



COST Action 1101

OPTICAL WIRELESS COMMUNICATIONS - AN EMERGING TECHNOLOGY

OPTICWISE at a glance

OPTICWISE is an Action of the COST Programme (European Cooperation in Science and Technology) funded by the European Science Foundation, allowing the coordination of nationally funded research on a European level. The Action aims to serve as a high-profile consolidated European scientific platform for interdisciplinary optical wireless communication (OWC) research activities. It was launched in November 2011 with kick-off meeting in Brussels and will run until November 2015.

Why a New Action?

Wireless transmission via optical carriers opens doors of opportunity in areas as yet largely unexplored. Offering significant technical and operational advantages, OWC can be, in some applications, a powerful alternative to and, in others, complementary to existing radio frequency wireless systems. Variations of OWC can be employed in a diverse range of communication applications ranging from very short-range (on the order of millimetres) optical interconnects within integrated circuits through outdoor inter-building links (on the order of kilometres) to satellite links (larger than 10,000 kilometres). In many respects, OWC research is still in its infancy and calls for extensive research to begin to harness the enormous potential of the optical spectrum. This COST Action will provide the platform to synergize interdisciplinary OWC research activities, spanning from characterization of diverse propagation media to modeling, design and development of devices, components, algorithms, protocols and systems.

Objectives

- Make significant contributions to the scientific understanding and technical knowledge of the OWC field;
- Develop transformative and far-reaching OWC solutions as powerful alternatives and/or complements to existing technologies, and thereby help increase OWC market penetration;
- Serve as an internationally recognized reference point in the OWC field;
- Increase awareness of OWC in the scientific community and the general public;
- Influence decision makers at national and international levels;
- Attract and train graduate students and early stage researchers (ESRs) for OWC field.

Strategies

Networking activities through OPTICWISE will

- synergize the interdisciplinary expertise in diverse fields ranging from atmospheric physics to photonic devices & systems;
- bridge the research efforts between academia and industry;
- avoid duplications within OWC research activities;
- increase the mobility of OWC researchers in Europe;
- provide opportunities for developing and sharing common software/hardware tools;
- enable timely diffusion of generated knowledge within the research community;
- provide training opportunities for graduate students and ESRs in the OWC field.

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Working Groups (WGs)

WG1 (Propagation Modeling and Channel Characterization) will develop, evaluate and validate statistical and empirical channel models for OWC applications and optical bands under consideration.

WG2 (Physical Layer Algorithm Design and Verification) will provide an information-theoretic framework for OWC and investigate practical algorithms and techniques to approach these ultimate performance boundaries.

WG3 (Networking Protocols) will deal with upper layer protocol stacks and investigate co-existence and interoperability of OWC with other communication networks.

WG4 (Advanced Photonic Components) will work on the efficient design, characterization, fabrication and test of state-of-the-art opto-electronic/ photonic components and sub-systems for OWC systems

Special Interest Groups (SIGs)

The permanent **SIG on Techno-Economics, Industrial Standards & Future Trends in OWC (TESEO)** deals with business and market issues related to OWC. It participates to international standard bodies like ITU, ETSI, FSAN, WWRF and aims to lead trends in emerging OWC applications;

Based on the needs and technical development trends, SIGs will be created addressing specific applications and involve members from more than one WG.



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