Group number:sdmay22-30
Project title: 5G and beyond
Client: Hongwei
Advisor: Hongwei
Team Members: Josh Guyer, Joshua Naber, Johnathan Leisinger, Connor Kesterson, Raffael Neuser, Nick Garrelts, Ruofeng Gao

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o **Project Summary:** *(Short summary about the project. What are the design goals? Have the direction or scope of the project changed? This should be about a paragraph in length.)*

The goal of our project is to design and create a User Equipment enclosure that will be deployed locally around Iowa to be used by the ARA Wireless network. This enclosure will hold a couple radios including the B210, B205, and skyLark mMIMO radio. All of these radios will be controlled by a main computer inside of the enclosure in which we will be using the Intel NUC. There will also be a secondary Dell Precision used within the enclosure to provide a research environment to outside researchers. The software team is also working on getting several algorithms implemented into the srsRan protocol suite. Some of these algorithms include a device-to-device (D2D) communication algorithm as well as a local-deadline partition algorithm.

o **Accomplishments** *(Please describe/summarize as to what was done, by whom, when and, collectively as a group since the last report. This should be about a paragraph or two in length. Bulleted points are acceptable as well. Please keep only your technical details related to your project. Figures, schematics, flow diagrams, pseudocode, and project related results are acceptable, but please ensure that they are legible (clear enough to read) and to provide an explanation. If researching a topic, please add a few details about what was learned and how it is relevant to the project. If two or more people worked on a single task, be sure to distinguish how each member contributed to the task. Specific details relating to the assistance provided to other members may be included here.)*

● Joshua Naber - Finished the first iteration of the enclosure. Started to brainstorm ideas for creating a second enclosure which will include some components changing on the inside. Did some research on how to monitor the power draw of our enclosure, such as using a relay and raspberry pi.
● Josh Guyer- Finished the first iteration of the enclosure. Had to solder power strips and other wires. Looking at making another enclosure with a bigger case which would provide more room. Presented the enclosure to a senator's assistant for additional funding.
● Nicholas Garrelts - Finishing local-deadline partition algorithm into srsRAN. Summarized benefits of using an LDP algorithm. Worked on setting up testbench.
● Johnathan Leisinger - Finishing the translation of the Device-to-Device algorithm into srsRAN. Working with our research assistant to set up a suitable test bench for the software team's algorithms.

- Connor Kesterson- Finishing UCS algorithm translation into srsRAN as well as working on test bench setup and initial tests.
- Ruofeng Gao- Keep working with weighted fair queueing(WFQ) algorithm in srsRAN, and try to build local environment to implement the algorithm. Working on the srsRAN transmission part. Meeting with team about poster.
- Raffael Neuser - Set up local srsRAN env on WSL for testing and compiling directly from source

o **Pending issues** *(If applicable: Were there any unexpected complications? Please elaborate.)*

The hardware team is looking at making another enclosure. We may not be able to finish it in time but the graduate student we are working with should be able to. We want to add fans to it so there would be active cooling. The current enclosure works well but gets a little warm so we don't know if it will last in warm weather.

The software team was facing delays on testing algorithms as one of the computers was missing from the testbed setup. This should be resolved this week to begin testing.

o **Advisor Input: It is very important that you meet regularly with your advisor. Please have your advisor select one of the options below.**
    ___x___ I am pleased with the progress the team is making.
    _____ The teams progress could use some minor improvements.
    _____ The team's progress has some major concerns.
Your advisor's selection must be confirmed by either an email attached to this report (merge files into a single pdf) or a physical signature obtained from an in person meeting. <u>Please provide this report to your advisor at least 1 week before the due date so that they have time to respond.</u>
Signature: _____

Zhang, Hongwei [E CPE]
to me, Timothy ▾

Tue, Apr 19, 6:36 PM (2 days ago) ☆ ↩ ⋮

I approve the report.

Best,

Hongwei