Initial Plan

- Understand and model aggregate uplink (UE) power output in a sector (desired goal is to develop a three-sectored network simulator) and eventually full network)

  - Different signal channels with unique transmission and reception parameters

  - Path loss models, optimization, accuracy

- Develop initial model of how UEs (user equipment) interact with a base station

  - Determining relevant parameters and their respective ranges of operation

- User friendly packaging with clean GUI

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Refined Current Structure

- Reorganized and consolidated parameter and execution files

  - One file for parameters, one file for calculations, one file for graph generations

  - One file per call model with relevant parameters

- Aggregated PRB allocations as per the LTE specification

  - PRACH configuration index implemented

- Currently PRACH and PUSCH implemented

  - User inputs can alter UE specific parameters, environmental parameters, etc.

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PUCCH Issues

- Control channel implemented in srsLTE

  - Written in C designed for a Linux machine

  - Some test files use LTE systems toolbox

  - Compilation and reference errors on Linux, Windows, and Windows w/ Linux subsystem

- Current solution: Sintayehu will begin making attempts to work with the srsLTE package

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Call Model Components
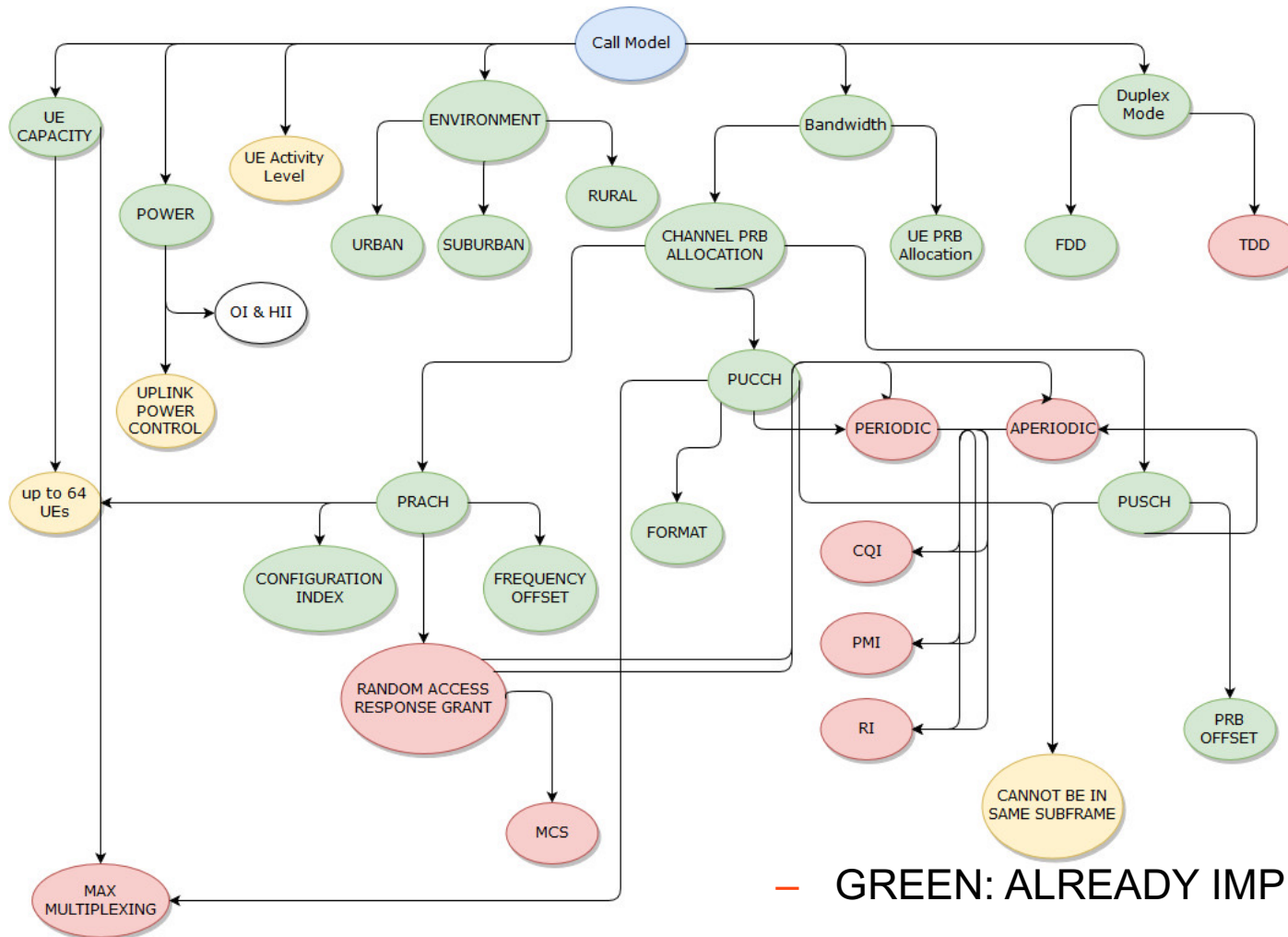
- GREEN: ALREADY IMPLEMENTED

- YELLOW: TO BE IMPLEMENTED

- RED: UNABLE/UNSURE ABOUT IMPLEMENTATION

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Next Steps

- PUCCH implementation

- Increase robustness, efficiency, and code clarity

  – Intermittent failures due to ranging/indexing errors

  – ~5 minutes/call model

    ○ Replace activity duration subroutine with control via PRB allocation

    ○ Pre-allocation of arrays for waveforms within call model

  – Comments & documentation

- Build up realistic call model library with variety of input parameters

  – Number of frames, environment(path loss model), call pattern, etc

- Refine MatLab GUI

  – Organize and interpret visual and simulation data

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