

## PROJECT / Optical Radio Convergence Infrastructure for Communications and Power Delivering

# ORCIP



### Main Objective:

ORCIP is an hybrid testbed that combines the realism of physical testing with the scalability and flexibility of simulations. The hybrid testbed will be a set of radio heads deployed within the University of Aveiro Campus and connected through optical fibre to a central location where all the processing and interfacing is performed. The use of the appropriate interfaces allows the reconfiguration for heterogeneous wireless and optical physical test beds with multiple protocol stacks for next generation physical technologies. The testbed will also allow the plugging of various simulator types, providing a parallel & distributed multi-tool simulation framework.

ORCIP differs from existing testbeds both in scope and approach. Its main objective is to provide researchers and industry with a platform infrastructure, which allows testing and evaluation in an integrated (realistic) way: taking into account every layer from physical devices to applications. The testbed will include the interfacing for existing systems, as well as a framework to develop novel algorithms and hardware for future developments. This allows developers to characterize solutions based on existing systems and researchers to evaluate novel proposals at the algorithmic or protocol level for future systems.

The integration of the physical testbed with simulators combines the realism of physical testbeds with the scalability of multi-mode simulations. Physical prototypes can communicate with simulated layers for repeatable results or obtain real multimedia application traffic for realistic service evaluation. The proposed infrastructure will also permit the combination of high bit rate studies with low bit rate ones, where the wireless power transmission combined with protocols that are complementary to the high bit rate communication scenarios, will allow a testbed for future access communication systems.

When fully deployed ORCIP will include a physical testbed and HW development infrastructure for 5G solutions based on Cloud Radio Access Networks (C-RAN), a multiplicity of platforms that include narrowband and broadband for both personal and machine to machine M2M communications including wireless power transmission capabilities.

ORCIP is an open infrastructure and remotely accessible that will allow the scientific community and industry to test, measure and certificate advanced optical & radio systems. This will facilitate companies to enter and pursue activities centred on innovation and knowledge, since release them of the expenditure required in the acquisition of expensive equipment and technical expertise for its operation. In summary, the infrastructure will be an instrument to lower the barrier of entry of domestic firms in innovation activities in the next-generation telecommunications areas.

Eligible Costs: 1 449 700,93 € (Total) / 1 449 700,93€ (IT)

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Funding (Orçamento de Estado - OE): 217 455,14 € (Total) / 217 455,14 € (IT)

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Groups: [Optical Communications Systems – Av.](#), [Mobile Networks – Av.](#), [Radio Systems – Av.](#), [Wireless Circuits – Av.](#), [Network Architectures and Protocols – Av.](#), [Optical Networking – Co](#)

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Partners: INSTITUTO DE TELECOMUNICAÇÕES

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