

General information

Company name: NPC Srl

Contacts:

Enrico Callegati

callegati.e@crit-research.it

+39 059 776865

Niccolò Bellini

n.bellini@ncpitaly.com

+39 349 1593659

Area of interest	Choose Y or N
○ Functional encryption and reduction of leakage (e.g., anonymization or obfuscation)	N
○ Ultra-lightweight cryptology and ultra-high-speed cryptographic algorithms including quantum cryptography	N
○ Physical cryptanalysis, including tampering, side channel, faults injection attacks, and security of tools for good software implementation and validation practices	Y
○ Authenticated encrypted token research for mobile payment solution	Y
○ Innovative cryptographic primitives and complementary non-cryptographic privacy-preserving mechanisms to enforce privacy	Y
○ New techniques, such as quantum safe cryptography, which are secure from quantum computers	N
○ Quantum key distribution	Y
○ Automated proof techniques for cryptographic protocols	N



SPACE MIND

- *NPC - SpaceMind Division:*
 - **Mission** → R&D of products dedicated to the space sector
 - **Team** → Msc Aerospace Engineers with background in space technologies and experience in nanosatellite cubesat class missions
 - **Vision** → To become a turnkey solutions provider for nanosatellite applications
 - Key **Products**:
 - ARTICA: a plug and play deorbiting sail for Cubesat application.
 - MORAL: High performances ALT-AZ mount for 1m class telescope and pointing instrument.
- *No direct experience in H2020 but can rely on **competent engineering partner** (CRIT Srl)*

What is an aerospace company doing in a cryptography brokerage event?

OBJ → To develop a technology for the implementation of a **QKD communication protocol between CubeSat & Earth**

- QKD communication via **optic fiber** has now **intrinsic limit** → **range** (100km) due to photon absorption by cable glass
- Satellite usage can **overcome QKD limits**:
 - Improved performance in terms of **communication range** (no distance limits) as photons only cross the atmosphere
 - Physically-logistically **complicated to interfere**
- Challenges:
 - Optics & quantum generator **miniaturisation for satellite integration**
 - **Performance** assurance (pointer accuracy, link-bdg.)
 - Devices (satellite receiver, telescope) **customisation**
- Exploitation vision (→ 2MLN€ turnkey solution):
 - Secure communication **service to end users** (i.e. banks)
 - Platform industrialisation for **security solution providers**
- High worldwide interest for laser orbit communication (JPN, NASA, China, **ESA → EDRS satellites working @1.8 Gbit/s**)
- High scientific impact on **several domains** (aerospace, physics, ICT)
- Technical partners → Univ. of **Padua** (Public. on single photons sat. exchange [2008], quantic sat. communication [2015])



Available for integration in ongoing proposals