Implementation of a 5G Indoor Testbed with O-RAN and SDRs

Project Client (Project Sponsor)
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Introduction and Background
5G small cell (pico) base-stations can provide advanced features and stand-alone capabilities for private networks. There are two main parts of a mobile base-station – the radio access network (RAN) and the mobile core network. These parts are typically bundled and sold as proprietary hardware and software. However, the advance in virtualization technologies and standard off-the-shelf (COTS) hardware has made it possible to implement such a base-station using opensource software and Software Defined Radios (SDR).

Objectives
Imitate the implementation as described in the paper at arxiv.org: 2205.13178. The software will be run on a standard laptop/PC and the radio is a National Instrument B-205-mini SDR module with appropriate antennas depending on the frequency band chosen.

Technical or Other Constraints
This project will involve handling some hardware.
A National Instruments B-205-mini SDR module is provided.
Appropriate antennas will be provided.