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H2020 MSCA ITN Project: VisIoN “European Training Network on Visible light based Interoperability and Networking”

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Context : New generations of LEDs have attractive features such as a long life expectancy, lower power consumption and reduced heat dissipation. In line with governmental plans worldwide, it is predicted that LEDs will be the ultimate light source in the near future. Besides indoor illumination, LEDs are being widely used in street lighting, traffic signs, advertising displays, transportation, etc. Visible light communication (VLC) is one of the most promising current areas of research with a significant potential for high-impact results and successful outcomes might revolutionize utilization of LEDs for modern infrastructures to add novel functionalities in addition to illumination. VLC has been proposed for smart homes and streets, manufacturing and medical environments for increased data security and reduced interference, or a two-way vehicle-to-vehicle and vehicle-to-roadside infrastructure communications as part of the emerging intelligent transportation systems for increasing road safety.

Objectives : This project aims to train a new generation of early-stage researchers (ESRs) in the emerging area of VLC. Through research on co-supervised individual projects focusing on selected applications, VisIoN will make significant contributions to the fundamental scientific understanding and technical knowhow. Targeted application areas include indoor and outdoor VLC access, smart transportation, and medical and manufacturing environments. In addition to technical training through PhD courses, dedicated tutorials, and workshops organized by the Network, the ESRs will benefit from a wide range of complementary non-technical training activities such as entrepreneurship, authoring scientific papers/patents, dissemination, etc. The participation of industrial partners will further promote research training with commercialization perspectives enabling ESRs to fully integrate theory with hands-on practice.

3 Research Topics

Smart Cities, Offices, and Homes

VLC augments RF based technologies in indoor and outdoor communications. In smart cities, where everything will be connected, the communication networks must offer higher speed, high reliability, high availability, low latency and the new requirements of Internet-of-Things.

Smart City

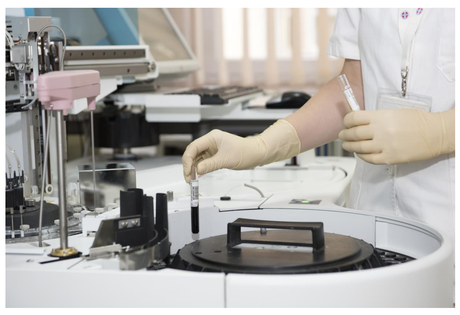
Smart Transportation

LEDs are widely used in traffic signs, advertising displays, transportation, streetlights, etc. VLC is proposed for two-way vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communications to reduce the number of casualties, increase safety, improve traffic efficiency and introduce autonomous driving, as well as providing high-speed Internet access within cars, trains, airplanes, etc.

Smart Transport

Manufacturing and Medical

VLC exploits its unique potential of not being jammed by RF signals, very limited interference with other devices, and offering total security of protecting data. With the use of MIMO architectures, VLC can offer high reliability and robustness and with its inherently high bandwidth it can address low latency requirements.



Manufacturing & Smart healthcare

Key points

3,75 M€ - 48 months - 10 partners - 7 countries

5 Academic partners : Ecole Centrale Marseille (Marseille, France), Northumbria University (Newcastle, United Kingdom), Czech Technical University (Prague, Czech Republic), University of Las Palmas (Gran Canaria, Spain), Ozyegin University (Istanbul, Turkey)

2 Research Institutes : Fraunhofer Heinrich Hertz Institute (Berlin, Germany), Institute for Telecommunications (Aveiro, Portugal)

3 Industrial Partners : OSRAM Gmbh (Germany), Oledcomm SAS (France), Ford OTOSAN (Turkey)

Supporting Industries : LightBee (Spain), Network Rail (UK), Philips (Netherlands), SQS Vlaknova Optika (Czech Republic)

Next Rendez-Vous VisIoN !

First training school in Budapest, Hungary, **July 2018**

Second training school in Gran Canaria, Spain, **January 2019**

Check out our website : **www.vision-itn.eu**

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