

# Optical key building-blocks for Quantum Applications

*EPIC Meeting on Single-Photon Sources and Detectors*

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Laser World of Photonics  
26 April 2022



Ms Lola COURTILLAT  
EU Project Manager



# About AUREA Technology

- Independent French SME founded in 2010
- 100% EU27 company (France)
- Key building-blocks for Quantum Communications
- > 300 customers worldwide
- Strong R&D (> 50% PhD in Quantum Tech.)
- SPIE Prism Awards 2020 & 2021 Finalist

**AUREA**  
TECHNOLOGY



*EU27 map*

# Leading provider of Quantum Optical Instruments

**High-performance Key building-blocks for Quantum applications:**

**Photon generation**



*Entangled Photon Sources*

**Photon Detection**



*Single Photon Detectors*

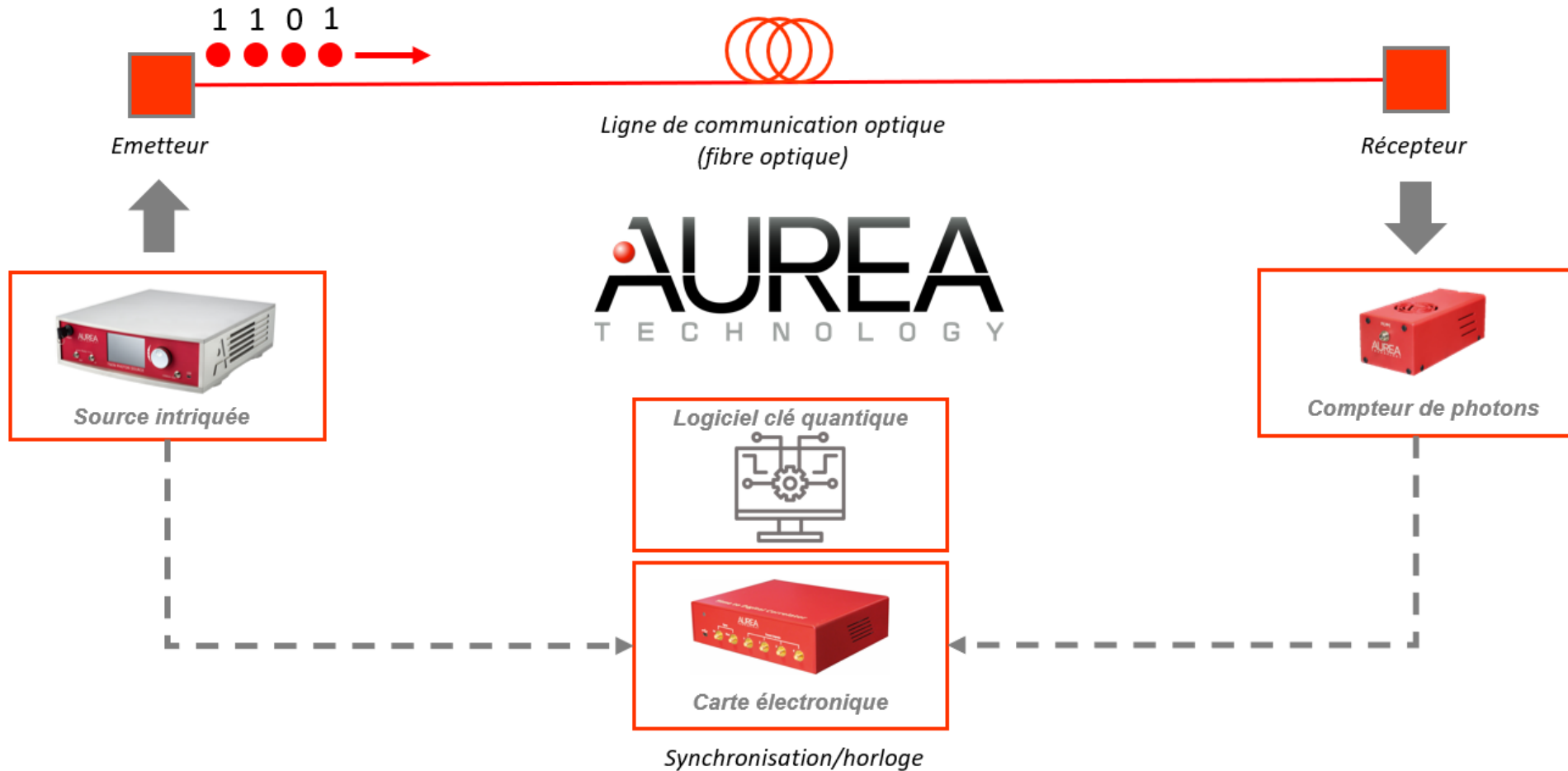
**Timing electronics**



*Photon time correlation*

- ✓ **One-stop-shop solution**
- ✓ **Easy to integrate (room temperature, UART link...)**
- ✓ **Scalable production**
- ✓ **World-class technical support**

# Example of Quantum Communications set-ups



# AUREA Technology structure

## Project and sales organization in Europe

### European Projects



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### Technical Sales & Support



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**AUREA TECHNOLOGY SUPPORTS**  
**You can trust us!**

**EURO-QCI**



# European projects



## Photon Source

- Entangled Photon Source
- Photon Source Characterization and qualification
- Telecom wavelength

## Quantum link Transmission

- Quantum Key Distribution optical transmission
- Quantum optical transmission Characterization and qualification
- Encoding & decoding building blocks

## Single Photon Detector

- Geiger-mode Single Photon Counting Avalanche Photodiode (SPAD) at room temperature
- Improved InGaAs SPAD (GHz – High QE)
- Single Photon Counting Characterization and qualification
- Telecom Wavelength

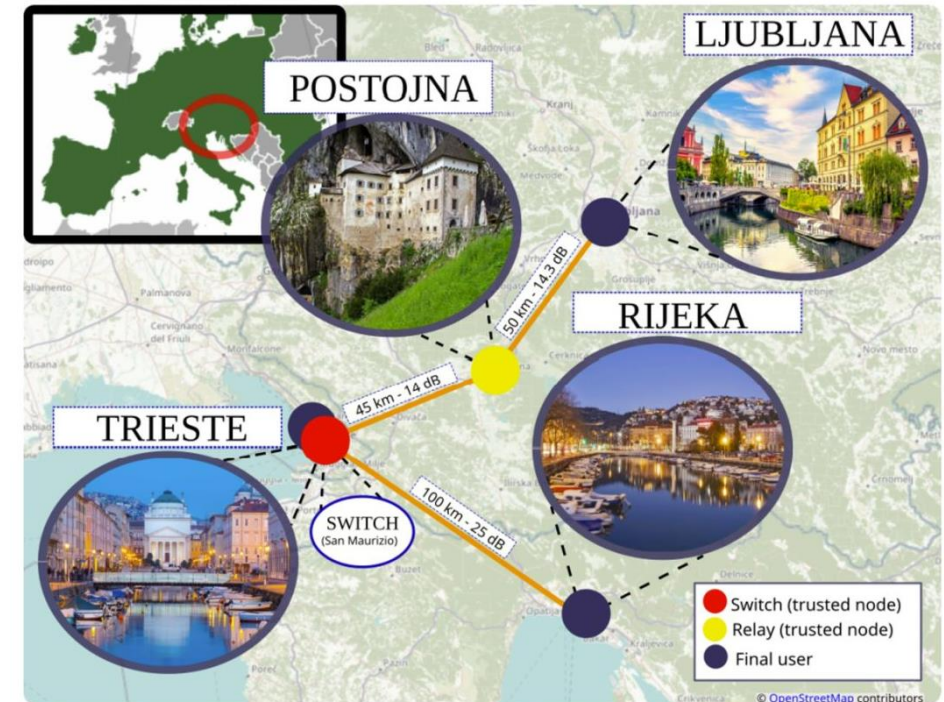
# EURO-QCI: Ground Segment

## Largest inter-European Quantum Network

- SPD\_NIR\_OEM **single-photon detector** is integrated in a **large inter-European Quantum Network!**
- This first **QKD network** deployment between 3 different countries paves the way for the **future European Quantum Infrastructure**.
- **Achievements:**
  - ✓ **3 countries** Italy – Slovenia – Croatia
  - ✓ **1 Quantum Secured G20 Communication**
  - ✓ **Only few days** to set up the entire network from scratch
  - ✓ **Long-term stability**
  - ✓ **1 VPN** with enhanced security by QKD

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TECHNOLOGY

QTI





# EURO-QCI: Space Segment

## Quantum Space Project

- High performance Entangled Photon Source Demonstration Model
- Space based Entangled Photon Source
- 100% EU Technology
- Quantum communication link at 1550 nm
- Objectives:
  - Generation rate > 1 GHz : **over achieved**
  - Transmission Key Rate > 10 bits/s : **over achieved**
  - LEO & GEO scenarii



# What we are looking for

**AUREA Technology is looking for new partners  
building ground & space Quantum communications systems!**

**Core technologies:**

**Photon Sources, Photon Detectors, QKD building blocks**



Meet us at  
**LASER WORLD OF PHOTONICS**  
26th - 29th April 2022 - Munich  
**BOOTH #A4 - 100**

The logo for "LASER World of PHOTONICS" is displayed in the bottom left corner. "LASER" is in green, "World of" is in a smaller black font, and "PHOTONICS" is in orange. To the right of the text is a graphic of a cross made of dots. The background of this section is an aerial view of a park with a lake and fountains.

**LASER** World of  
**PHOTONICS**





# THANK YOU !

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