to gain a comprehensive understanding of their surroundings through collective perception, including the capability to see through obstructions to capture hidden objects and to be informed and predict trajectories. 6G also contributes through fast data processing close to the “event” to minimize delays and enable a realistic digital-twin representation of the traffic scenario. Network slicing guarantees quality-of-service to ensure the prioritization of traffic related to vulnerable road users over less critical one. The availability of cost-efficient sensing and communication system enables democratized safety on the road.



The teams from UPC and Beamagine around Prof. Santiago Royo and Prof. José Antonio Lázaro were able to showcase their technologies towards automated driving and LiDAR during the *Smart City Expo World Congress* in Barcelona, in featured TV spots (Catalan broadcaster TV3) and in a local newspaper (La Vanguardia), among other national and local media appearances.



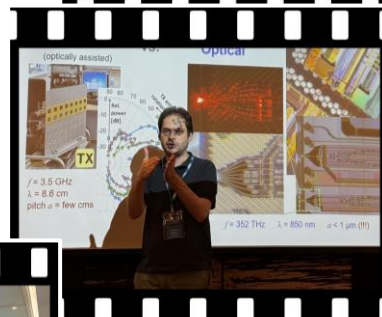
Recap: 6G-EWOC @ Fall Conferences

The 6G-EWOC team was indeed very active this fall. We attended several conferences in the field to disseminate the concept behind our architecture and first experimental results on the development of its constituents.

At the **IEEE Future Networks World Forum**, we contributed to the symposia on *Connected and Automated Mobility* and *Optical-Wireless Convergence*. We presented the implications concerning the introduction of low-latency simultaneous mapping and localization of traffic participants to 6G networks and our approach in accomplishing this challenge – together with optical wireless comms as the bandwidth enabler that permits a late and thus more effective fusion of raw sensor data at the network edge.

At the **IEEE CAMAD** and **Infocom World** conferences, we had the chance to focus on the architectural aspects that arise when addressing a new vertical through the introduction of a next-generation radio network. With the influx of new sensor and heterogeneous access technologies, the network needs to cater for their peculiarities in order to unleash their full potential.

For more details, check out the paper preprint on our [project webpage](#).



Our Recent Publications and Talks

- E. Theodoropoulou et al., “6G-EWOC: AI-Enhanced Fibre-Wireless Optical 6G Network in Support of Connected Mobility,” in Proc. IEEE International Workshop on Computer Aided Modeling and Design of Communication Links and Networks (CAMAD), Athens, Greece, Oct. 2024, paper S16.3
- B. Schrenk et al., “6G-EWOC: Optical Wireless Communication in Support of Autonomous Driving,” in Proc. IEEE Future Networks World Forum (FNWF’24), Dubai, United Arab Emirates, Oct. 2024, paper S04.3.2
- J.A. Lázaro et al., “6G-EWOC: Crowdsourced SLAM data fusion for Safe and Efficient ADAS Driving,” in Proc. IEEE Future Networks World Forum (FNWF’24), Dubai, United Arab Emirates, Oct. 2024, paper S01.B.5
- K. Filis et al., “AI-Enhanced Fibre-Wireless Optical 6G Network in Support of Connected Mobility”, 26th Infocom World 2024 Conference, Athens, Greece, Nov. 2024, P47

Meet the 6G-EWOC Team

We are delighted to present further project results at three more spring conferences. Meet us at

- 39th Annual AAI Conference on Artificial Intelligence, Philadelphia, United States, 25th of February – 4th of March
- Mobile World Congress (MWC), Barcelona, Spain, 3rd – 6th of March
- Optical Fiber Communication Conference (OFC), San Francisco, United States, 30th of March – 3rd of April