

## Working Group 4, Milestone M4.2

# Long Range Optical Wireless Field Trial Implementation and Evaluation



## Introduction

The working group 4 (WG4) deals with long-range links mainly focussing on airborne and satellite FSO links. Reporting on various field trials and experiments, various STSM reports and internal documents summarizing collaborative work within the working group members have been presented fulfilling the Milestone 4.2. List of input documents and STSMs is presented below.

Technical details on the activities are detailed in Deliverable 4.2.

## Input Documents

The activities for WG4 targeting “Field trial implementation and evaluations” has been presented in terms of various input documents during working group meeting and discussed. Some of the topics that were covered are presented below.

1. Gerhátné Udvary Eszter (TU Budapest): “Background optical radiation measurement in Hungary”
2. Joana Sofia do Sul da Mota Torres (German Aerospace Center): “Development of High-Performance Adaptive Optics Control Algorithms for Free Space Optical”
3. Carlos Guerra-Yáñez, Innocenzo de Marco, Javier García Olmedo, Florian Moll, Stanislav Zvánovec: “Outdoors Evaluation of the Crosstalk Between Classical and Quantum Signals in a Free Space Terrestrial Link”
4. András Mihály: “Extending fiber-based quantum networks with non-terrestrial nodes”
5. Javier Garcia Olmedo: “Characterization of FSO cross-talk and impact on QBER”
6. Niek Doelman: “Field test with Optical Feeder Link, ground terminal”

## Short Term Scientific Mission

Moreover, several Short-term scientific missions were also done to maximize the collaborative work between different WG members. Some of them targeting the Milestone 4.2 are provided in the following. The work accomplished during some of the STSMs are planned to be published in the near future.

1. “Outdoors Evaluation of the Crosstalk Between Classical and Quantum Signals in a Free Space Terrestrial Link”, Carlos Guerra-Yáñez (CTU Prague to DLR), March 2024
2. “Theoretical loss analysis for free space optical links”, Máté Galambos (Budapest University of Technology and Economics in HU to Scuola Superiore Sant’Anna -IT), September 2023
3. “Characterization of FSO cross-talk and impact on QBER”, Javier Garcia Olmedo (DLR to CTU Prague), June 2024
4. “Tomographic Reconstruction Algorithms for Laser-Guide-Star-Assisted Pre-Distortion Adaptive Optics Systems,” Ilija Hristovski (DLR to ESA Teide Observatory-ES), June 2024