TP

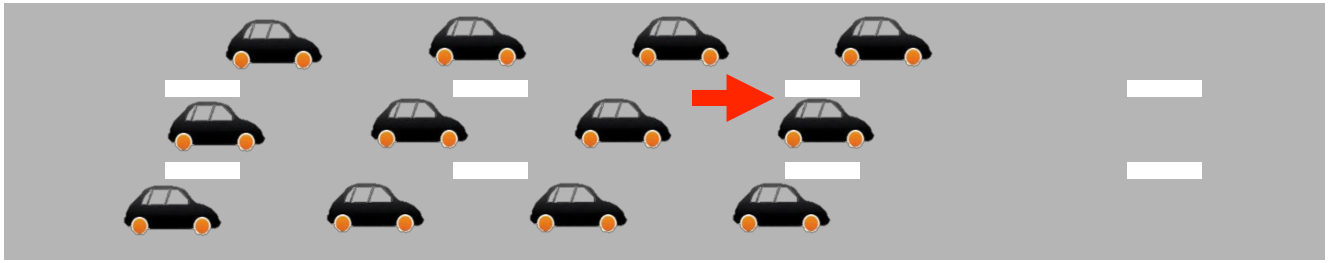
2019

Mobility Model

- **Mobility Model**

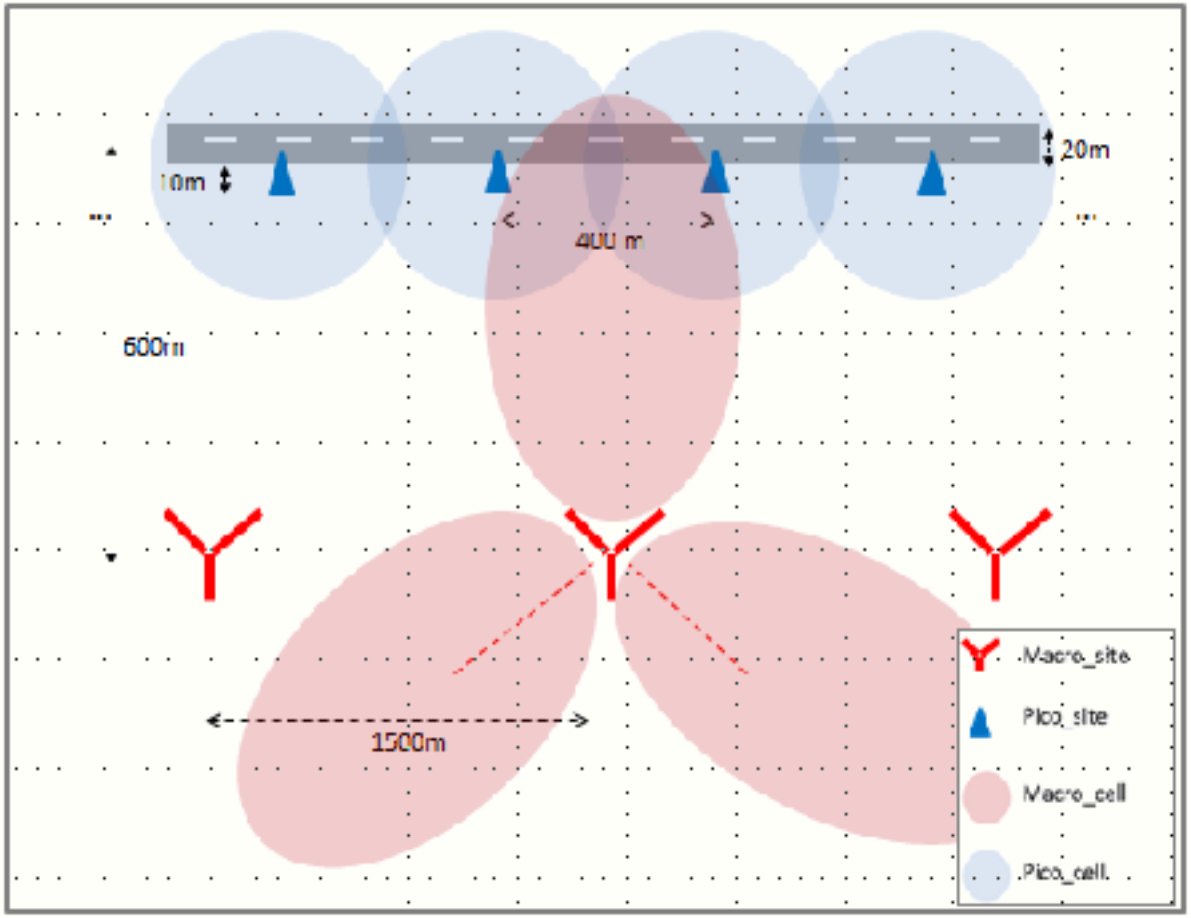
One user scenario

Multi-users scenario

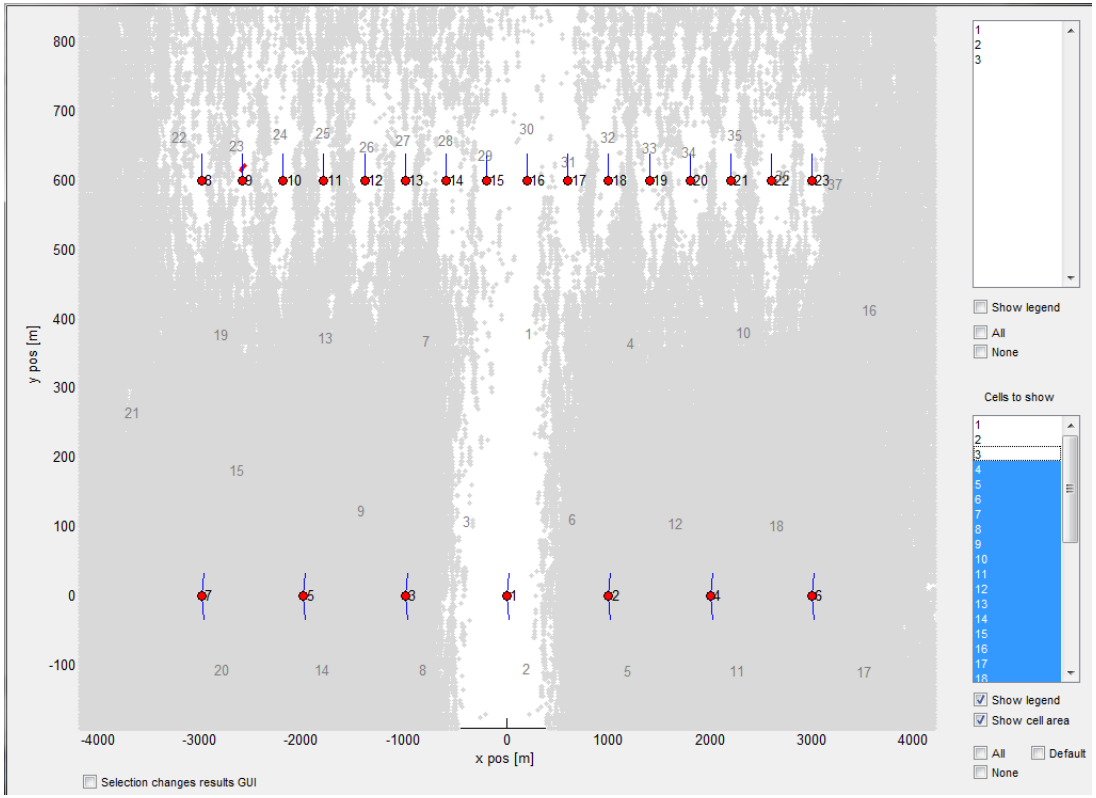


- **Constant speed** : 40kmh
  80kmh
  120kmh

The heterogeneous network



Network topology



Propagation effect : Pathloss + shadowing

Simulation tool and implementation

- A bench of matlab classes, functions and scripts
- Developed by researchers from the Vienne University
- Free licenced, only used for educational purposes
- Simulates LTE downlink transmissions
- Based on discrete events :

event = transmission of a subframe from the eNb to the end user
Delay of an event = 1TTI = 1ms

- Trace files at the end of each simulation (received bits, SINR, CQI ...)

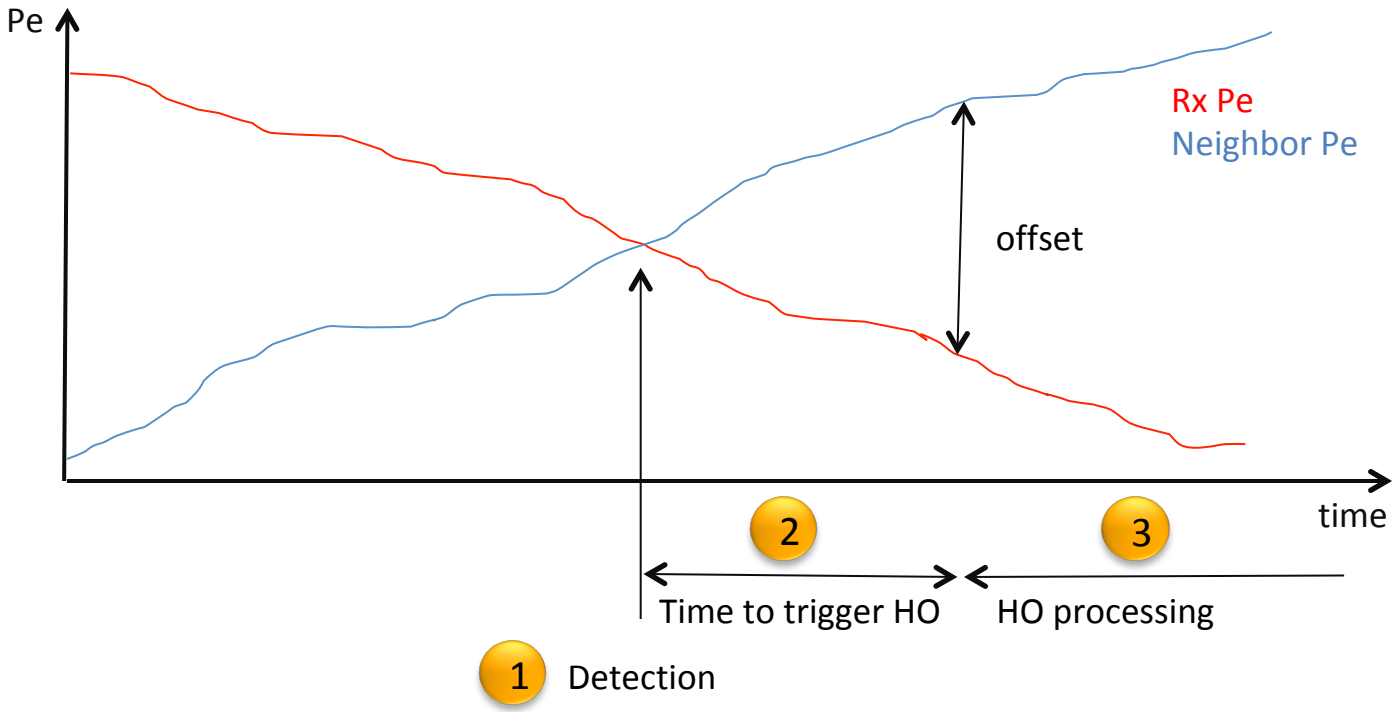
A3 event in LTE

- Event A3 is used to trigger intra LTE mobility.
- Unlike GSM and WCDMA, UEs do not perform periodic measurements of neighbor cells. Measurement based reporting used in LTE to trigger handover.
- By default, user equipment in the LTE network detect suitable neighbor cells without the assistance of a list of neighbor cells sent by the serving RBS.
- User equipment are expected to blindly detect suitable handover candidates and the subsequent handover evaluation is undertaken using generic offset values.

A3 event in LTE

- When specific cell offset relationships exist, this information is sent to the user equipment in RRC Connection Reconfiguration messages.
- The RRC Connection Reconfiguration message can also contain a list of cells for which handover is not allowed. These cells are identified by their Physical Cell Identity or by a range of Physical Cell Identities.
- Measurements commences on the serving and neighboring cells when the RSRP of the serving cell falls below the value defined in the sMeasure parameter.
- The user equipment detects neighboring cells via intra frequency searches.

Handover Process: event A3



1 + 2 Measuring powers each 30 TTI

2 The received power is the worst for 4 successive times

3 Selecting the best neighbor power

Objectifs

1. Simuler une procédure de H.O (**event A3**) en considérant:

- un seul utilisateur mobile,
- une vitesse constante,
- une durée de simulation (LTE_config.simulation_time_tti) = 2000 TTI,

On utilisera les fonctions suivantes:

- UE.m : handover procedure (handover_decision), les puissances
- LTE_sim_main.m :
- LTE_sim_main_launcher_examples.m : lancer la simulation et sortir les performances avec les paramètres sélectionnés.

Objectifs

2. Afficher les puissances RSRP en fonction des TTIs.

3. Afficher les Handovers que fait le mobile

4. Afficher le SINR du mobile le long de son trajet.

5. Rajouter un offset (en dB) à la condition d'initier un HO.

6. Adapter les paramètres de l'algorithme A3 à la vitesse (40kmh, 80kmh, 120kmh),

7. Interpréter…