**SMART Objective**: Effectiveness of the Slotted Random-Access Network Protocol

**KPI** (what defines the performances of the protocol):

* throughput,
* packet delay,
* percentage of loss packets (due to overflow in the queues)
* network traffic
* (compatibility with real-time Application = percentage of deadline not respected)

**Factors**:

* **N couples** of Tx-Rx,
* **C number of channels**,
* probability **p** (probability of sending a packet in the current timeslot),
* **lambda rate** of the exponential distribution,
* Tx and Rx **buffer size**
* (**Deadline** for real-time application)
* **time slot**

**Assumptions**:

* Pure Slotted (packets can only be sent at the beginning of the time-slot),
* One slot Packet Length,
* No bit errors in the channel,
* No trasmission delay in the channel (=> speed of an electromagnetic wave on air is very close to c. With a distance of 2km from the transmitter to the receiver, the transmission delay is in the order of some ns, so we choose to not considere trasmission delay)
* FIFO queues with limited capacity (=> maybe M/M/1/C)
* Tx and Rx always synchronized
* After an eventual collision the packet will change its channel choice randomly

**Implementation in Omnet++**:

* **Transmitter**: campo nextArrivalTime per capire se arriverà pacchetto nel prossimo time slot. Campo verrà ricalcolato nel caso di più pacchetti nello stesso time slot
* Eventi del Transmitter dovranno avere più priorità degli eventi del Channel, il canale entra in funzione quando tutti i transmitter hanno comunicato che vogliono eventualmente trasmettere un pacchetto
* Channel: vector<bool> per capire se c’è stata collisione in un canale