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LTE Sector Level Simulation Update

Authors: Aaron Wubshet

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The Charles Stark Draper Laboratory, Inc.
555 Technology Square, Cambridge Mass. 02139-3563
CAGE Code: 51993

Agenda

1. Familiarization
2. Initial Structure
3. Current & Future Status

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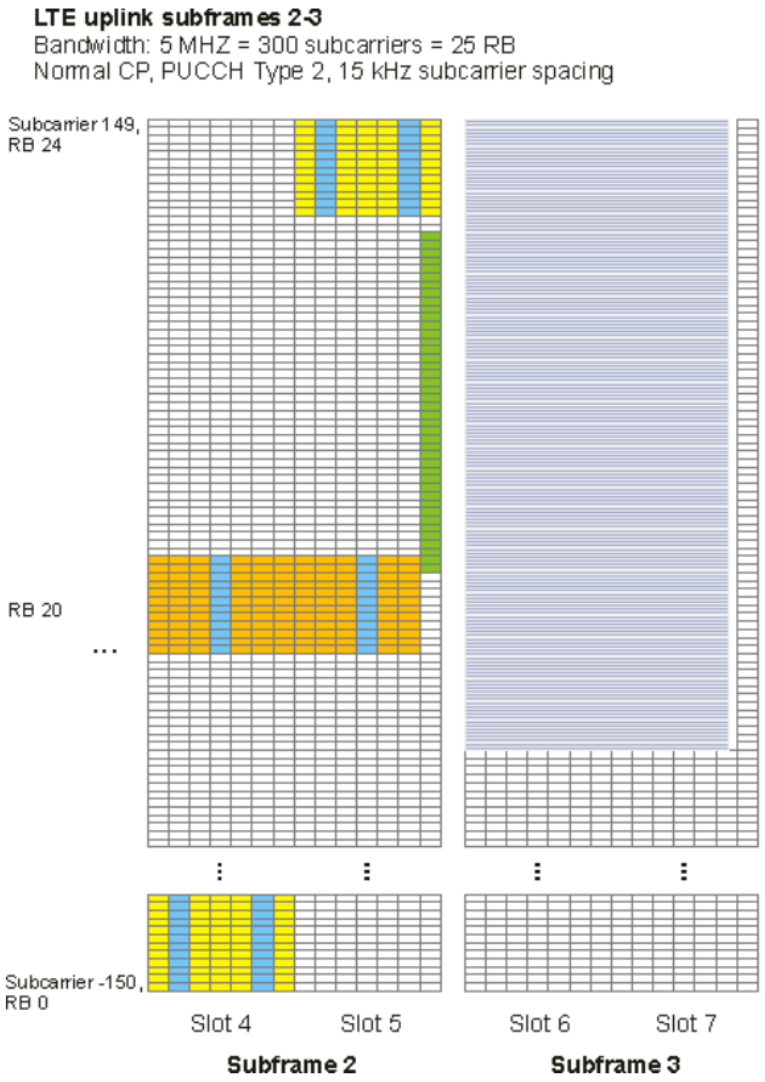
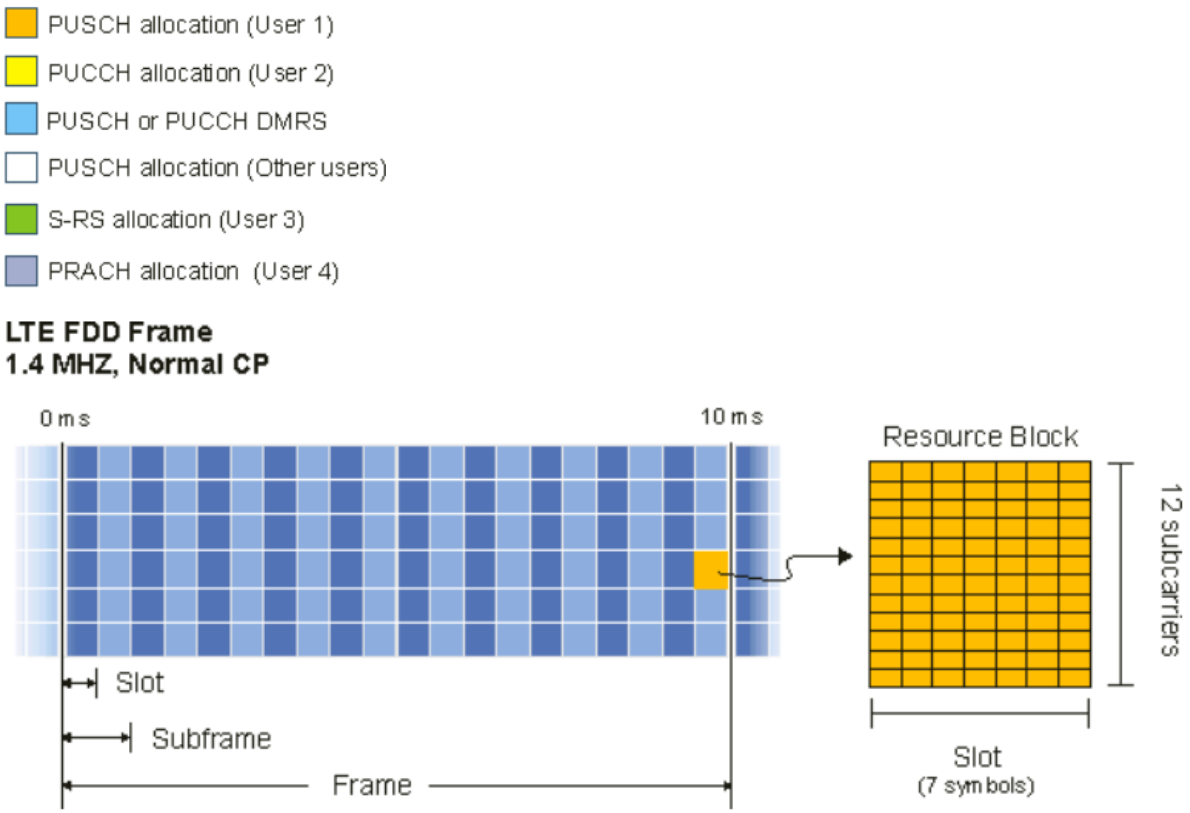
Familiarization

Frame Structure LTE





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Images from:
http://rfmw.em.keysight.com/wireless/helpfiles/89600b/webhelp/subsystems/lte/content/lte_overview.htm

Preliminary steps

- Relevant readings: TS 36.211, 36.213, 36.201, 36.300
- Convert openLTE octave code to MatLab syntax
- Become familiar with key functions in the openLTE library

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Initial Structure

First Attempts

- Modularity
  - Separate simulation and parameter files
  - Separate each channel into unique files
- Issues with range of data (sample size conflicts when trying to plot)
  - Computation time too long
- Path loss, multipath channel estimation functions

External Functions

Path Loss

- Modified HATA vs COST231-HATA hybrid
- Not sure how to interpret comparison
  - Overall similar except at transition points(frequency and distance)

Multipath channel estimation

- LTE-LPS implementation
  - Worth creating in house?

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Current & Future Status

Refined structure

- Combined separate simulation files to overlay channels
  - Common parameters and unique parameters in one file
  - Separate file for execution and visuals
- Currently PRACH and PUSCH implemented
  - User inputs can alter UE specific parameters, environmental parameters
  - Speed optimizations
- More practical idle/active durations
  - Blank plots because of long idle times and/or range issues

Next Steps

- PUCCH implementation available as a C file
  - Wrap into MatLab vs write my own based on specifications
- Real time PRB allocation and aggregation at the network level
- Organize and interpret visual and simulation data
  - Practicality of activity subroutine (how much does it reflect reality?)
- Incorporate PUCCH and updated openLTE BB generation
  - Build MatLab GUI around the simulation with common user parameters?