



CELTIC-NEXT



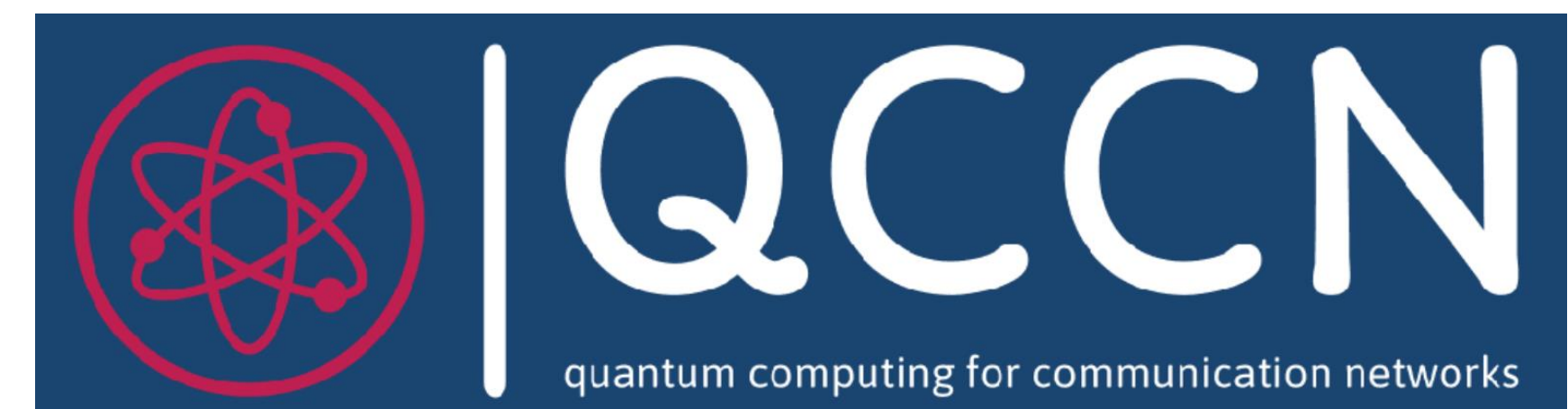
Proposers Brokerage Day

18th September 2024, London

Pitch of the Project Proposal

Quantum Computing for Communication Networks (QCCN)

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QC in Networks. Why?

Main Benefit

*Improved computation of **complex and time-sensitive comp. tasks** in comm. networks by **quantum computing (QC)**.*

Enables data loss reduction, network automation, better QoE, ...

Added Value

*New **QC algorithms for network optimization and signal processing** tailored to neutral atom and photonic QC hardware.*

Reasons for own Participation

Experience in QC algorithm design for resource optimization in networks and solid background in communications engineering.

Organisation Profile

*quitt: quantum information technology and
telecommunications*

*Start-up in Pre-Seeding Phase (not yet funded)
Located in Germany*

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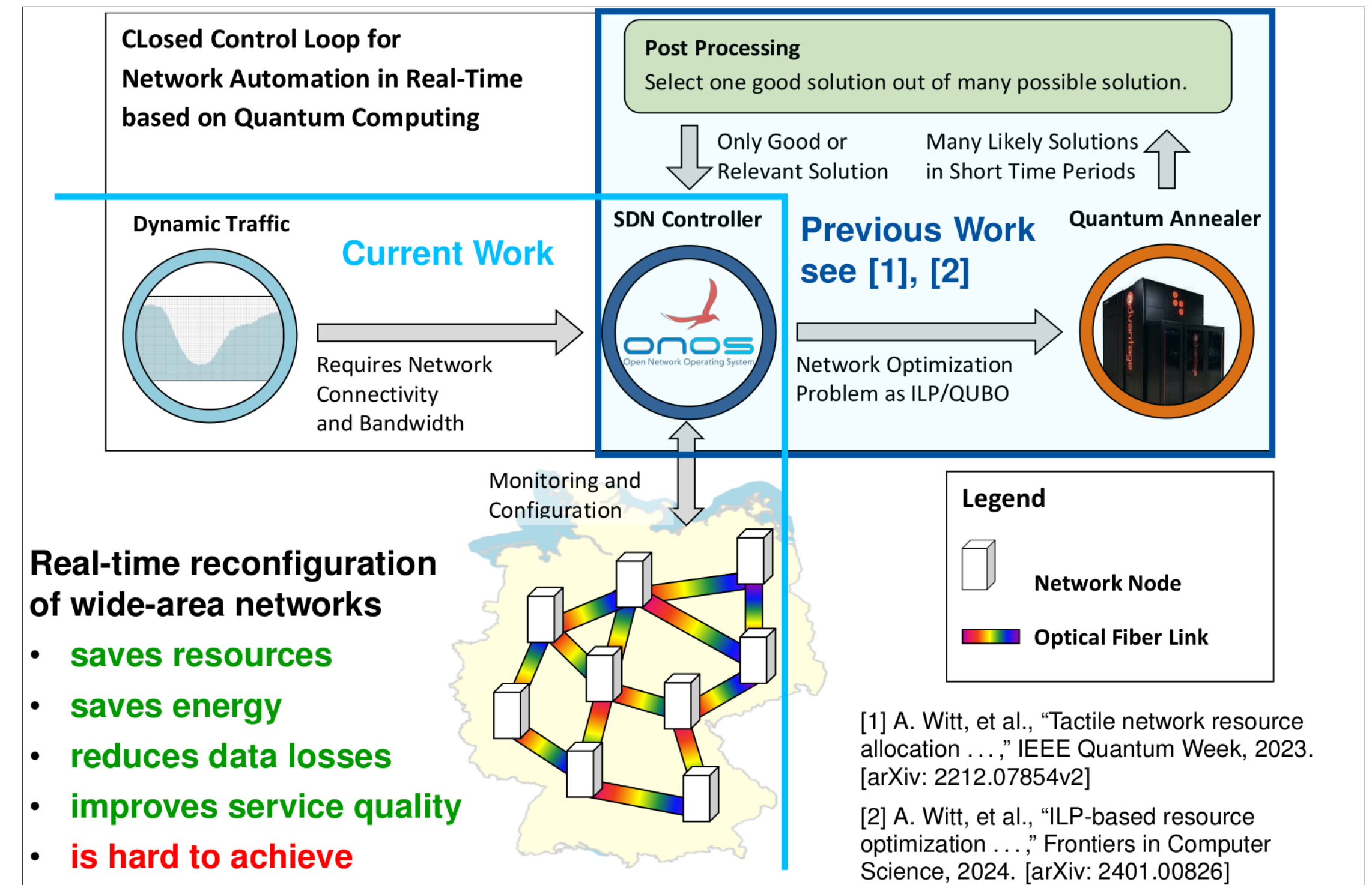
QC for Optimization

Vision

Real-time optimization of networks to obtain network automation.

Motivation

QC can solve NP-hard problems with an exponential speed-up compared to classical computing.



Presented at IEEE HPSR July, 2024.

QC for Signal Processing

Vision

Supporting 6G/7G signal processing in X-hauling by optical quantum computing.

Motivation

6G NR uses small cells, many antenna per CU/DU, provides BB signals for many users.

Optical QC can reduce energy consumption and seems embeddable in small-packaged, room-temperature systems in near future.

Expectation

Outcome

Design and evaluation of QC algorithms for ILP-based optimization and signal processing in 6G X-haul.

Simulation environment, 2 Papers/year, patents.

Impact

Demonstration of real-world applications realized with QC.

Schedule

- 1. year: Solving network ILP on gate-based/neutral atom QC*
- 2. year: X-haul signal processing concept with QC*
- 3. year: Refinements and Improvements*

Partners



Consortium doesn't exist, yet.

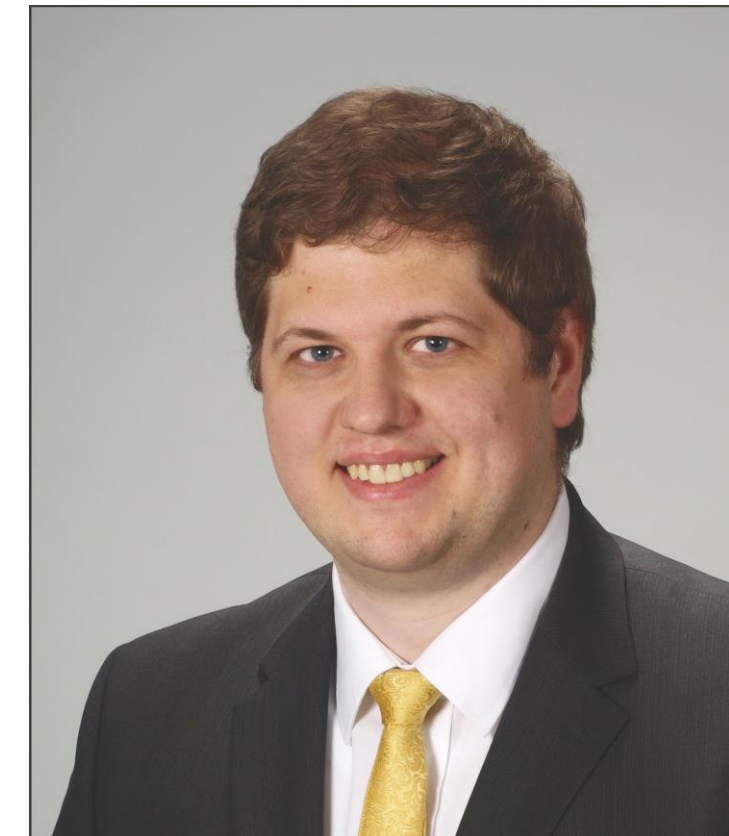
2 German partner from the field of theoretical quantum physics with experience in QC possibly available.

*Searching: Partner with keen in
6G X-hauling, Radio-over-Fiber, Optical Transmission*

Contact Info

For more information and for interest to participate please contact:

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Presentation is available via:



Join the Consortium Building Session Tuesday 24th at 15 CET

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Meeting number (access code): 2744 998 1092

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