

# PROJECT / QuantPrivTel: Quantum PrivateTelecommunications

## QuantPrivTel

### Main Objective:

QuantPrivTel – Quantum Private Telecommunications is a research project that joins the theoretical expertise of the Security and Quantum Information Group (SQIG) at Instituto de Telecomunicações (IT) in Lisbon and the skills in quantum optics experiments of the Optical Communications group (OC-Av) at IT Aveiro to tackle new challenges in the emergent and multidisciplinary area of quantum private telecommunications. Its main scientific objectives are:


1. To propose new quantum protocols for important problems of privacy in telecommunications that cannot be solved with the now-famous quantum key distribution, namely the authentication of classical messages with enhanced security and fair contract signing;
2. To develop and implement efficient methods to generate and detect single photons in optical fibers, as well as pairs of entangled photons, and to use them to demonstrate in the laboratory our original quantum protocols for message authentication and fair contract signing.

Some contributions are also expected to more general and forward-looking problems, such as new schemes to improve phase estimation and precision measurements based on phase distinguishability and quantum correlations, and their possible applications to positioning systems and satellite communications, or the design of environment-assisted quantum channels, a very novel idea we intend to explore.

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Groups: [Security and Quantum Information - Lx](#), [Optical Communications Systems – Av](#), [Communication Theory – Lx](#)

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