NEWSLETTER

ISSUE
04
July 2024

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

OCTAPUS

In this issue

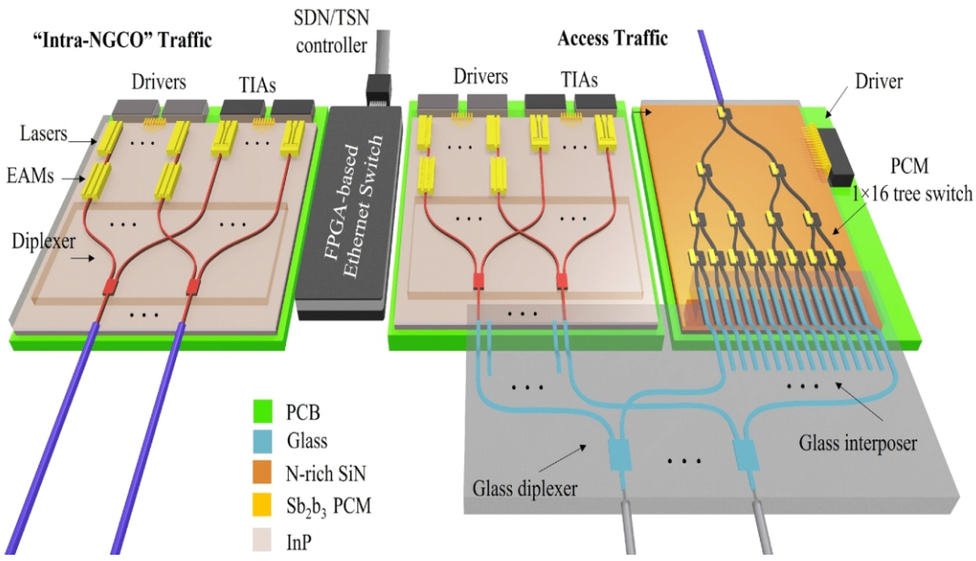
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HORIZON EUROPE
The New EU Framework Programme for Research and Innovation
2021-2027

PHOTONICS21
PHOTONICS PUBLIC PRIVATE PARTNERSHIP

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.



Consortium

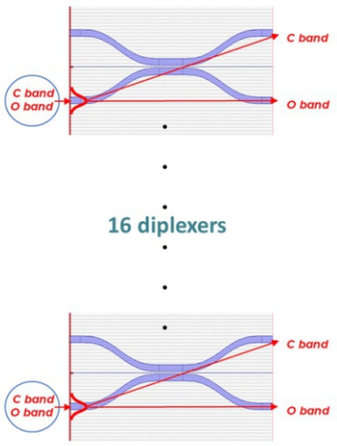
WinPhoS Research Group
COMCORES
teem PHOTONICS
COSMOTE
NEXTWORKS
imec
SMART PHOTONICS
UNIVERSITY OF Southampton
Fraunhofer IZM
NVIDIA
orange

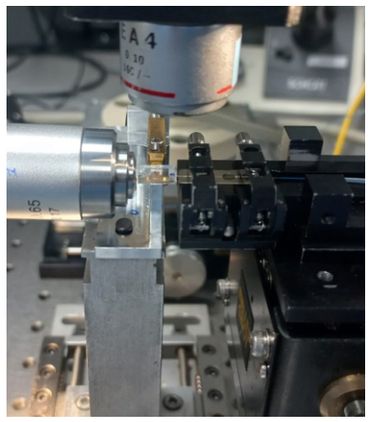
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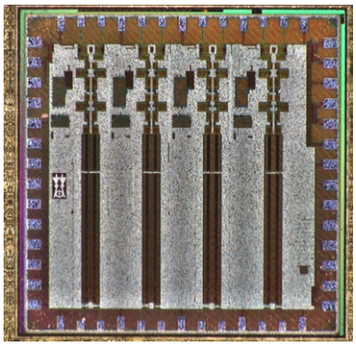
Technical Progress

1 Development of Optical Switching Components

►The first run of experimental measurements of an array of 16 glass-based O-band / C-band diplexers has been launched by TEEM. Additional experimental measurements will take place at AUTH.

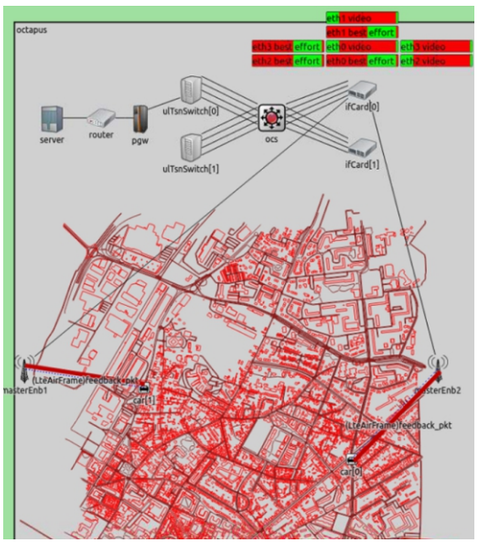




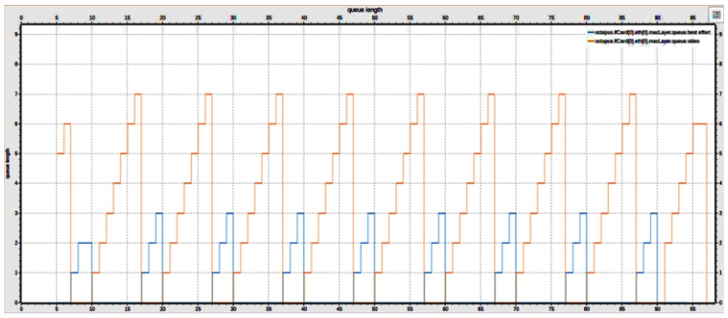


►A 4-channel, 56Gb/s capable 28nm ring modulator driver has been designed and the first fabricated samples have been received in June. The testing of the chip will follow. The driver supports Up to 56Gb/s NRZ with a power consumption of 95mW / channel (1.7pJ/bit).

2 Network Modeling and Simulations

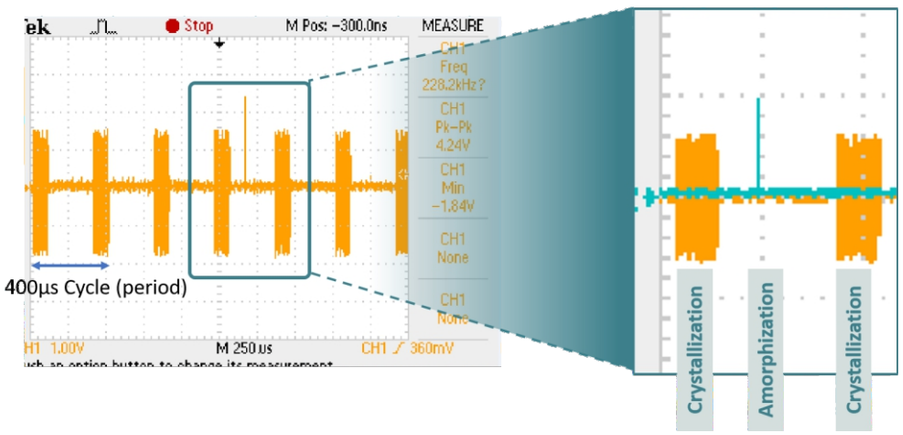


► Performance evaluation: Integration of TSN Time-Aware shapers with OmNet++ Simu5G framework.



►Queue evolution under time-aware shaper for 2 TSN-aware streams of mobile users in urban environment:
•Best effort (blue)
•Delay-sensitive video traffic (orange)

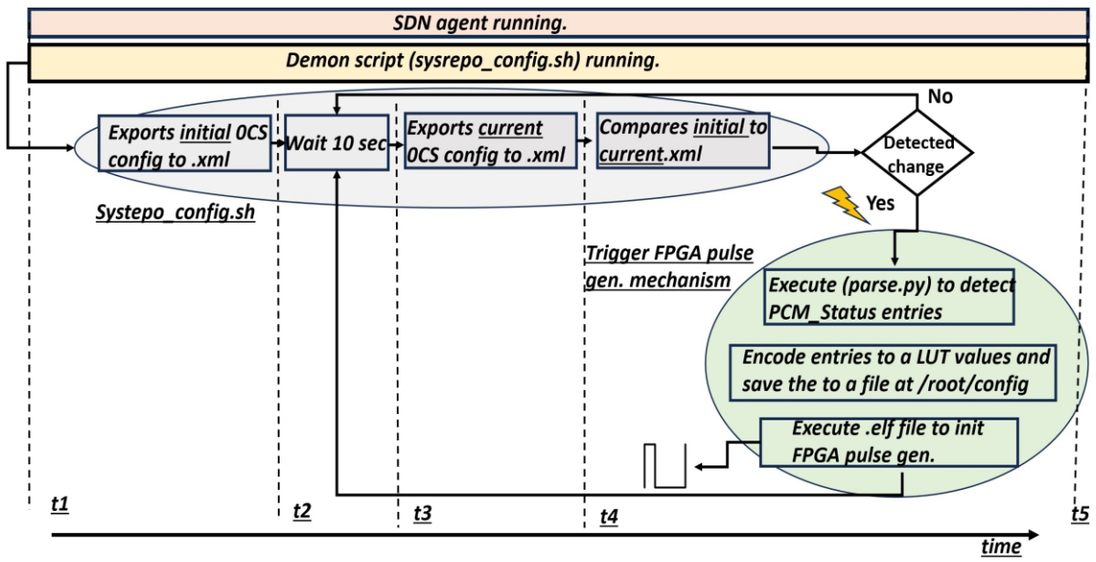
3 Experimental Lab Activities on the OCS-OCTAPUS archtiecture



►FPGA generated Cyclic (periodic) operation, including combined Amorphization & Crystallization Pulses.

Main outcomes:
- Flexible FPGA Design with tuning
- Accurate Experimental OCS Waveforms
- Similar with AWG Pulses also prepared for OCS tests

OCS Control Plane on FPGA



►The first round of experimental implemetations of an OCS control plane on FPGA has been completed.

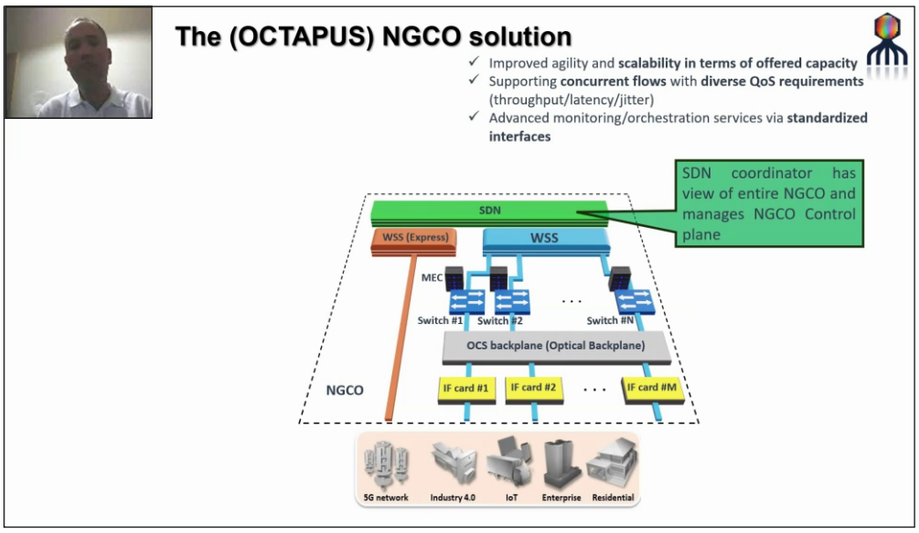
Dissemination Activities

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

- ✓ 2 Journal papers
- ✓ 20 Conferences
- ✓ 3 presentations at Standardization body/Organization
- ✓ 13 presentations at exhibitions
- ✓ 5 Other publications

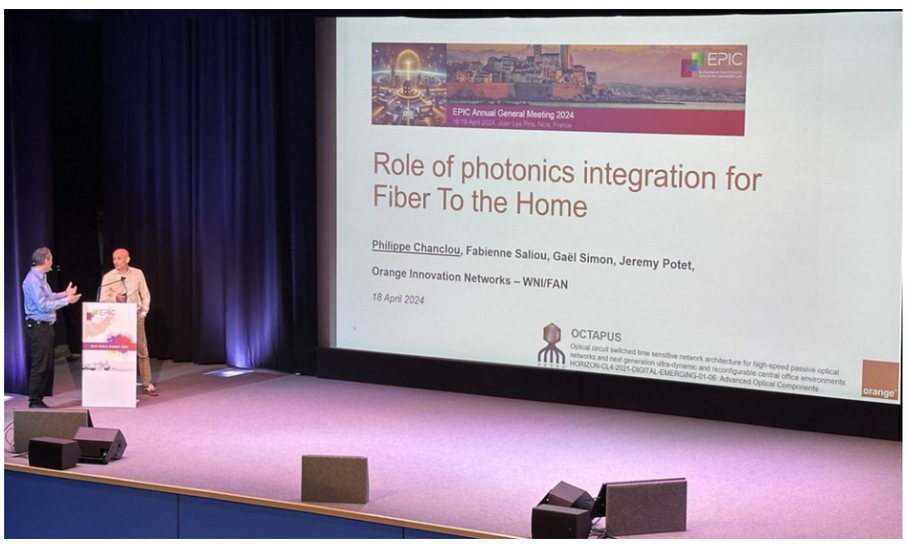
PAST PRESENTATIONS

OCTAPUS at the 5G-PINE workshop of the AIAI Conference, Corfu, Greece, 27-30 June 2024



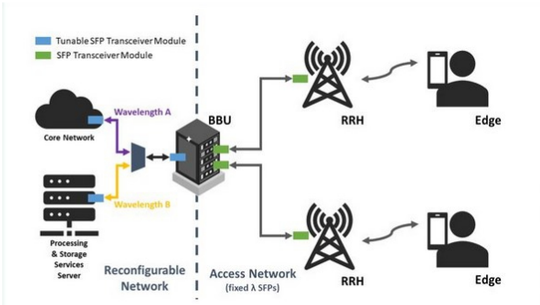
The OCTAPUS project vision, goals and control plane architecture was presented in the 9th 5G-PINE workshop, co-hosted with the 20th International Conference on Artificial Intelligence Applications and Innovations (AIAI 2024) in a presentation titled ”OCTAPUS: Empowering Next Generation Central Offices with Cross-Layer Network Intelligence towards a Reconfigurable Data Plane”.

OCTAPUS at EUROPEAN PHOTONICS INDUSTRY CONSORTIUM, April 2024

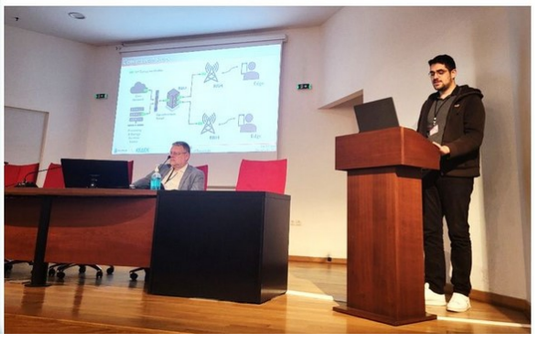


OCTAPUS project member Dr. Philippe Chanclou from Orange gave a talk on the "Role of photonics integration for Fiber To the Home" at the EPIC - EUROPEAN PHOTONICS INDUSTRY CONSORTIUM Annual General Meeting 2024 in Nice, France.

OCTAPUS at PACET 2024 – Thessaloniki, Greece, 28–29 March 2024



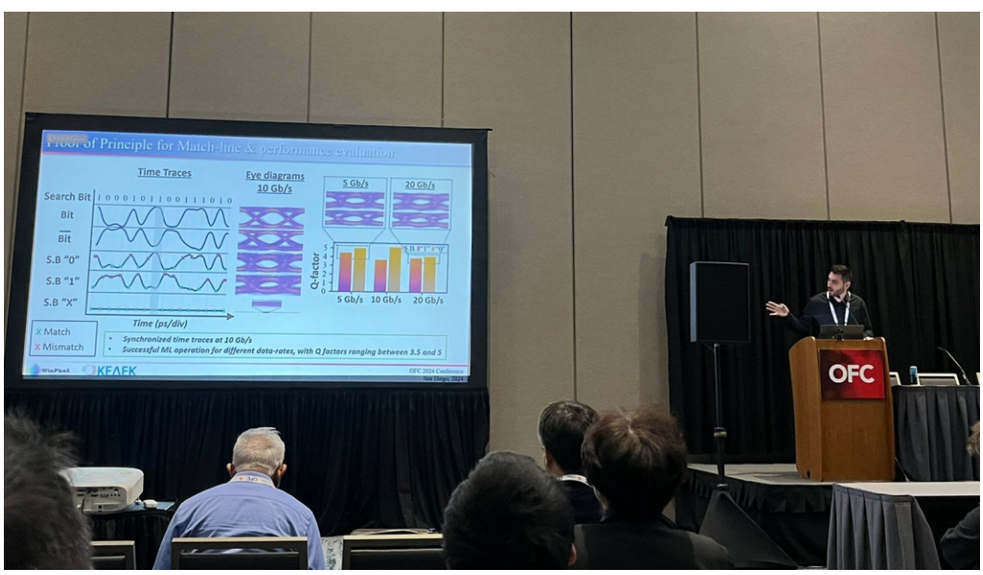






OCTAPUS partners participated in the Panhellenic Conference on Electronics and Telecommunications (PACET 2024) in Thessaloniki, Greece, on March 28-29 2024. George Michail, Mary Vargemidou and Chris Vagionas of the WinPhoS Research Group presented part of the OCTAPUS project architecture, including a demonstration of a Programmable Flexible Optical Circuit Switched Network Architecture based on Wavelength Tunable SFP+ Transceivers that can adapt to the varying needs of emerging low-latency 5G/6G networks

OCTAPUS at OFC 2024, San Diego, California USA, 24-28 March 2024



A paper titled "20 GHz Silicon Integrated Optical Ternary Content Addressable Memory (CAM) Cell" was presented at the Optical Fiber Communication Conference (OFC) 2024. The OCTAPUS project was mentioned as the European project that supported the work.

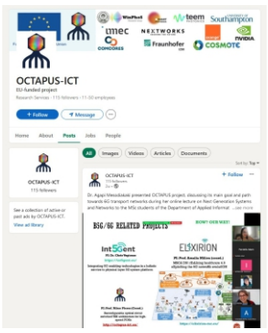
Communication Activities

Communication Channels

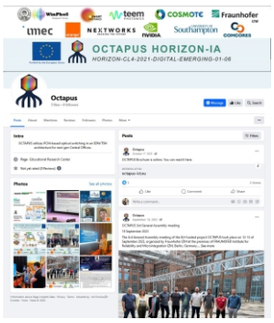
website



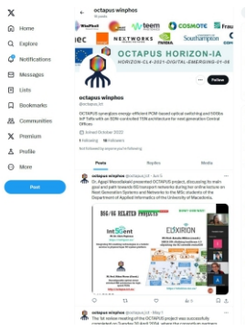
LinkedIn



Facebook



X (Twitter)



Website (https://www.octapus-ict.eu)

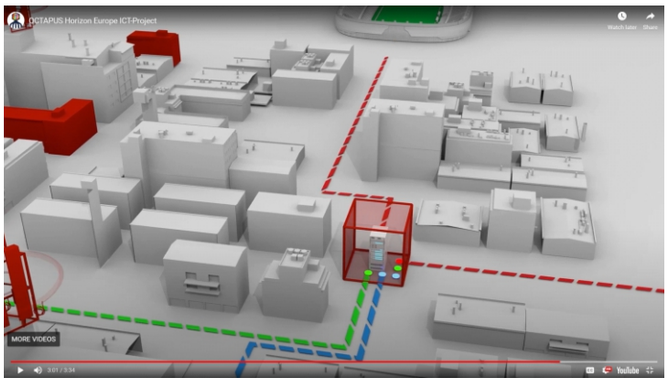
LinkedIn (https://www.linkedin.com/groups/9249210/)

Facebook (https://www.facebook.com/octapus.ict)

X (Twitter) (https://www.twitter.com/octapus_ict)

OCTAPUS Video Presentation

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



Consortium & Review MEETINGS

M19 Consortium Meeting

OCTAPUS organized the 4th plenary meeting at the facilities of Teem Photonics at Grenoble in France on 5-6 March 2024 to discuss the progress of the project and prepare for the first review meeting.



First Review Meeting

The 1st review meeting of OCTAPUS was successfully completed on Tuesday 30 April 2024, where the consortium partners presented the impressive progress of the project and together with the Project Officer and the reviewers they set clear goals for the coming months.

