



The QCI.dk-CB Project

- Quantum initiatives in DeiC
- The current cross border project
- The wider perspectives...

Government strategy for all things "quantum"

11 Initiatives, 2 of which are implemented by DeiC:

- Quantum research and talent development (90 MDKK)
- Strengthening infrastructures against threats from quantum technologies (40 MDKK)

National Strategy for Quantum Technology

Part 2 – Commercialisation, Security and
International Cooperation

Quantum research & talent

Grants and Funding

Q-Computing

Q-Algorithms and Software

Q-Competences

Q-Communication

Services

Resources

Projects and collaborations

Niels Bohr Quantum Summer School

Services

International cooperation and EU projects

Upcoming services

SERVICES

Quantum

Quantum Compute Consulting
(Q-Access)

Quantum Sandbox Access
(Q-Access)

Quantum Specialised Access
(Q-Access)

Scholarships
(Q-Algorithm)

Scholarship Counselling
(Q-Algorithm)

Alumne program
(Q-Algorithm)

Competence development
(Q-competence)

Niels Bohr Quantum Summerschool
(Aktivitet)

EuroHPC LUMI-Q
(Projekt)

EuroHPC QEX
(Projekt)

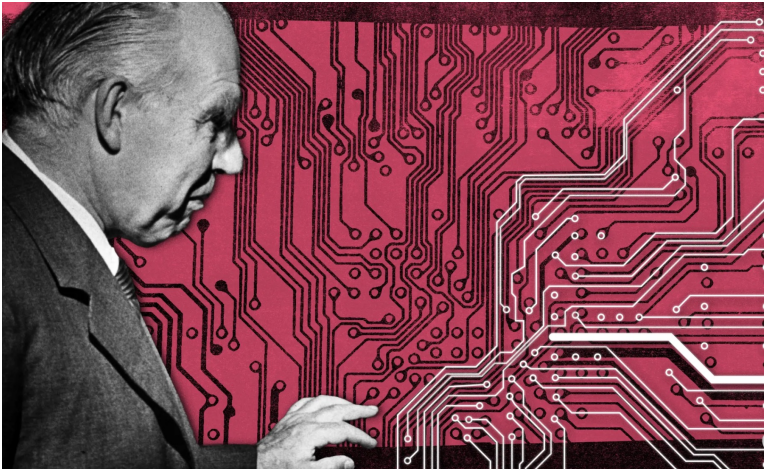
Overview of the Stakeholder Landscape in the Danish Quantum Ecosystem:

[https://www.deic.dk/sites/default/files/2025-11/Quantum Overview of the stakeholder landscape in the Danish Quantum Ecosystem.pdf](https://www.deic.dk/sites/default/files/2025-11/Quantum%20Overview%20of%20the%20stakeholder%20landscape%20in%20the%20Danish%20Quantum%20Ecosystem.pdf)

Quantum Computing Guide:

[https://www.deic.dk/sites/default/files/2025-11/Quantum Computing Guide october 2025.pdf](https://www.deic.dk/sites/default/files/2025-11/Quantum%20Computing%20Guide%20october%202025.pdf)

TARGET GROUPS AND STAKEHOLDERS



Danish Quantum Communication Infrastructure



DECLARATION ON A
**QUANTUM COMMUNICATION
INFRASTRUCTURE**
FOR THE EU

All 27 EU Member States

have signed a declaration agreeing to work together to explore how to build a quantum communication infrastructure (QCI) across Europe, boosting European capabilities in quantum technologies, cybersecurity and industrial competitiveness.

@FutureTechEU #EuroQCI



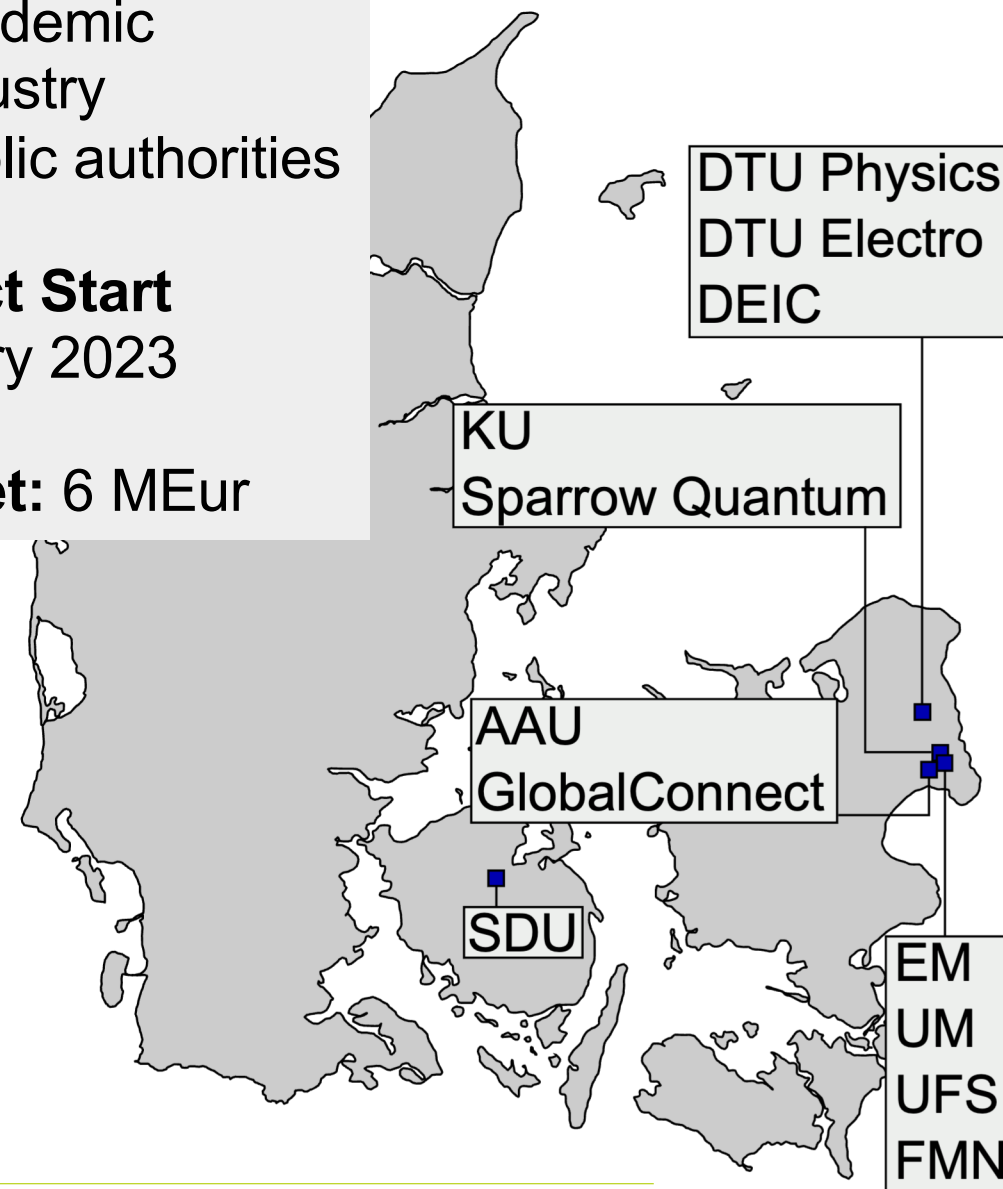
The EuroQCI will be a secure quantum communication infrastructure spanning the whole EU, including its overseas territories.

Triple-helix

- Academic
- Industry
- Public authorities

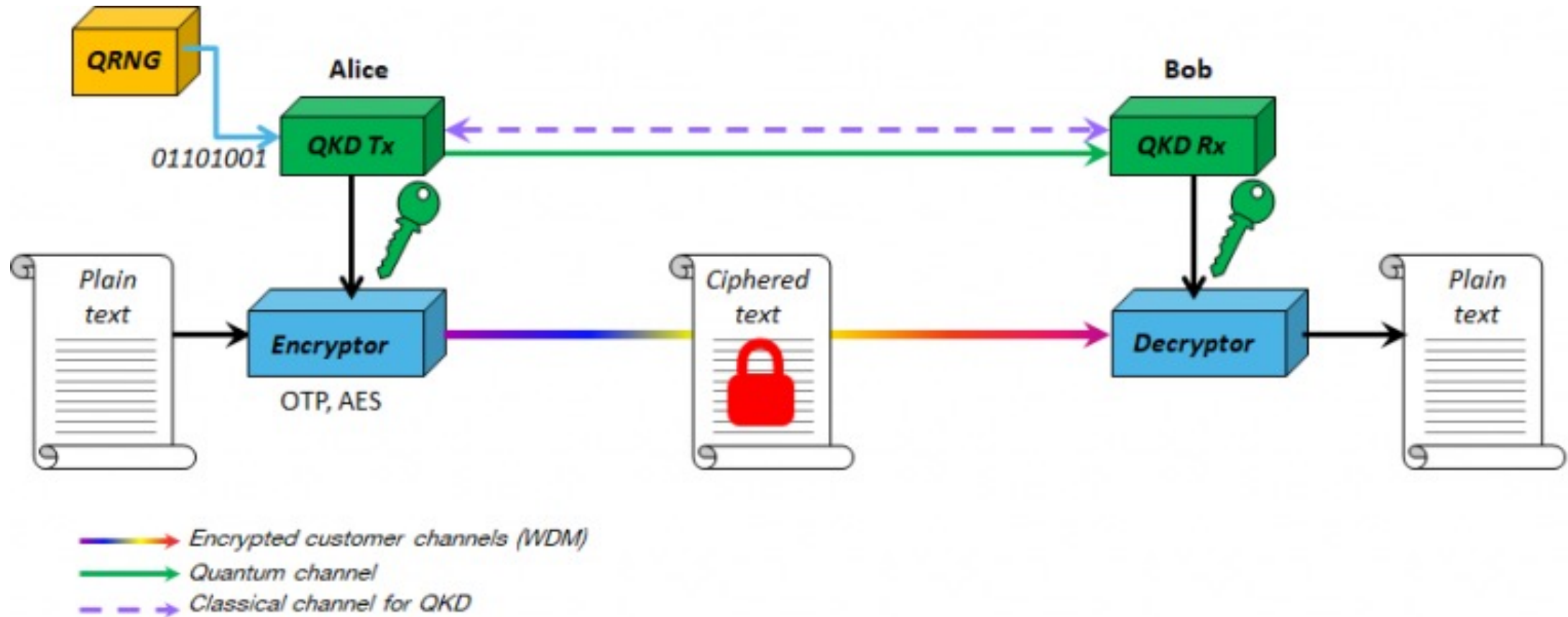
Project Start
January 2023

Budget: 6 MEur

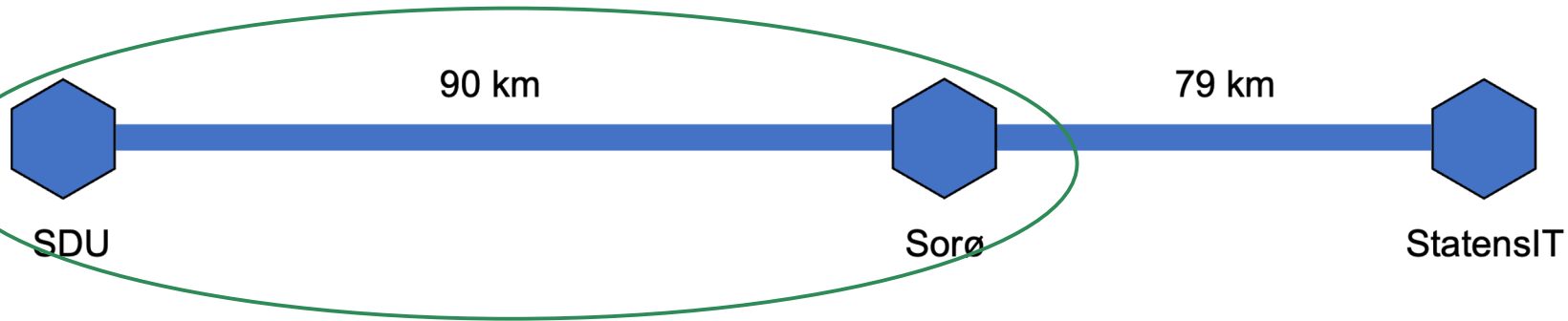


QCI.dk – The Danish EuroQCI project

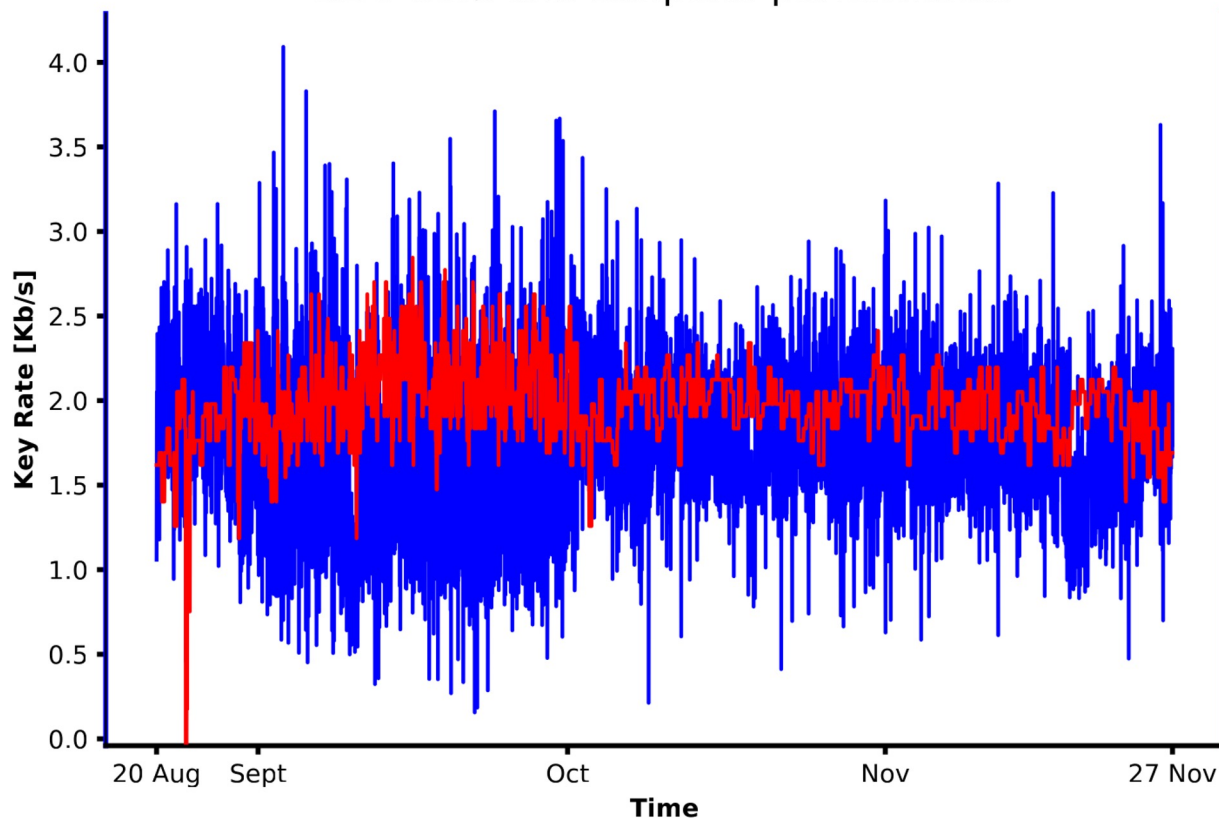
- The 4th quantum initiative in DeiC
- Financed by DEP/CEF + state co-financing



First Link: Up and Running



SDU-Sorø link temporal performance



Key Rate Distribution

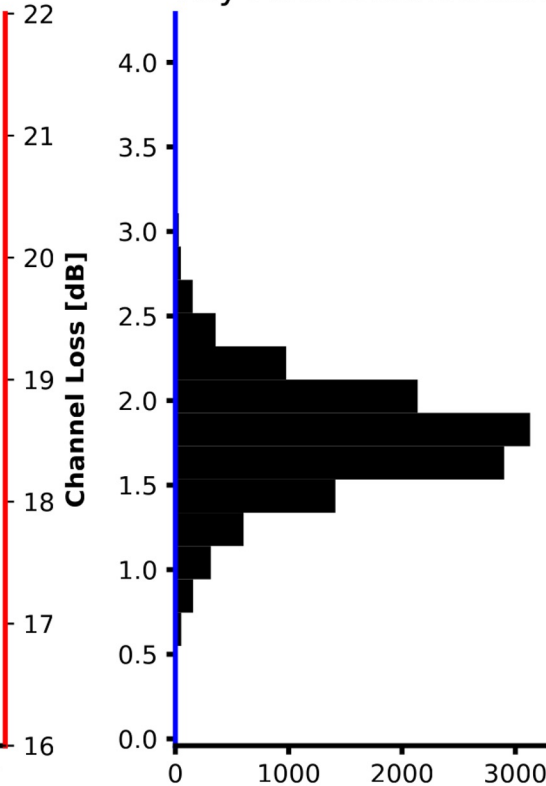
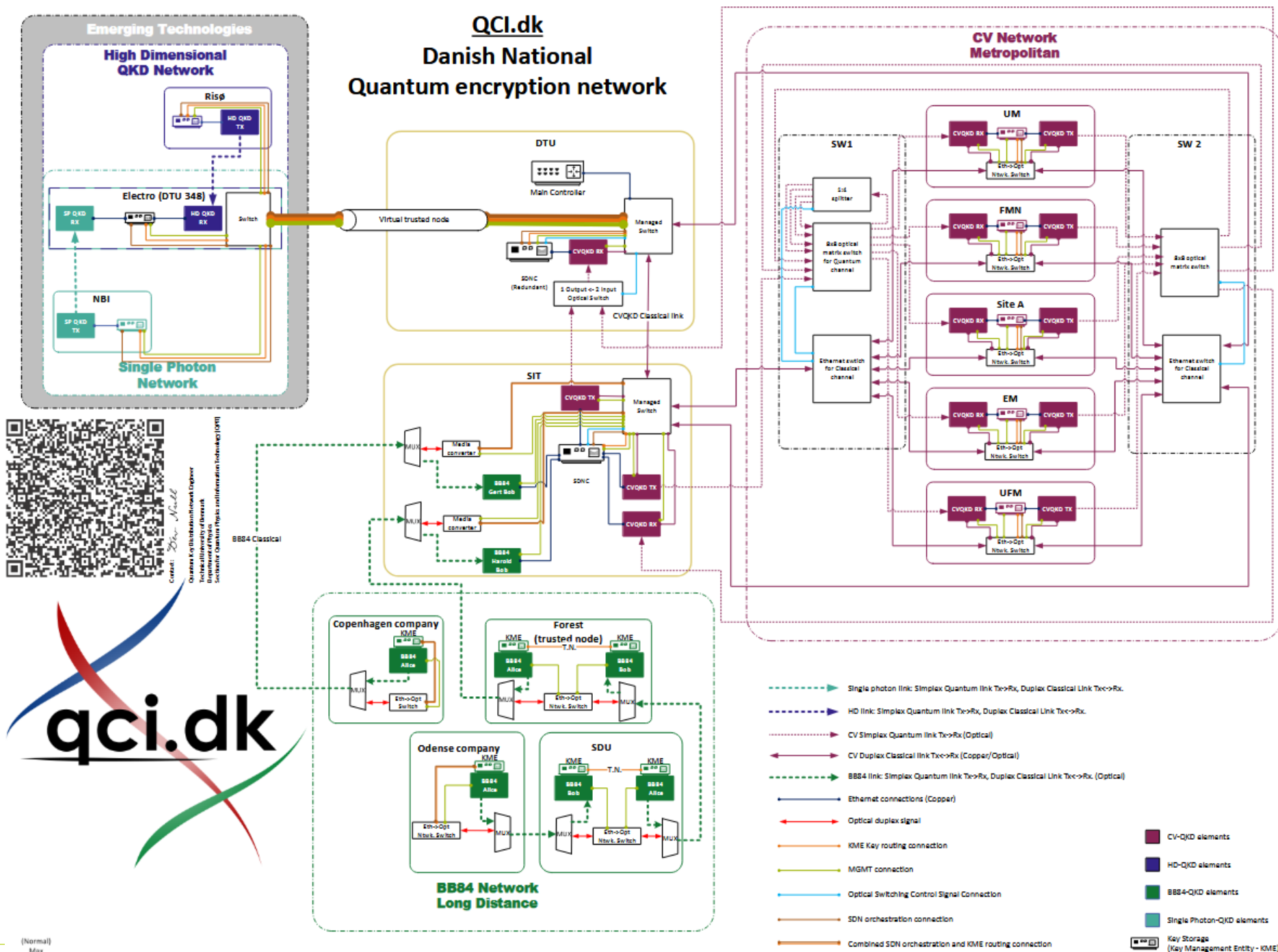


Diagram of the whole QCI.dk infrastructure



EuroQCI Cross Border

- Islands of national projects
- Interconnect these in a number of "cross-border" projects
- DeiC is leading a Danish-Swedish-Polish project, named QCI.dk-CB
- Project budget 10 MEUR

A map of Europe where the 27 member states of the European Union are highlighted in a teal color, while non-member states are shown in light gray.

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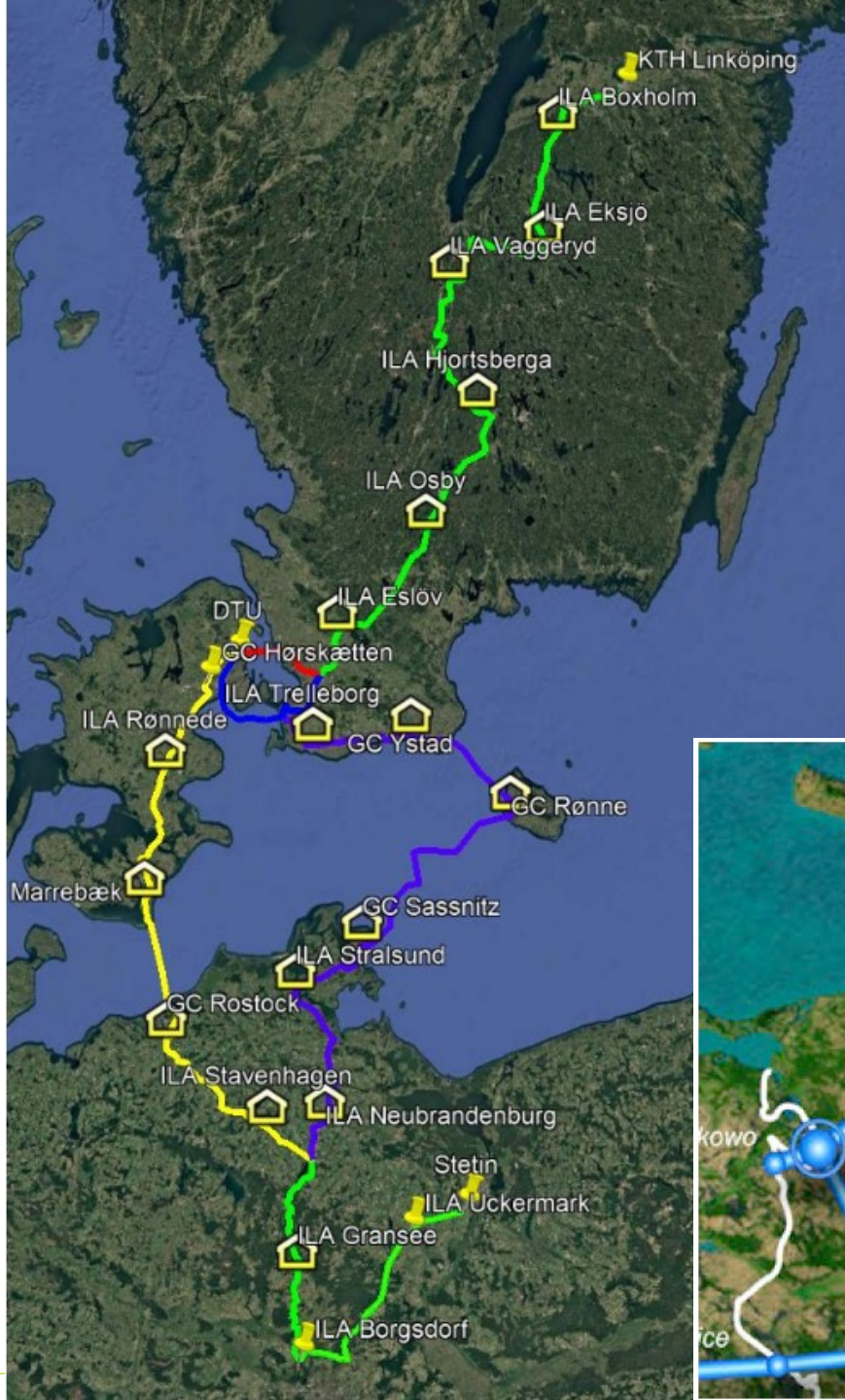
The partners in QCI.dk-CB



Partner	Relevance in the project	Roles in the project
DTU-DeiC	The Danish NREN, part of Danish NatQCI	Management, Operations of large fibre-based infrastructures
DTU-Physics	Leading the Danish NatQCI, experience with QCI equipment	Equipment procurement and configuration
PCSS	The Polish NREN, part of the Polish NatQCI.	Management of Polish part
KUT	Regional network operator in the Polish NREN and NatQCI	Deployment and operation of Polish part
SUNET	The Swedish NREN	Operations of large fibre-based infrastructures, liaison to Swedish NatQCI
ESS	Use cases and natural hub in the topology	Important new use-cases
GlobalConnect	Unique experience in trans-national infrastructures and cable owner	Consultancy, use cases, expertise on fiber infrastructures

QCI.dk-CB

- 1240 km “new” dark fiber
- 840 km fiber in PIONIER
- 2 to 5 CB connections
- Approx 20 sets of QKD equipment
- >1kbit/s
- 10 MEUR
- 3,5 years from 2026
- Co-funding from governments in Denmark, Poland and Sweden



DeiC



www.qcidkcb.net



42 months



QCI.dk-CB Timetable		2026												2027												2028												2029					
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
WP1	Project management, coordination and quality assurance																																										
T1.1	Administrative project management		MS1																																								
T1.2	Cross border cooperation coordination																																										
T1.3	Technical coordination and risk management																																										
T1.4	Reporting																																										MS2
WP2	Design, deployment and operation of the QCI infrastructure																																										
T2.1	Preliminary design of the QCI infrastructure												MS3																														
T2.2	Procurement of fiber and housing																	MS4																									
T2.3	Procurement and preparation of QCI equipment																	MS5																									
T2.4	Deployment of QCI infrastructure																							MS6																			
T2.5	Operation of the QCI infrastructure																																										
T2.6	Performance evaluation																																										
WP3	Interoperability with the connecting QCIs																																										
T3.1	Establishing common technical practices																		MS7																								
T3.2	Pre-installation trials																																										
T3.3	Facilitating and monitoring use cases																																										
WP4	Dissemination and outreach																																										
T4.1	Website				MS8																																						
T4.2	News, updates and documentation																																										
T4.3	Document sharing, internal communications, events				MS9																																						
T4.4	Coordination with other QCIs																																										
WP5	Plan for the sustainability and continuation																																										
T5.1	Desk-top study (the catalogue)																																										
T5.2	Engage with relevant stakeholdes																																										
T5.3	Reporting (The Roadmap report)																																										MS11

Steps ahead



- Fiber procurement in 2026
- Hopefully also procurement of QKD equipment in 2026 (or early 2027)
- Development of a universal key management platform
- Development of an out of band communications and management system based on one fiber

Hopefully, the fiber infrastructure can be “multi-use”

- QKD signals need – to some extent – to be alone in the fiber
- But we rent fibers in pairs
- On the other fiber, you can use WDM (bi-directional) for a range applications:
 - Normal network traffic
 - Surveillance and management of the QKD equipment
 - Sensing
 - Time and frequency distribution
- Even though QKD may not be high on your agenda – yet – there are good reasons to follow the development of the infrastructure that it leads to



For the whole society – not just research



- Some use cases are from research (ESS)
- Most use cases, however, are not research related
- This QCI is for the whole society
- May be used to encrypt research network traffic
- But equally, this QCI can be used to encrypt data transmission on any network – provided the endpoints are “close” to our points of presence
- We help getting Europe ready for the “cryptocalypse”

Security is many things...



- DKCERT services
- Compliance, predictability, quality assurance
- Risk-based approach to suppliers and software development
- Resilience towards outages and sabotage
- Technology that prevents evesdropping and intrusion
- Digital sovereignty and autonomy
- The arms race in quantum computing
- The arms race in the field of AI
- The arms race in sensing and other kinds of sabotage prevention
- Resilience towards GNSS jamming

} QCI

If you want to...



- Know more
- Participate
- Help finding applications for QKD

Please contact us (or one of the other partners)

Tak

- Questions and comments

Martin Bech

martin.bech@deic.dk

21760625

DeiC Netdrift

netdrift@deic.dk

35 888 222

www.deic.dk

serviceinfo.dk

