NEWSLETTER

ISSUE

05

JAN 2025

Optical Circuit switched Time sensitive network architecture for high-speed Passive optical networks and next generation Ultra-dynamic & reconfigurable central office environments

OCTAPUS

HORIZON EUROPE
The New EU Framework Programme for Research and Innovation
2021-2027

PHOTONICS21
PHOTONICS PUBLIC PRIVATE PARTNERSHIP

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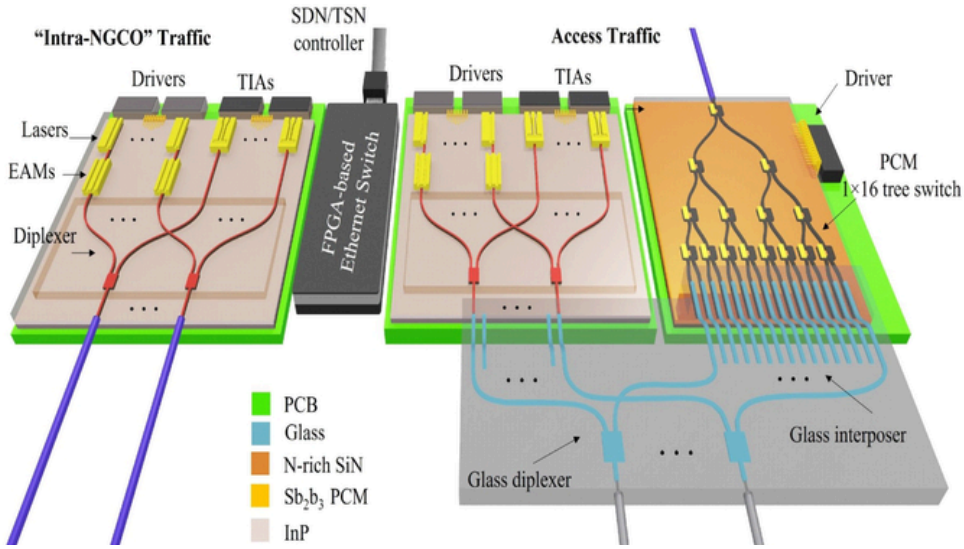
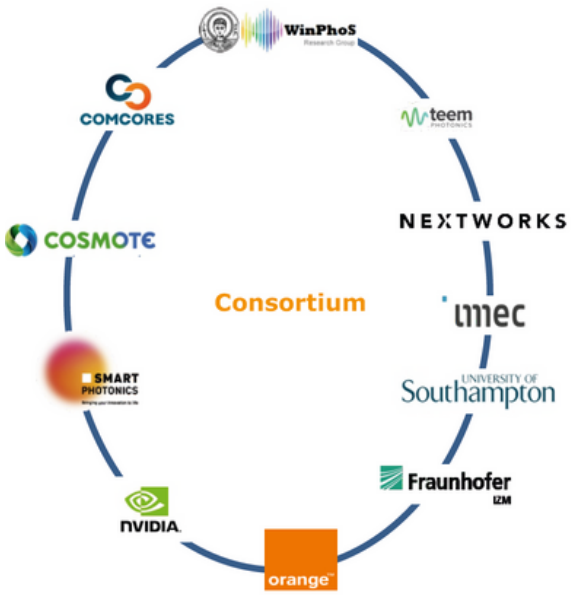
The OCTAPUS vision

To deliver an agile, low-cost and energy efficient PIC technology framework that will re-architect the NGCO (Next Generation Central Offices) ecosystem, transparently upgrading its capacity to 51.2Tb/s and beyond, through an innovative optically switched backplane and transceiver toolkit allowing three layers of traffic provisioning; i.e., optically switched express path time-sensitive & best-effort traffic classes.





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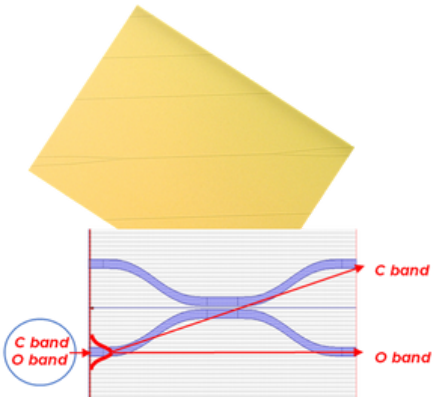
Technical Progress

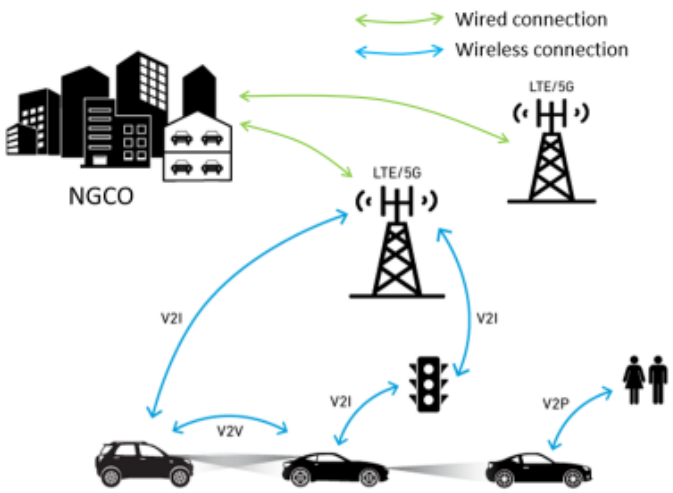
1 Development of Optical Transceiver InP PICs & Glass-based Diplexer

A Glass-based Diplexer developed by TEEM.



The first generation of Optical InP transceiver components have been fabricated by SMART and are currently being characterized.

2 Network Modeling and Simulations



A holistic simulation framework was developed to investigate the impact of vehicular traffic on modern V2X communication with special interest on delay-sensitive applications. It integrates state of the art simulation environments and appropriate libraries designed to support a wide range of network topologies, communication protocols, channel models and mobility patterns.

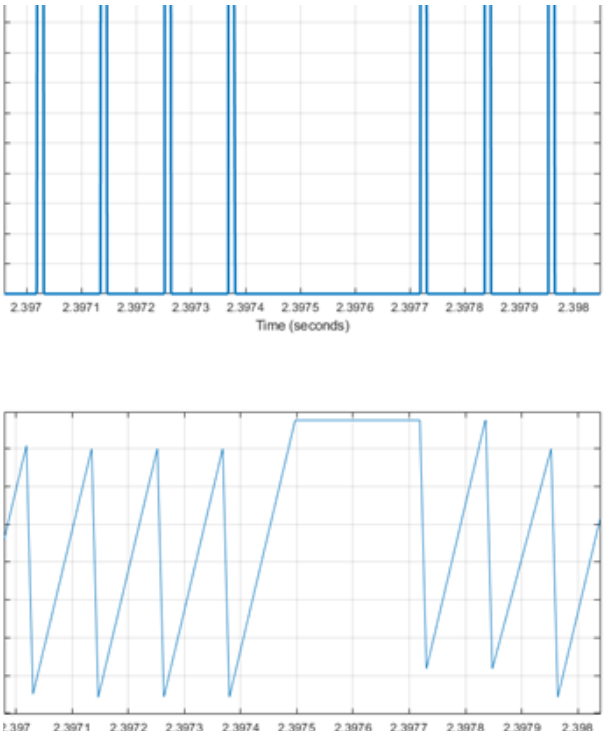
3

Experimental validation of Time Sensitive Networking Shapers

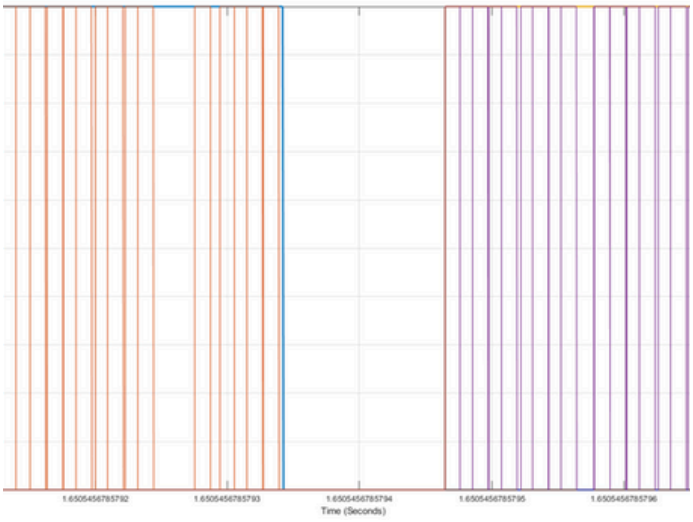
An extensive experimental investigation of the operation of the Time Sensitive Networking shapers was performed in preparation for integration with the OCTAPUS Uplink Switches and IF cards.

Both the Credit Based Shaper (CBS) and Time Aware Scheduler (TAS) were successfully validated

CBS Shaper



TAS Shaper



Dissemination activities

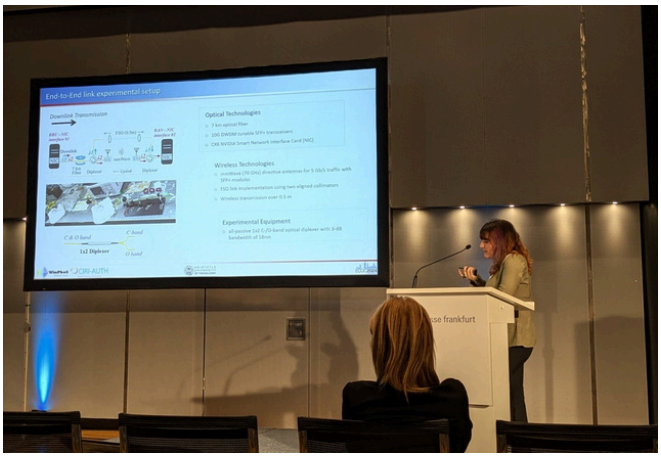
All dissemination activities can be found at :
octapus-ict.eu/index.php/dissemination/publications

- ✓ 3 Journal papers
- ✓ 27 Conference Presentations
- ✓ 5 presentations at Standardization body/Organization
- ✓ 16 presentations at exhibitions
- ✓ 5 Other publications

PAST PRESENTATIONS

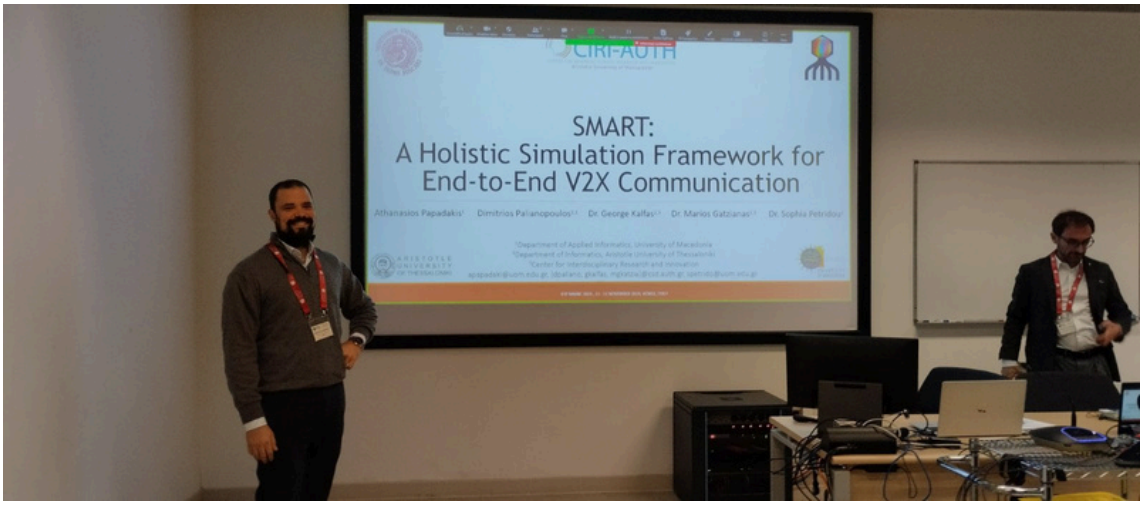
OCTAPUS at ECOC 2024

The OCTAPUS partners participated in the 50th European Conference on Optical Communication that took place between September 22 and 26 in Frankfurt, Germany, presenting the progress of the project in oral and poster presentations, workshops and the 10th International Symposium on Optical Interconnects in Data Centres.



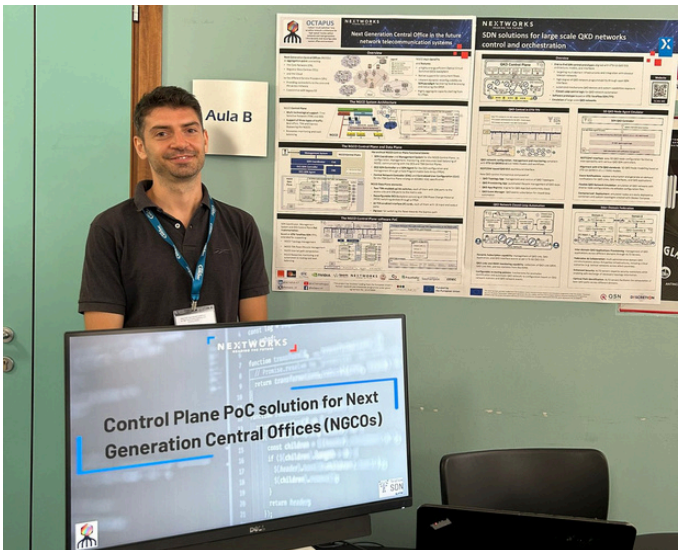
OCTAPUS at IFIP Wireless and Mobile Networking Conference (WMNC)

The OCTAPUS project was presented at IEEE IFIP Wireless and Mobile Networking Conference (WMNC) on 11-12 November 2024 in Venice, Italy. Athanasios Papadakis presented a paper entitled “SMART: A Holistic Simulation Framework for End-to-End V2X Communication”.



OCTAPUS at the IEEE HPSR 2024

The OCTAPUS project was presented at the IEEE International Conference on High Performance Switching and Routing, that took place between 22-24 July 2024 in Pisa Italy, in a presentation entitled "Building the Enhanced Control Plane of Next Generation Central Offices" at the Workshop on Control and Management of Future Optical Networks.



OCTAPUS at IEEE Globecom Conference

The OCTAPUS project was presented at the IEEE Globecom Conference, December 8-12 in Cape Town, South Africa. Agapi Mesodiakaki presented a paper entitled “A Just-in-Time Medium-Transparent MAC Protocol for Multi-Service 5G X-haul Transport Networks”

UPCOMING WORKSHOP

Organization of a Workshop at the IEEE Summer Topicals 2025 on

"(OA6G) – Optical Access and 6G networks: From Photonics to New Network Applications"

The following urganizers

- Chris Vagionas (from AUTH, Greece, member of the OCTAPUS project)
- Fabienne Saliou (from Orange, France, member of the OCTAPUS project)
- Shota Ishimura (KDDI, Japan)
- Colm Browning (Mbryonics, Ireland),

are organizing a topical on *"Optical Access and 6G networks: From photonics to new network applications".*

The IEEE Summer Topicals Meeting Series forms an international conference that fosters information exchange (and possible future collaborations) in a few rapidly growing areas of technology or "Hot Topics" / Topicals related to the general field of Photonics.

The focus of the Topical / Call for Papers:
The rise of demanding network applications are shaping a drastic transformation of the access and fronthaul networks with radical changes from photonics technologies up to new network functionalities. Optics is expected to play a critical role in lighting up the network of the future. Key topics will aim to cover four main areas of innovations, such Converged Optical Access Networks, Fiber Wireless fronthaul technologies, Satellite communications for 6G/beyond 5G and finally emerging functionalities, such as time-sensitive, deterministic traffic and fiber-sensing, tailored for the idiosyncrasy of the Point-to-MultiPoint optical access infrastructure.

The workshop/topical will take place in Berlin, 21-23 July 2025.
The deadline to submit a paper is on 3 March 2025
Papers can be submitted at the following link: https://www.ieee-sum.org/paper-submission/

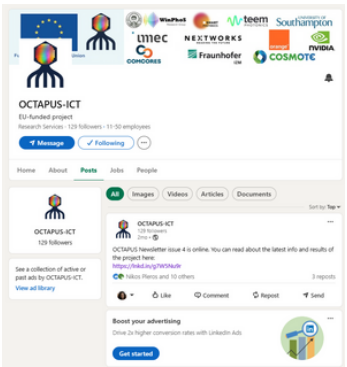
Communication activities

Communication channels

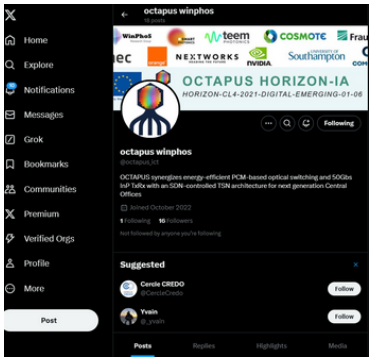
Website

Meta **(Facebook)**

LinkedIn



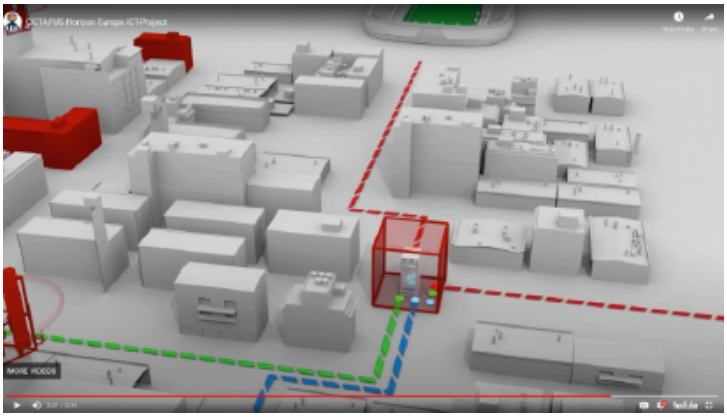
(twitter)



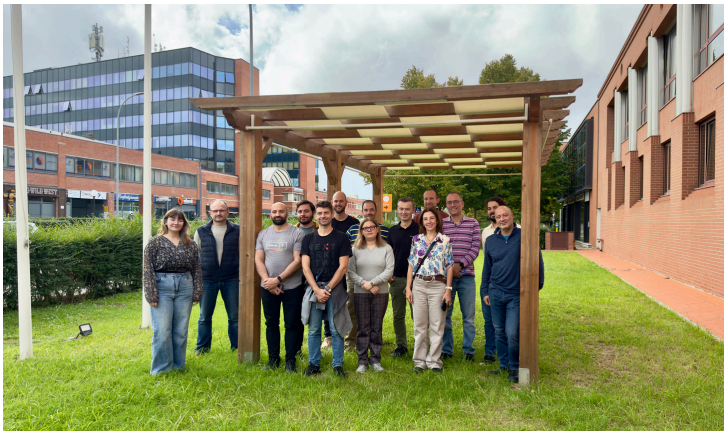
Website (https://www.octapus-ict.eu)
LinkedIn (https://www.linkedin.com/company/octapus-ict/posts/?feedView=all)
Meta (Facebook) (https://www.facebook.com/octapus.ict/)
X (Twitter) (https://x.com/octapus_ict)

OCTAPUS Video Presentation

The video presentation of the OCTAPUS project, which highlights the vision and objectives of the project has been released on YouTube. Watch it here or scan the QR code:



Consortium MEETINGS

M26 Consortium Meeting

The 5th plenary meeting of the OCTAPUS project took place between 09-10 October 2024 in Pisa, Italy. The meeting was organized by Nextworks. The consortium had the chance to discuss the technical progress of the project as well as the advances in the field of 50G transceivers for HS-PON networks, low-power optical circuit switching devices and SDN-controlled TSN-networking with deterministic traffic profiles.