Improving QoE using OSC near-RT RIC and OAI 5G RAN leveraging O-RAN E2SM-KPM and E2SM-RC

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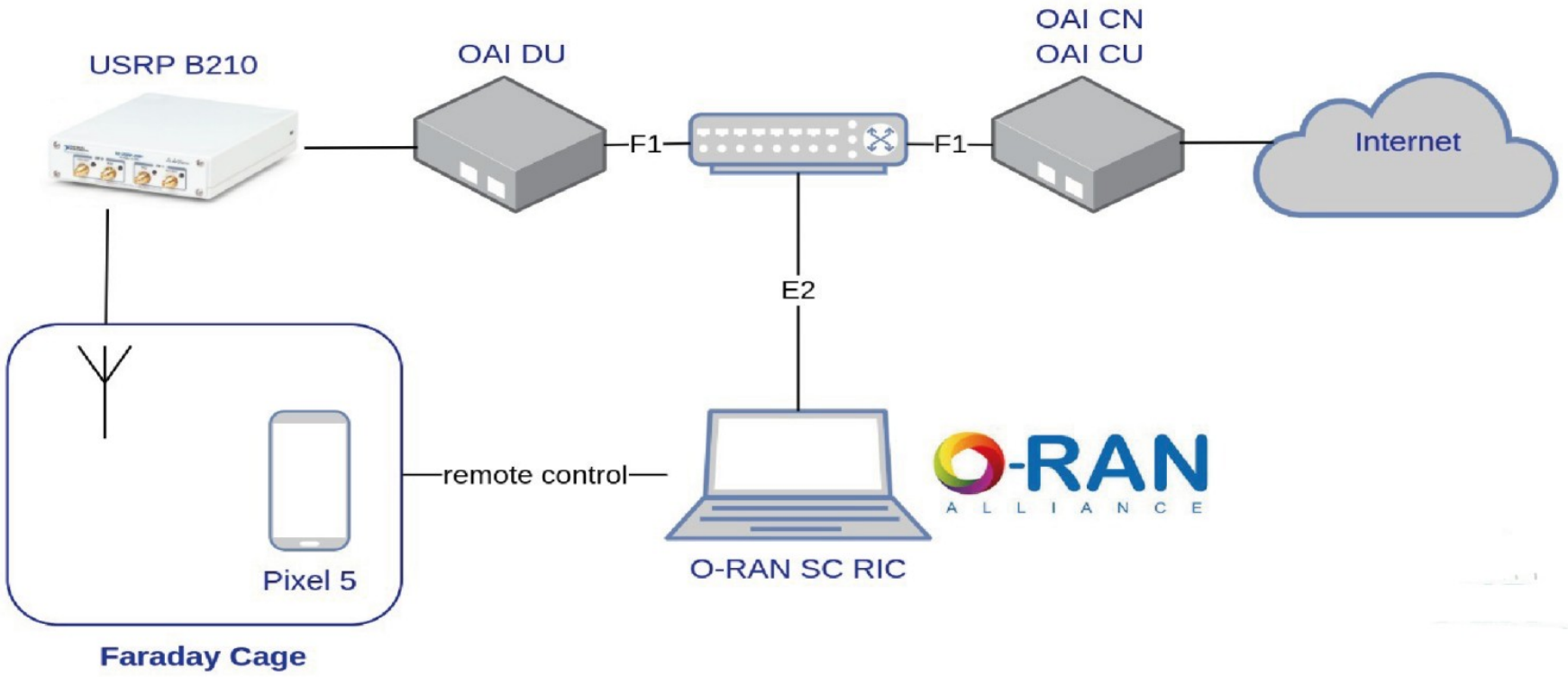
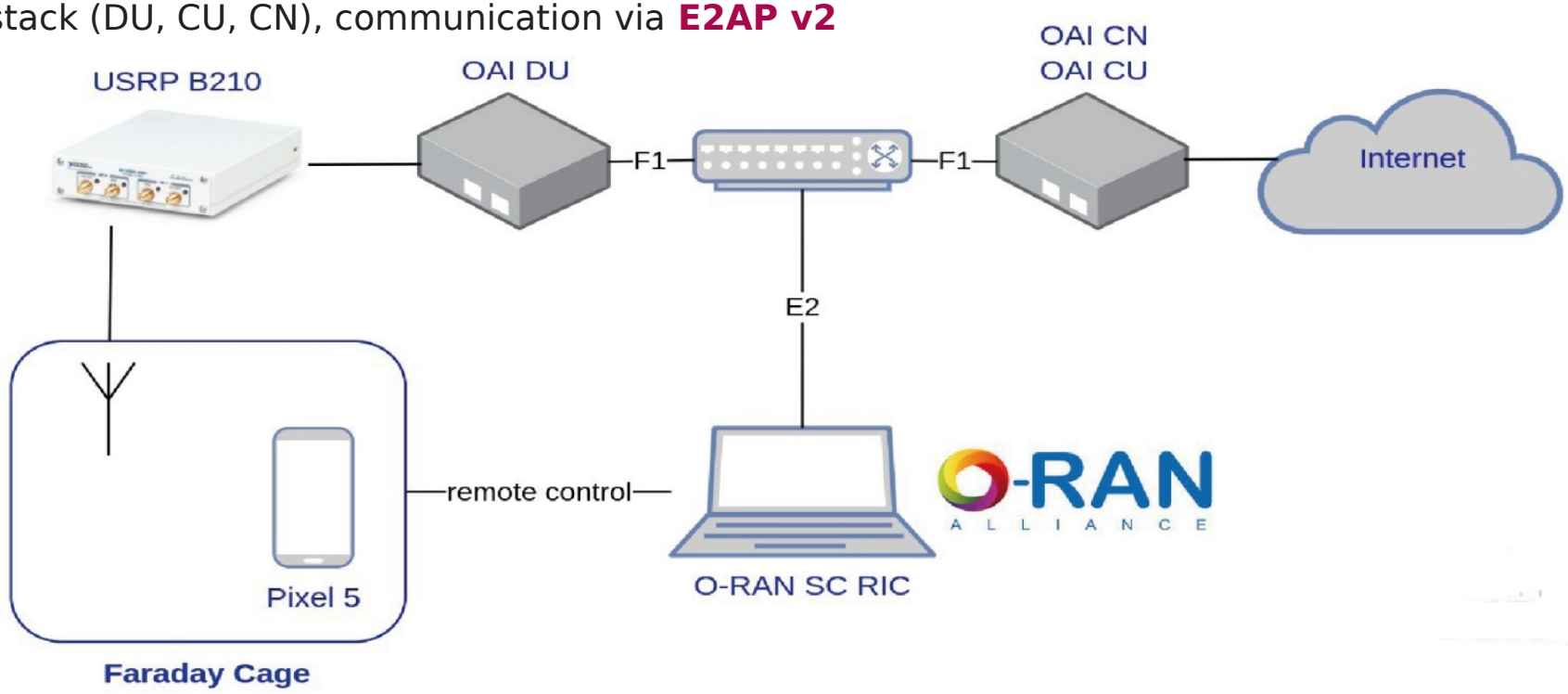
Demo description

- ✓ **xApp** monitors and controls QoE of user with latency-sensitive application
- ✓ ORAN Software Community near-RT RIC (“**OSC RIC**”)
- ✓ In OAI-DU: monitor UE performance via **E2SM-KPM**
- ✓ In OAI-CU: modification of RAN configuration by adding new DRB with **E2SM-RC**



Demo components

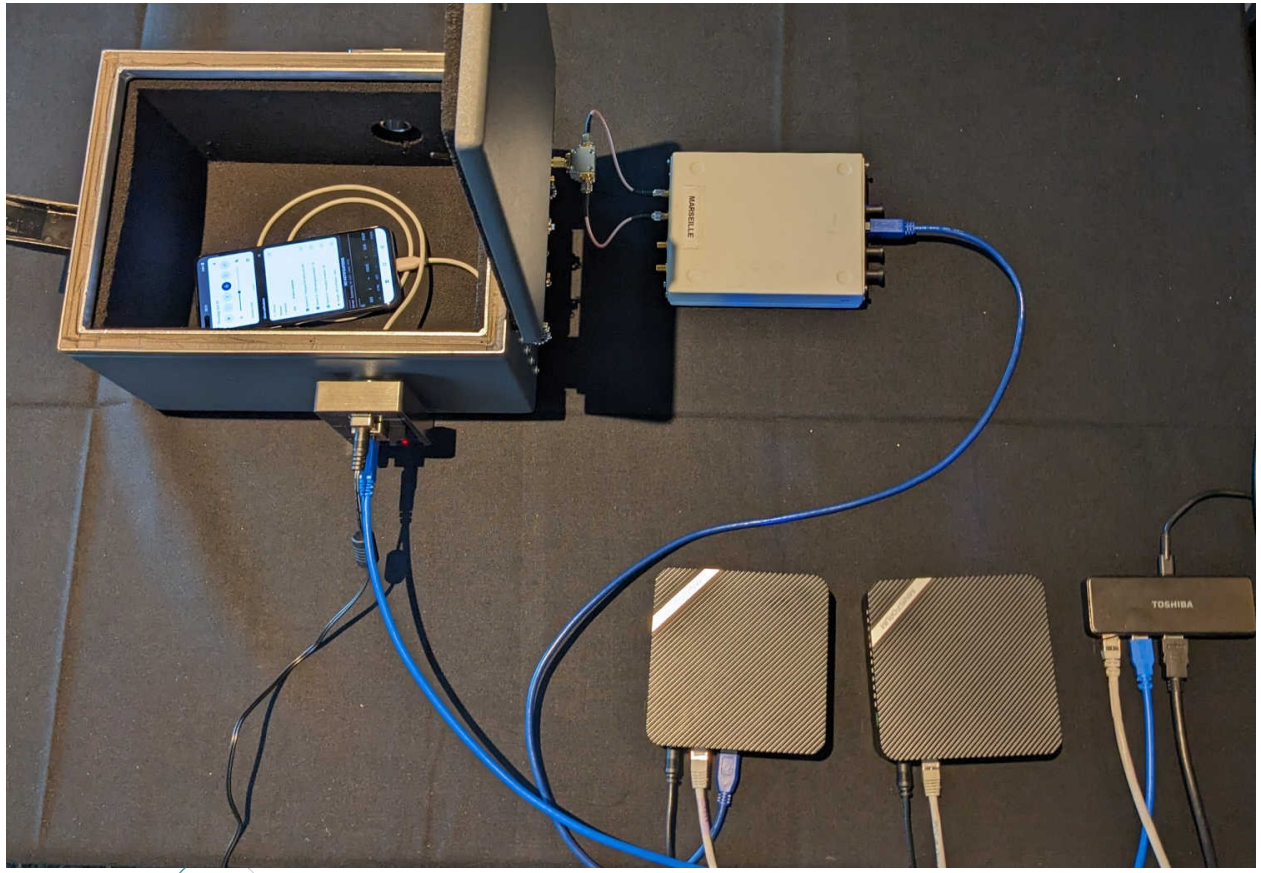
- ✓ **OSC-RIC**, as nearRT-RIC and xApp open source stack; xApp is modified hw-go app
- ✓ O-RAN Service Models:
  - **E2SM-KPM v02.03** (Key Performance Measurement)
  - **E2SM-RC v01.03** (RAN Control)
- ✓ Full **OAI RAN** open source stack (DU, CU, CN), communication via **E2AP v2**
- ✓ **COTS UE** (OnePlus Nord)

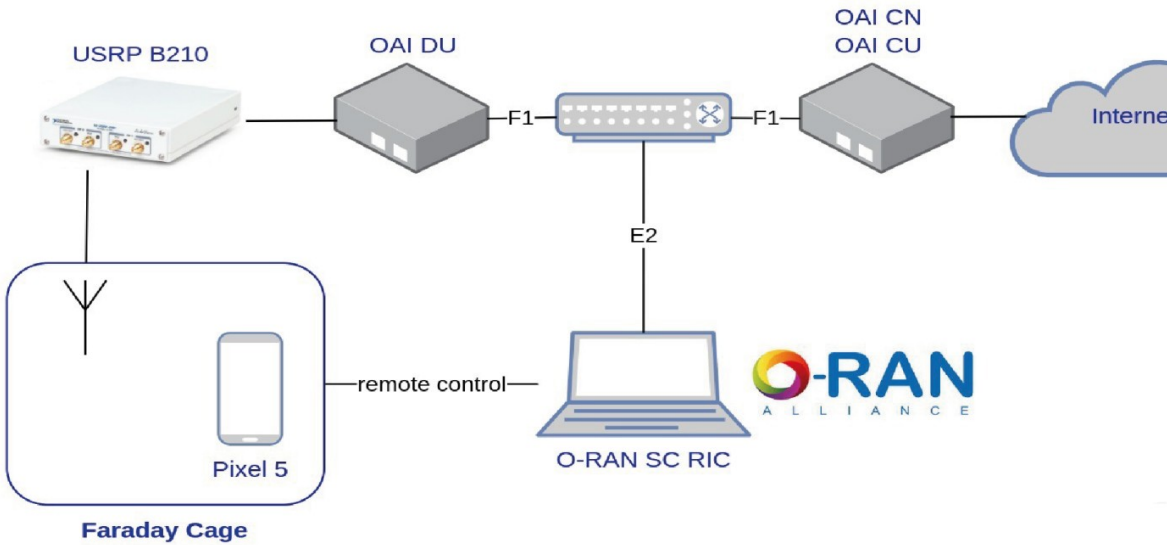


OSC near-RT RIC and xApp

- ✓ Use latest OSC-RIC **H release** with RMR 4.8
- ✓ xApp based on the hello world (`hw-go`) and RC (`ric-app-rc`) **OSC RIC xApps**
- ✓ FlexRIC code added for encoding/decoding SM elements of KPM and RC
- ✓ Added logic
  - xApp subscribes to gather the **RLC SDU sojourn time** (DRB.RlcSduDelayDl) via KPM SM
  - Sojourn time > 10ms: **xApp adds second bearer** via Control Message/RC SM
  - Traffic is steered, segregating bloating and latency-sensitive flows
  - Sojourn time < 1 ms: **xApp releases second bearer** via Control Message/RC SM

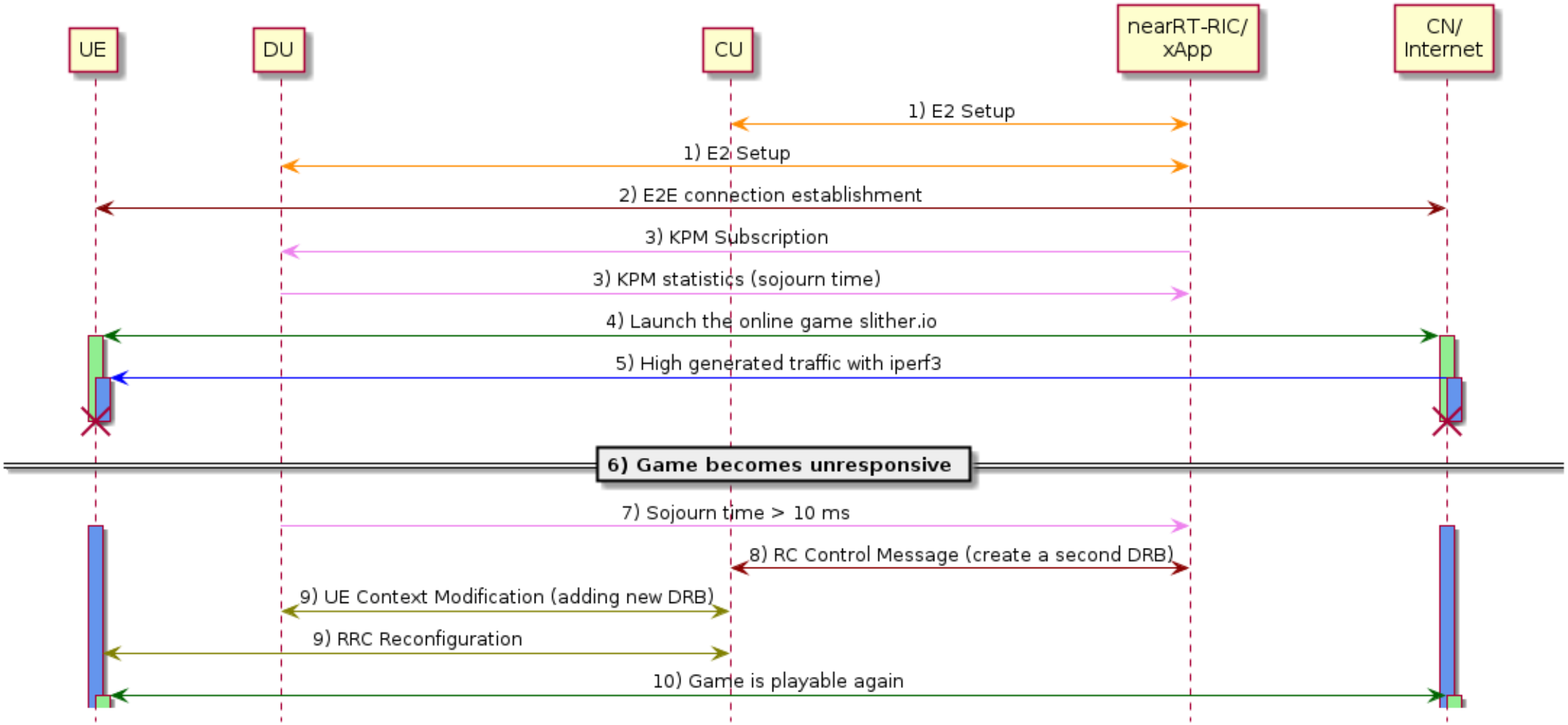
Demo setup





Demo video

Demo details – Message Flow



Conclusion

- ✓ Showed **integration of OSC-RIC (H release)** with OAI-DU/OAI-CU (develop)
- ✓ Demo: Enhance user's **QoE of delay sensitive application** while allowing high traffic
- ✓ Demonstrate end-to-end near real-time RIC monitoring and control features
  - Use O-RAN specified E2AP v2.00 (v3.00 possible)
  - Use O-RAN Service Models: E2SM-KPM v02.03 (v03.00 possible) and E2SM-RC v01.03
- ✓ Performance: 125Mbps DL (cell max) while satisfying the latency requirements