PRESS RELEASE
NOTA DE PRENSA

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The birth of a new discipline: Low-energy Visible Light IoT Systems

New ENLIGHT'EM project set to write the next chapter of the LED revolution in the language of ubiquitous networks

New ENLIGHT'EM project, coordinated by IMDEA Networks Institute, is set to use Visible Light Communications (VLC) technology to bring connectivity and sustainable ubiquitous communication networks to every LED bulb.

IMDEA Networks Institute launched this month in Madrid (Spain) a new Marie Curie European Training Network that marks the birth of a new discipline - Low-energy Visible Light IoT Systems - at the intersection of VLC and networked embedded systems (traditionally the domain of radio communication technologies). ENLIGHT'EM* will recruit and train a new generation of innovators and provide them with the know-how to spearhead the development and real-world implementation of the Internet of Things (IoT) in the immediate and beyond-5G world.

Dr. Domenico Giustiniano, ENLIGHT'EM's Principal Investigator, explains: "Light Emitting Diodes, commonly known as LEDs, are driving a revolution in lighting systems due to their superior energy efficiency (up to 80% higher than fluorescent or incandescent lights). In this project we are exploring their potential to render networked communication functionalities. What we propose is to bring connectivity to every LED bulb by means of VLC technology. Every LED bulb can be turned into a transceiver, complementing the existing Radio Frequency (RF) infrastructure, making it possible to create truly sustainable and ubiquitous networks where IoT systems can operate."

Integrating VLC in lighting environments and IoT systems calls for the design of networked and intelligent lights. It will be necessary to develop novel technologies, algorithms and innovative techniques for communications and networking. Thus, the convergence of solid state lighting pervasiveness, networked VLC and an ever-growing IoT will require highly trained professionals in a new discipline born at the intersection of VLC and networked embedded systems, that will push the huge market potential of LED luminaries in visible light IoT systems.

Connected energy, light, living and cities

Fifteen early stage researchers (ESRs) will be recruited and trained in ENLIGHT'EM through a multidisciplinary pan-European network of preeminent experts from universities, research institutes, SMEs, and large companies, all coordinated by IMDEA Networks. These researchers will evolve into top-notch experts in a diverse array of sub-fields leading to the integration of low-energy VLC into the IoT. They will acquire and hone cutting-edge technical skills contributing to IoT areas such as connected energy, light, living and cities, but they will also attain the entrepreneurial mindset necessary to successfully apply the acquired knowledge and research results to the business world. The trained professionals of this European Training Network will therefore be central to achieving a competitive advantage in Europe in terms of a VLC-enabled IoT that is integrated in the 5G ecosystem.

“LEDs are already entering the IoT market with embedded sensory functionalities”, said Dr. Giustiniano. “Once we are able to incorporate connectivity to the equation, VLC-enabled LEDs, are set to become a game-changer in the IoT ecosystem in the not-far-of future”. ENLIGHT’EM represents a stepping stone in this direction, as it consolidates pan-European collaborations among leading groups in the field of visible light and radio communication technologies, embedded networking, solid state lighting, and sustainable development of smart applications.

“It is of paramount importance that new technologies are designed for sustainable socio-economic development”, said Dr. Giustiniano. “As energy is a scarce resource, new VLC technologies entering in the market should be conceived to consume low-energy during their life-time span. Leveraging on the multidisciplinary expertise of the project partners, ENLIGHT’EM will specifically look at key aspects to achieve this objective, such as simultaneous data and power transfer in the visible light spectrum domain, passive communication and sensing, as well as emerging verticals such as Vehicle-to-Anything (V2X) communication, transportation and manufacturing. Scientific leadership and technology transfer are at the heart of the project”.

**ENLIGHT’EM: European Training Network in Low-Energy Visible Light IoT Systems*
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Top Illustration: Representatives of the 10 organizations that compose ENLIGHT’EM’s consortium met at IMDEA Networks in Madrid on June 13th and 14t to kick-off the project.

Additional Resources:

PR YouTube video: https://youtu.be/8Q5Jm8U33LM

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About Us

IMDEA Networks Institute is a **research organization on computer and communication networks** whose multinational team is engaged in cutting-edge fundamental science and technology. As a growing, English-speaking institute located in Madrid, Spain, IMDEA Networks offers a unique opportunity for pioneering scientists to develop their ideas. IMDEA Networks has established itself internationally at the forefront in the **development of future network principles and technologies.** Our **team** of highly-reputed researchers is designing and creating today the networks of tomorrow.

Some keywords that define us: *5G, Big Data, blockchains and distributed ledgers, cloud computing, content-delivery networks, data analytics, energy-efficient networks, fog and edge computing, indoor positioning, Internet of Things (IoT), machine learning, millimeter-wave communication, mobile computing, network economics, network measurements, network security, networked systems, network protocols and algorithms, network virtualization (software defined networks – SDN and network function virtualization – NFV), privacy, social networks, underwater networks, vehicular networks, wireless networks and more…*

IMDEA Networks Institute
28918 Leganés (Madrid) Spain
Avda. del Mar Mediterráneo, 22

+34 91 481 6210
mediarelations.networks@imdea.org
www.networks.imdea.org

Twitter: @IMDEA_Networks | LinkedIn | Facebook | Instagram | Flickr | YouTube