



HIGHLIGHTS

**5G BROADBAND
(10 GBIT/S)**

LOW LATENCY (1 MS)

**HIGH LOCATION
ACCURACY (<10 CM)**

**WIRELESS NETWORKS IN
BUILDINGS COMBINING
MMWAVE AND VISIBLE
LIGHT COMMUNICATION**

Funding



This project has received funding from the European Union's Horizon 2020 program under grant agreement number 761992. Call: H2020-ICT-2016-2. Type of Action: RIA

Topic: ICT-07-2017: 5G PPP Research and Validation of critical technologies and systems.

Impact

The IoRL RRLH system provides an elegant solution that can be used in 98% of public and commercial buildings. The solution makes considerable progress towards all core 5G PPP KPI's inside buildings, including capacity, latency, energy savings, improved and ubiquitous coverage, higher user data rate and reduced electromagnetic field levels compared to LTE solutions.

IoRL will reinvigorate the market centred around the operation and management of broadband communication networks and services in buildings and thus create an enormous impact on both the building construction and communications industries in Europe.

Objectives

The Internet of Radio-Light (IoRL) project develops a safer, more secure, customizable and intelligent visible light communication and millimetre wave building network that reliably delivers increased throughput (greater than 10 Gbps) with reduced latency (less than 1 ms) from access points pervasively located within buildings, whilst minimizing interference and electromagnetic exposure and providing location accuracy of less than 10 cm. It thereby shows how to solve the problem of broadband wireless access in buildings and promotes the establishment of a 5G global standard in ITU.



Challenges

IoRL seamlessly integrates visible light communications with millimetre wave technology for considerably improved indoor communication. The project designs, develops and exhibits the operation of an integrated millimetre wave and visible light communication Remote Radio-Light Head (RRLH) in a wide range of different types of properties supporting innovative network services by third party application providers.

The IoRL RRLH solution is generic and can be integrated within the light roses of all types of lights and connected via either a plastic optical fiber or power-over-Ethernet network.

IoRL implements network function virtualization capabilities so that software defined home network operations can be instantiated also within the Home IP Gateway in a configurable way.

The IoRL solution includes position sensing technology to robustly identify the position of user equipment to within ~10 cm accuracy. The operation of the millimetre wave transceiver and visible light communication imaging receiver will be exhibited in combination with a wide range of advanced consumer electronic digital media user equipment, including AR glasses and VR headsets, among others.

Finally, IoRL develops and implements an efficient and effective dedicated security framework that addresses potential security threats and vulnerabilities of the resulting integrated heterogeneous network.

Project Facts

IoRL is a second phase 5G PPP European research project. It concentrates the efforts of 21 partners coming from 7 European countries including Turkey, as well as from Israel and China to develop technologies enabling a 5G buildings infrastructure with demonstrations planned in private homes, public buildings including a museum, a transportation hub and buildings hosting commercial operations.

Duration: June 2017 – May 2020

Budget: €7.6 M community funding under the Horizon 2020 program.