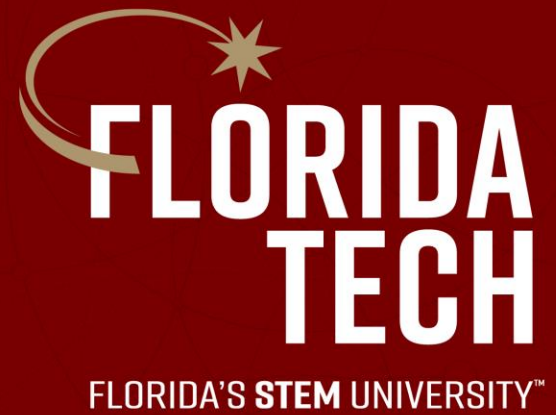


***Department of Electrical Engineering
and Computer Science***



Senior Project

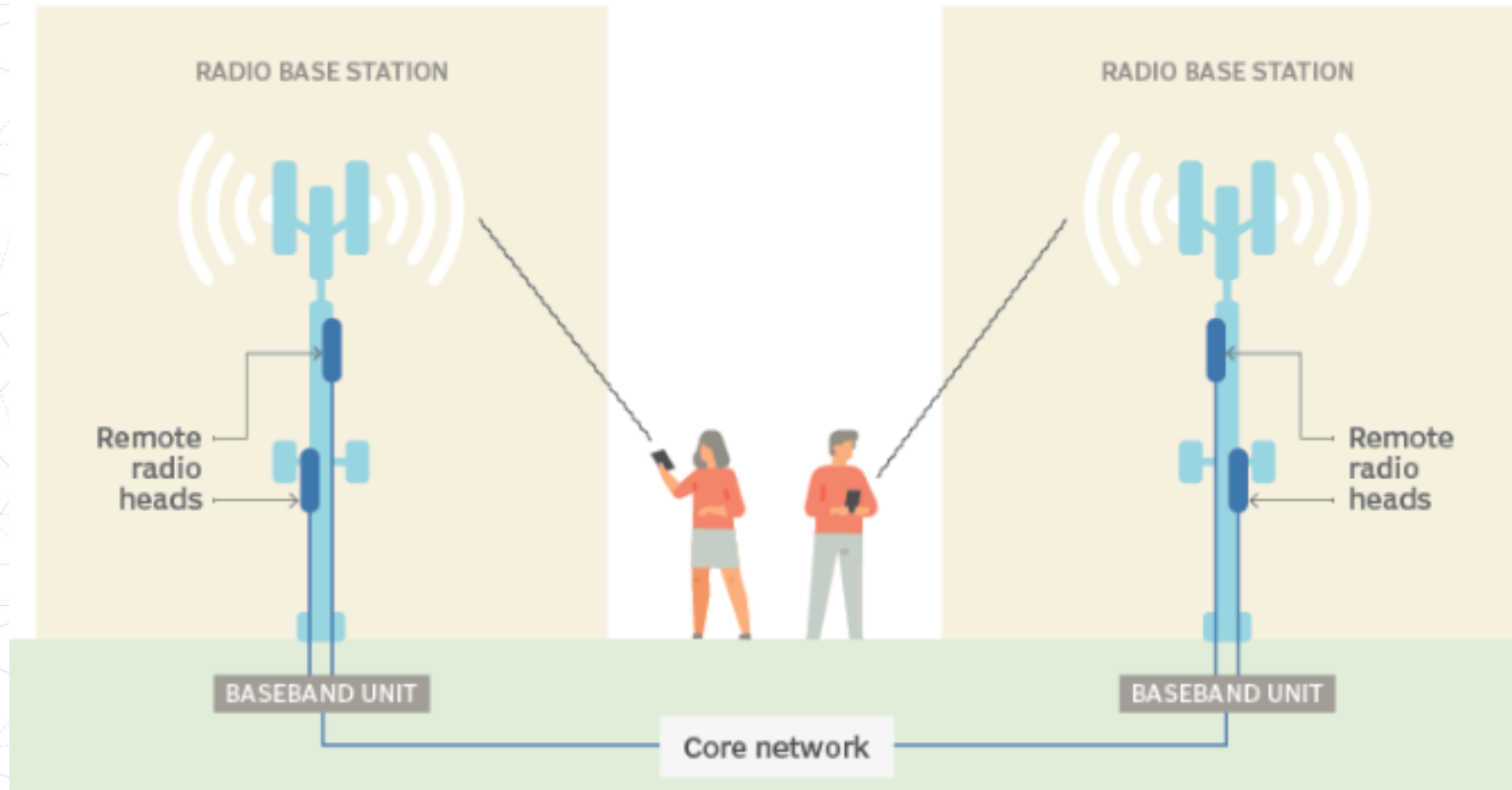
Dr. Aydeger's Pitch

Dr. Abdullah Aydeger

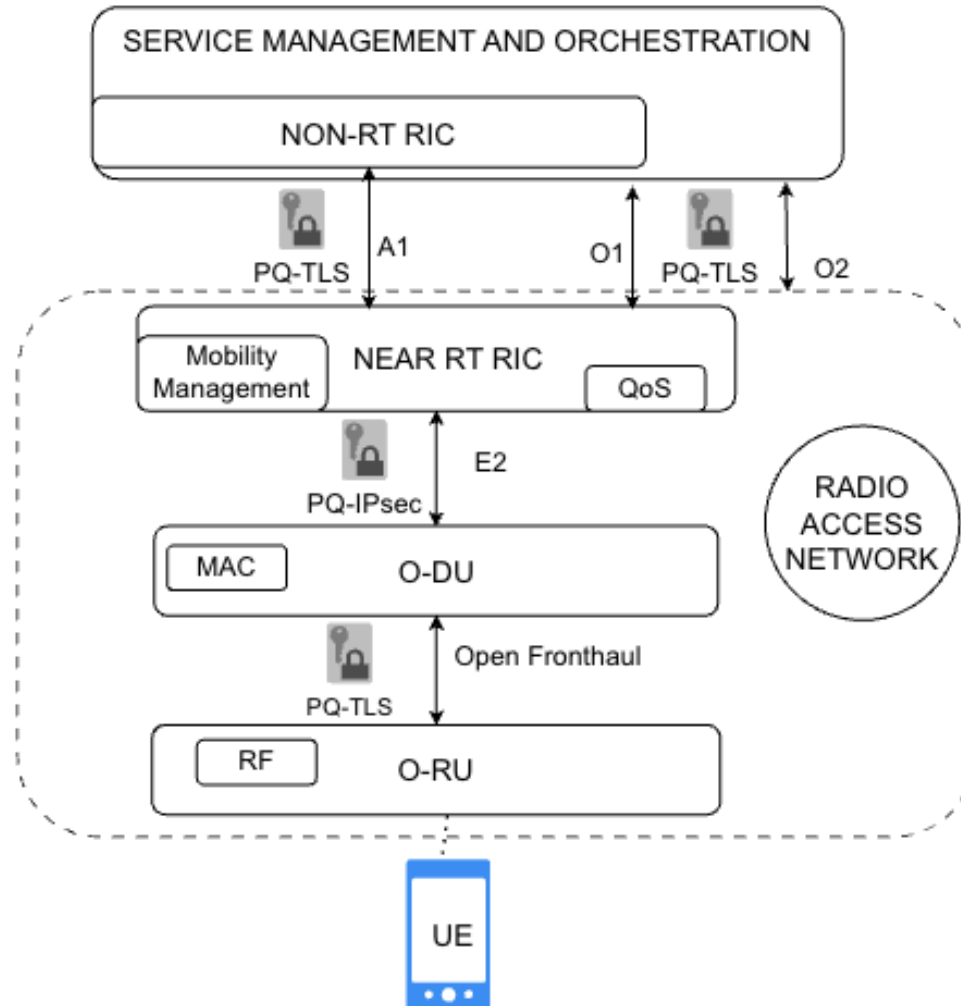
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Radio Access Networks (RAN)



Open Radio Access Networks (O-RAN)



Post-Quantum Cryptography for O-RAN

O-RAN Interface	Classical Encryption	Post Quantum Encryption
O1 Interface	TLS	PQ-TLS (e.g., Kyber)
O2 Interface	TLS	PQ-TLS (e.g., Kyber)
A1 Interface	TLS	PQ-TLS (e.g., Kyber)
E2 Interface	IPSec	PQ-IPSec (e.g., NTRU)
Open Fronthaul Interface	TLS	PQ-TLS (e.g., Kyber)
Open Midhaul Interface	IPSec	PQ-IPSec (e.g., NewHope)
Authentication	OAuth	PQ-DSA (e.g., Crystals-DILITHIUM)
Random Number Generation	PRNG	QRNG (Quantum Random Number Generator)

Steps

- Learn O-RAN testbed and run basic simulations.
- Learn PQC libraries and be able to change or play with them.
- Integrate PQC libraries for O-RAN interfaces.

Project 2: 5G/B5G for Non-Terrestrial Networks

- Learn NTN environments
- Run 5G testbed with such parameters (physical distance, signal propagation, line-of-sight, etc.)
- Test and verify

**Thank you.
Questions?**

Dr. Abdullah Aydeger