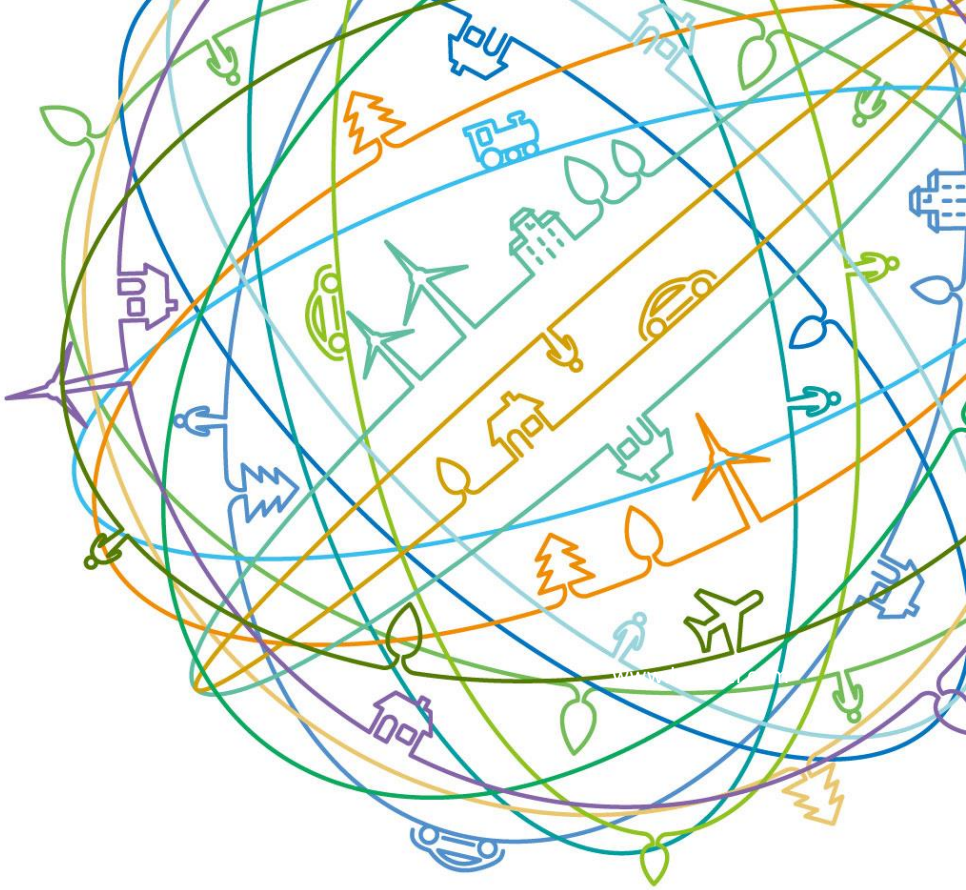
# Quantum Encryption

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02.02.2018

# 31. Jar

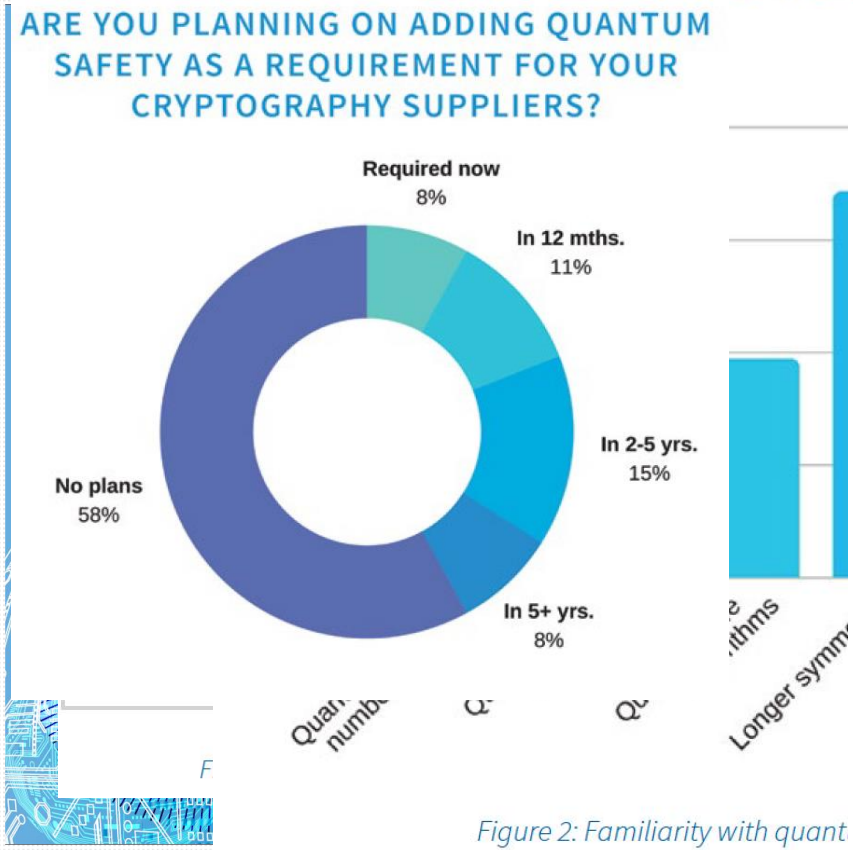



Figure 2: Familiarity with quant

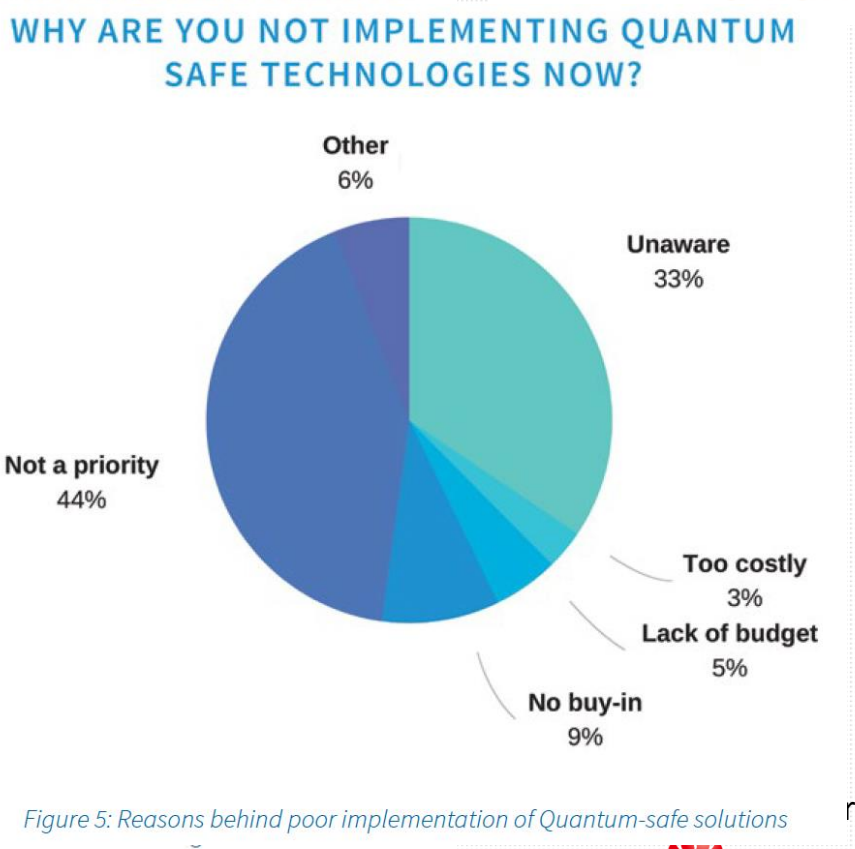
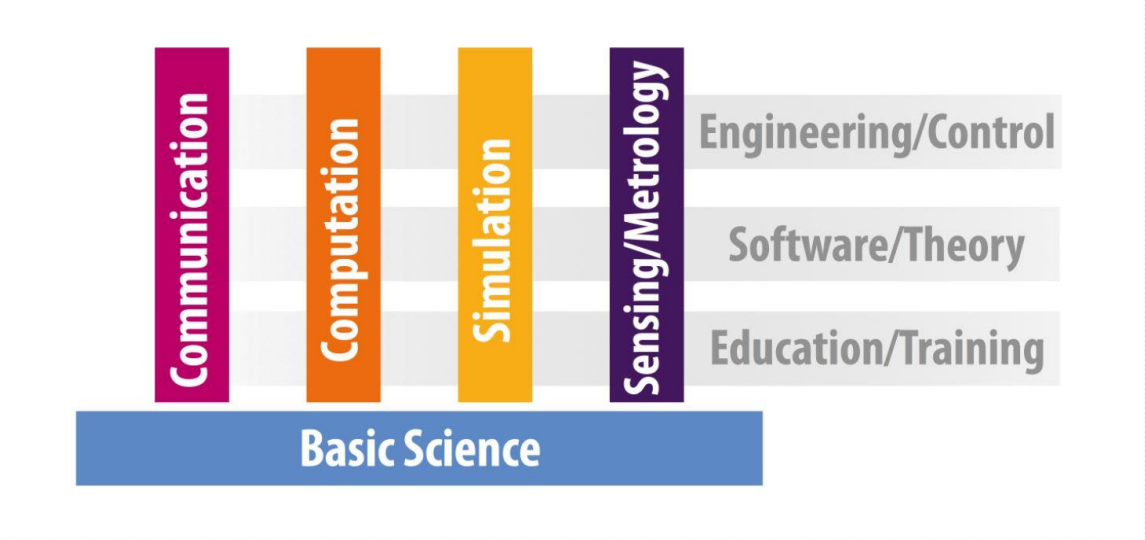



Figure 5: Reasons behind poor implementation of Quantum-safe solutions

# EU Quantum Technologies Flagship 2018 - 2028

The Quantum Flagship is a 10 years program initiated by EU with 1000M€ funding




https://ec.europa.eu/digital-single-market/en/news/intermediate-report-quantum-flagship-high-level-expert-group

# Development stages:

**1st generation:**
*pre-commercial proof-of-concept prototypes*

**2nd generation:**
*point-to-point systems over dark fibre*

**3rd generation:**
*10+ Mbit/s, long-term stability*

**4th generation:**
*integrated at component and application level*

I II III IV

TRL

H2020+

secure cloud

e-health

ITSaaS

smart homes

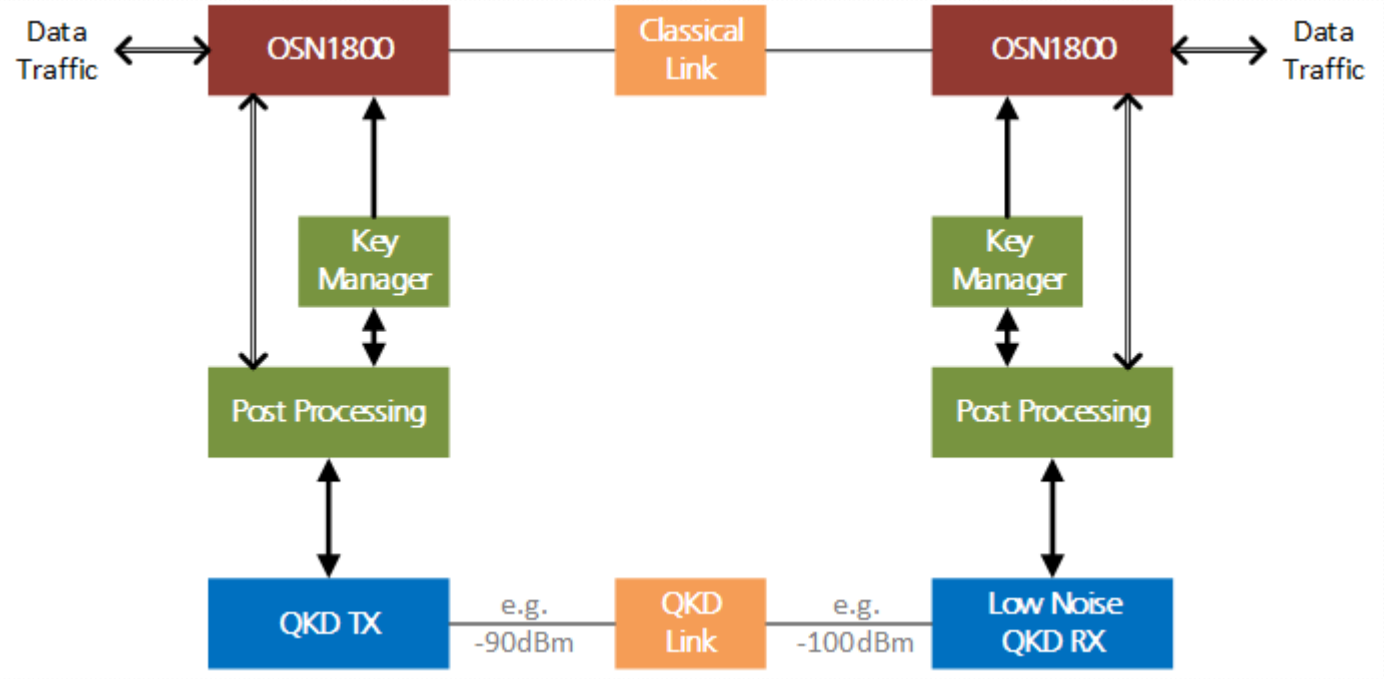
e-voting

Industry 4.0

smart grid

1 / CapEx

# Overall system architecture



# Team QCN

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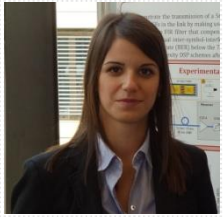
Dr. Fred Fung



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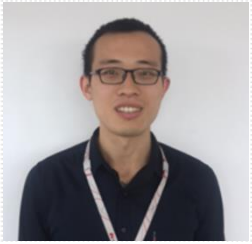

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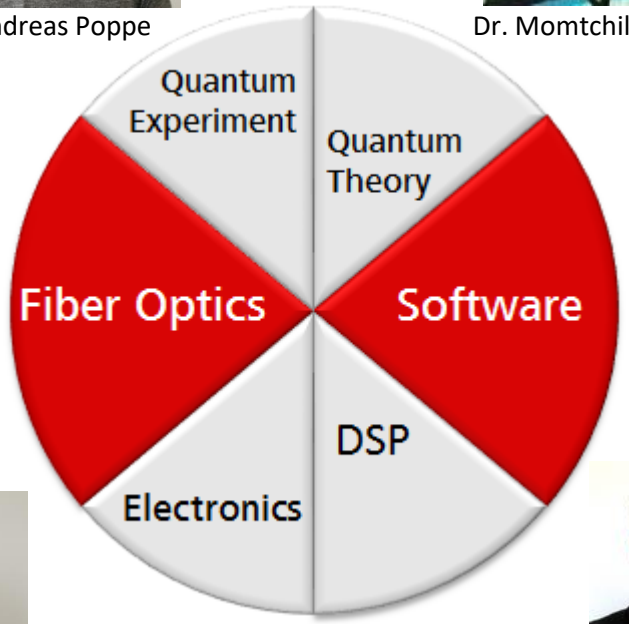
Dr. Stefano Bettelli




Dr. Hans Brunner

Dr. David Hillerkuss

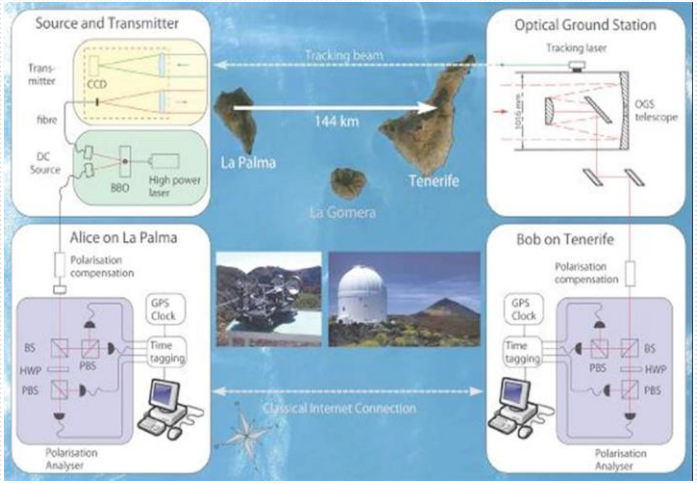
Dr. Spiros Mikroulis

Dr. Maxim Kuschnerov

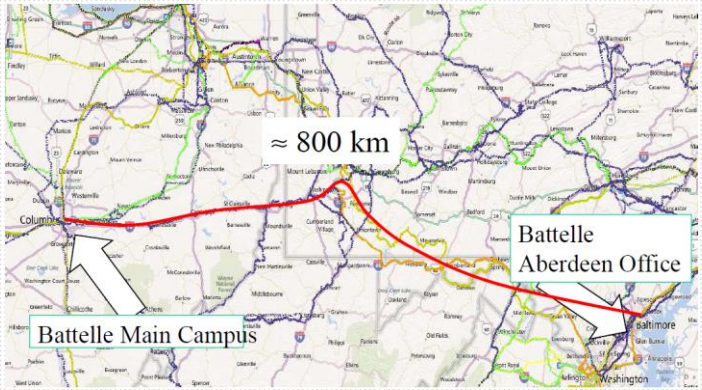
# Commercial QKD devices today

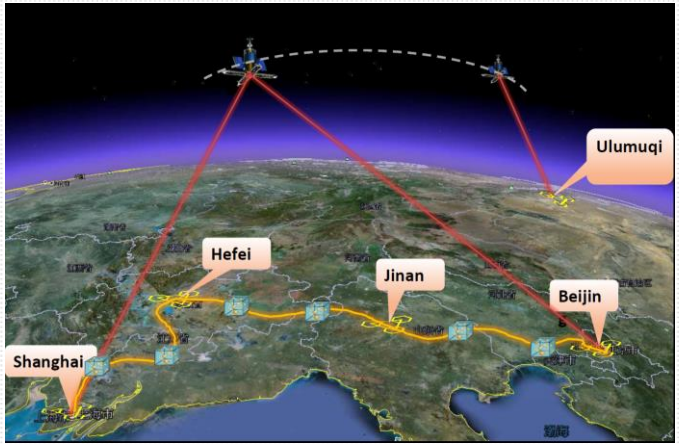
- **QuantumCTek (China):** Quantum gateway with high number of deployments, polarization encoding
- **IdQuantiqe (Swiss):** first commercial product (Datacenters, Banks, etc.), requires dark fibre for quantum channel
- **Toshiba QKD (Japan, UK):** System-boxed, standalone, high-rate system still under development, UK Quantum Hub


# QKD Networks

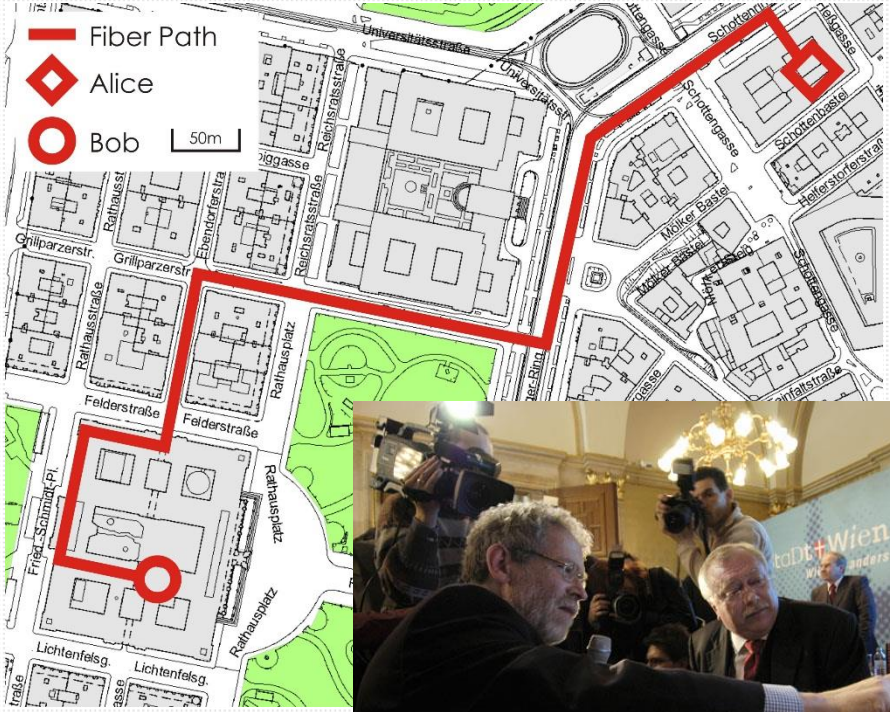




Multiple Trusted Repeater Networks



# QKD demonstrations 2004 and 2017





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