Project-XL: Orthogonal-Frequency Division Multiplexing in LTE for data transmission

This work consists in developing a standalone simulator. The objective is to simulate the OFDMA downlink data sent by a single antenna to a set of user devices within one cell. Simulation should include the carrier allocation, according to asynchronous heterogeneous traffic data.

The students must implement the arrival mechanisms of new communications with different data sizes (Mo) and different coding schemes over a single cell.

The simulator should represent the state of radio resources allocation over the cells. The number of sub-carriers is an input of the simulation. The radio resources allocation state may be represented by a matrix (see the LTE course – page 64) where the lines represent the sub-carriers and the columns the sub-frames. The columns should slide to left or right to show the time progression.

The simulator should display all the information about the new communication arrival and associate different colour to each of them.

We assume that communications are not limited to a given throughput. Therefore, best effort strategy is applied, and all available resources are dynamically equally shared over current communications.

Methodology, quality process:

- Every week: forum report on the work done (evaluated)
- Program to develop and to run with appropriate GUI (evaluated) ➔ student must join a clear manual of how the simulator is used.
- Deliver the program at the latest June 12 (evaluated)
- Presentation of the work via Teams (evaluated) ➔ to be specified later.

Good luck,
Your project contacts: Mr Mabed, Mr Cissé and Mrs Baala