

# Client Meeting 12/03/24

Present:

- Edmund Lai (client)
- Edward Keith
- William Bigley
- Chris Escandor
- Samuel Cathro

Apologies:

- Katarina Milicevic

## Main task:

Setup a 5-G network in a lab environment. A private network. 2 parts in cell system - base station and user devices. They need to be able to talk to each other. Say for example between 2 user devices, using the base station as a transfer medium. A lot of the 5g functions for a cell network are not needed for this experiment. We don't need to manage the station handover or QoS. Just one base station.

We are focusing on 5G specifically because it is the current standard and low-delay method. Although the radio network is the same as a 4G-LTE system. The part we are implementing is essentially the same, we can use that to supplement any knowledge gaps. For communication systems it is software that is important - the only hardware part is the antenna system (the SDR module). The frequency range is very wide and can be configured in many ways. Range is from 1GHz to 6GHz - we will be focusing on 5GHz.

We can check Github for documentation on how to setup the development environment and program the SDR according to what we need.

## The environment:

Laptop running the O-RAN software, connects to SDR, and acts as a base station. The "user device" could be another SDR module connected to a laptop, to mimic a cellphone and enable testing. If we do use a laptop as the user device, we will need one equipped with a SIM card, SIM card reader (for PC) etc. This would enable simulation of a broader spread of user devices. A lot of the software is available but is tricky to set up. Linux would be the most suitable environment for running the software stack. You should use a Docker IMG so that Edmund is able to test on his own system easily.

**Benchmarks:**

None, just focus on the demonstration. Maybe connection and speed metrics if we have time.

**Deliverables:**

End of project. Demonstrate the network with a couple of user devices (1 at least). Good documentation of the journey and coverage of the roadblocks we have come across. We need to work around any problems and document in detail how we did this and how future students would be able to avoid these problems in setting up the same experiment.

**Proposal and Planning:**

When writing the proposal and planning timeline, make sure it is reasonable and realistic for us. We are not doing this full-time, and not all the ITPM things we have learned will be applicable as we are only doing this part-time. Make sure it is realistic for our team and for our case. For example, do not schedule a deadline during exam period. Make sure we space out the R&D milestones around our other assignments and exams etc. Build in all team members assignment dates into the project schedule.

We also need to determine if we work through the mid-year break, or if we want to take a break after the first semester. We can decide this as a group, based on what is practical for us.

**Marking notes:**

It looks better for us at the end of the year to make all the deadlines, so make them achievable. The marks are based on evidence, so make sure we make the timelines and deliverables things we can achieve. Better to under-promise and over-deliver. Remember you don't start with 100% and have points deducted. You start from 0% and build from there, so make sure that you have enough evidence and tangible work to show the effort and successes.