

PHOTOPTICS 2026

14th International Conference on Photonics, Optics and Laser Technology

MARBELLA, SPAIN

6 - 8 MARCH, 2026

Workshop on “Photonic Technologies for a Sustainable ICT”

Dominique Chiaroni, Nokia Bell Labs

Leif Katsuo Oxenlowe, DTU

Olivier Bouchet, Orange Labs

GreenCOM

LCA

NOKIA
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THE SHIFT
PROJECT

SUSTAINING
6G

Workshop welcome



11h30 – 11h40 (GMT+1): Welcome of the General co-chairs (10')



GreenCOM



Workshop at Photoptics 2026



Title: Photonic Technologies for a Sustainable ICT

When? March 6th, 2026 – Room Andalucia 7

Participants: Keynote, invited and regular speakers will share their knowledge with the audience on this important topic with some key optical technologies investigated.

At the end, we will have a round table including a Q&A for the audience

Summary of the workshop: *A combined effect of the predictable linear evolution of the production of electricity and exponential growth of the electricity demand for ICT pushes the telecom industry to rethink the way they produce products. Very recently, a “sustainable by design” approach was proposed. It consists of the adoption of indicators of key values on top of the classical key performance indicators during the design phase. These values are within the environmental, societal and economic areas. This workshop will therefore focus on key optical technologies that will play a fundamental role in this new sustainable approach. In particular, this workshop will highlight how optical technologies will play a fundamental role from the access point up to the core of the network.*



Photonic Technologies for a Sustainable ICT



Motivations: Need to analyze the impact of optical technologies in this new sustainable digital world.

General context

- The projected tendencies for the worldwide production of electricity is linear.
- The projected tendencies for the worldwide energy consumption of the ICT is exponential.

Need to reduce the energy consumption but also the electricity demand

- Need to analyze the physical limits of different technologies to identify the right solutions.
- Future certifications a digital passport is creating a need for a sustainable design of any future products.

Photonic Technologies will play a fundamental role



The electronic technology is reaching limits

Moore Under Pressure

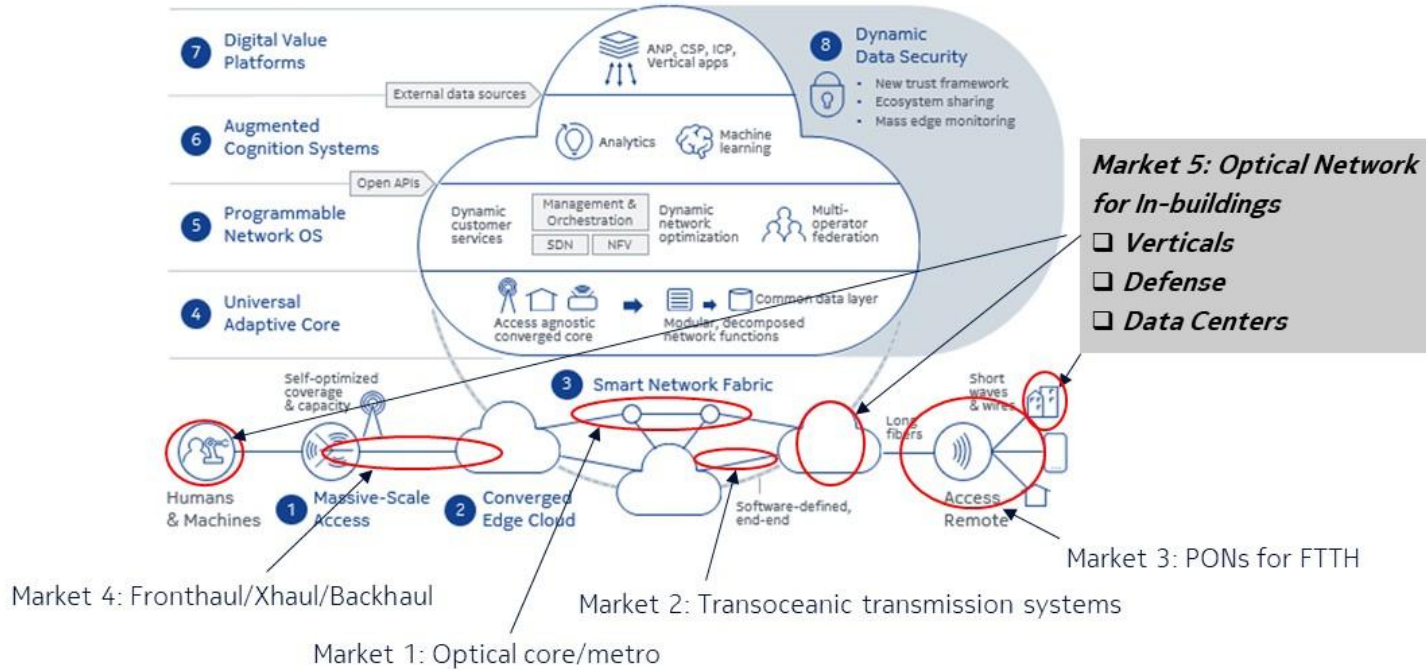
- Surging design and manufacturing costs
 - Diminishing returns ...
- Traditional node scaling runs out of steam



Optical technologies are providing complementary features

- Many optical components are zero energy (fiber, couplers, ...)
- The fixed access based on xPONs is less energy consuming than the mobile access.
- The optical technologies are already considered in the Crosshauling of vRANs
- New market opportunities are in front of us.

Market opportunities are in front of us



Words of the Co-chairs



Dominique Chiaroni: Dominique Chiaroni is graduated in Mechanics (IUT d'Aix-en-Provence), in Thermal Sciences & Physics (Bachelor and Master from the University of Corsica), and in Optics and Microwaves (Engineer degree obtained in 1990 from Telecom SudParis). He was engaged in 1990 by Alcatel CIT to work on optical switching technologies. Mainly focused in the study of innovative and eco-designed optical systems and networks, he is currently working in the Nokia Bell Labs Core Research team and involved in different projects dealing with Green Technologies since 2005:.. He received several internal and external awards. Associate professor at Polytech and at the Institut Polytechnic of Paris, he is author and co-author of more than 200 publications and patents including numerous invited Papers, Tutorials, and contributions in Books.



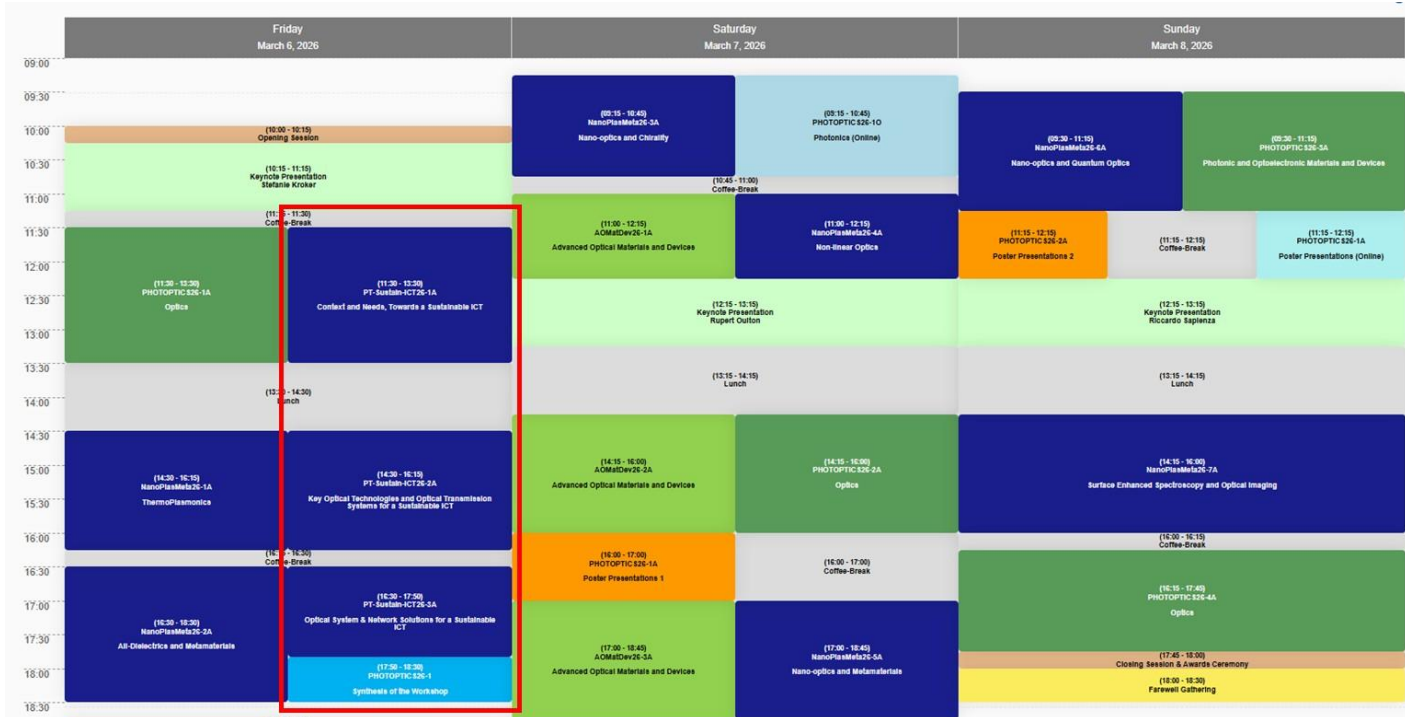
Professor Leif Katsuo Oxenløwe: Professor Leif Katsuo Oxenløwe is the Centre Leader of the SPOC (Silicon Photonics for Optical Communications) Centre supported by the Danish National Research Foundation, and the group leader of the High-Speed Optical Communications group at the Department of Electrical and Photonics Engineering, at the Technical University of Denmark (DTU). His research interests are high-capacity optical communications, integrated photonics, nonlinear optics and optical signal processing, and quantum communication and other quantum technologies. He has authored or co-authored more than 500 peer reviewed publications. He is a member of the Royal Danish Academy of Sciences and Letters, a member of the Danish Academy of Technical Sciences, a Fellow of the Optical Society, Senior Member of the IEEE Photonics Society, and served on the IEEE PS board of Governors 2020-2022. He received the B.Sc. degree in physics and astronomy from the Niels Bohr Institute, University of Copenhagen, Denmark in 1996. In 1998 he received the International Diploma of Imperial College, London, UK and the M.Sc. degree from the University of Copenhagen. He received the Ph.D. degree in 2002 from DTU and is since 2009 Professor of Photonic Communication Technologies.



Olivier Bouchet : M. Olivier Bouchet (m) received the Licence Es Physical Science and the Telecommunication Engineer Diploma in 1987 from University of Rennes and 1989 from Polytech of Angers respectively. A Master of Business of Administration (MBA), in 1992 from University of Rennes, completed his studies. His first activity, in France Telecom, was project leader for radio paging mass market product. He joined Orange Labs in 1998. His current research interests are in the field of Optical Wireless Communications (OWC), Light Fidelity (LiFi), Free Space Optic (FSO) and Fiber Wireless (FiWi). He is author or coauthor of 5 books, around 80 papers or oral communications and holds 38 patents. He was European OMEGA Work Package leader on Optical Wireless communication, then ECONHOME French project and ACEMIND European Celtic Plus project leader, European Community H2020 WORTECS project leader and SUSTAIN 6G Technical Manager.



Planning of the Workshop

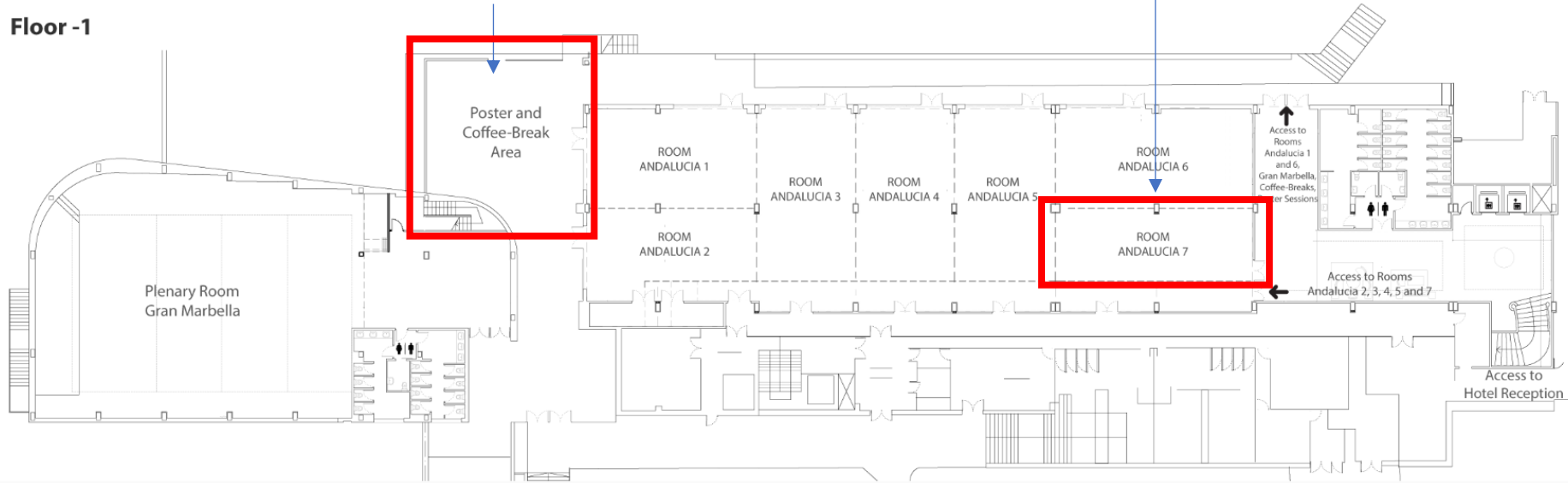


Location of the room

Pause and coffee break

Workshop

Floor -1



Main time slots to retain

11h30 – 13h30 (GMT+1): Session 1A: Context and needs, towards a sustainable ICT – Olivier Bouchet, Orange France

13h30 – 14h30 (GMT+1): Lunch time

14h30-16h15 (GMT+1): Session 2A: Key optical technologies and optical transmission systems for a sustainable ICT – Leif Katsuo Oxenløwe, DTU Electro, Denmark.

16h15-16h30 (GMT+1): Pause

16h30-17h50 (GMT+1): Session 3: Optical System & Network solutions for a sustainable ICT - Dominique Chiaroni, Nokia Bell Labs, France.

17h50- 18h30 (GMT+1): “Round table and Q&A” , Dominique Chiaroni and Leif Katsuo Oxenløwe, “Round table and Q&A”

Session 1A

Context and needs, towards a sustainable ICT

11h30 – 11h40 (GMT+1): Welcome of the General co-chairs (10')

11h40 – 11h45 (GMT+1): *Olivier Bouchet, “Introduction of Session I: Context and needs towards a sustainable ICT, Co-chair of the workshop. (5’)*

11h45-12h15 (GMT+1): *Hugues Ferreboeuf, “Digital Sustainability: A Need for Reset”, Keynote Speaker, Shift project, France. (30’)*

12h15-12h45 (GMT+1): *Christoph Schmelz and Bahare Masood Khorsandi, “SUSTAIN 6G – a framework for accountable sustainability in ICT”, Keynote Speaker, Sustain 6G project, Germany. (30’)*

12h45–13h05 (GMT+1): *Jesper Bevensee Jensen (CTO), “Quasi-Coherent Communications and Energy-Efficient Transceivers”, Invited speaker, BiFrost, Denmark. (20’)*

13h05-13h25 (GMT+1): *Gudrun Gudmundsdottir et al., “Towards sustainable data transmission: environmental assessment of a fixed optical telecommunication”, Regular Speaker, GreenCOM, DTU Electro, Denmark. (20’)*

13h25– 13h30 (GMT+1): *Olivier Bouchet, “Conclusion and introduction of Session 2A” (5’)*

Session 2A

Key optical technologies and optical transmission systems for a sustainable ICT

14h30 – 14h35 (GMT+1): *Leif Katsuo Oxenløwe, “Introduction of Session II: Key optical technologies for a sustainable ICT”, Co-chair of the Workshop. (5’)*

14h35 – 15h05 (GMT+1): *Niels-Kristian Hersoug, “GreenCOM – A green innovation of ecosystem of companies, universities and industrial associations.”, Keynote speaker, GreenCOM, DTU Electro, Denmark. (30’)*

15h05 – 15h30 (GMT+1): Paulo Robalinho, “Enhanced sensitivity in fiber loop mirror strain sensor based on Virtual Vernier Effect”, Regular long paper, INESC TEC, Portugal. (25’)

15h30 – 15h50 (GMT+1): Silas Hedeboe et al., “Data-distribution for the reduction of the number of amplifier sites”, Regular Speaker, GreenCOM, DTU Electro, Denmark. (20’)

15h50 – 16h10 (GMT+1): Christian Schou et al., “Single Microcomb for Efficient Ultra Scalable Data Centers”, Regular Speaker, GreenCOM, DTU Electro, Denmark. (20’)

16h10-16h15 (GMT+1): *Leif-Katsuo Oxenløwe, “Conclusion and introduction of the Session 3A” (5’)*

Session 3A

Optical System & Network solutions for a sustainable ICT

16h30 – 16h35 (GMT+1): Dominique Chiaroni, “Introduction of Session III: Optical System & Network solutions for a sustainable ICT, Co-chair of the Workshop. (5’)

16h35 – 16h55 (GMT+1): Marc Fleschen et al., “Optical Wireless Communication, a key enabling technology for a sustainable ICT”, Invited Speaker, Light Communication Alliance, Dubai. (20’)

16h55 – 17h15 (GMT+1): C. Ware and M. Lourdiane. “Optical functionalities to curb network power consumption: can digital twins solve the cross-layer problem?” Invited Speaker, Institut Polytechnique Paris/Telecom ParisTech, France. (20’)

17h15 – 17h45 (GMT+1): Lieven Levrau, “The IOWN Global Forum”, Keynote speaker, France. (30’)

17h45 – 17h50 (GMT+1): Domnique Chiaroni, “Conclusion and introduction of the Q&A session” (5’)

Session 3A

Round table & Q&A

17h50 – 18h30 (GMT+1): Dominique Chiaroni, Chair for the Workshop, “Round table and Q&A”

Panelists:

- Hugues Ferreboeuf (Shift project) (online),
- Olivier Bouchet (Sustain 6G) (on site),
- Leif Katsuo Oxenløwe (GreenCOM) (on site),
- Marc Fleschen (LCA) (online),
- Lieven Levrau (IOWN Global Forum) (on site).

17h50 – 18h25 (GMT+1): Status of each panelist, Q&A

18h25 – 18h30 (GMT+1): “Main messages of the workshop for a sustainable ICT”, General co-chairs

18h30 (GMT+1): End of the workshop

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Enjoy this workshop and don't
hesitate to participate. It is your
workshop



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