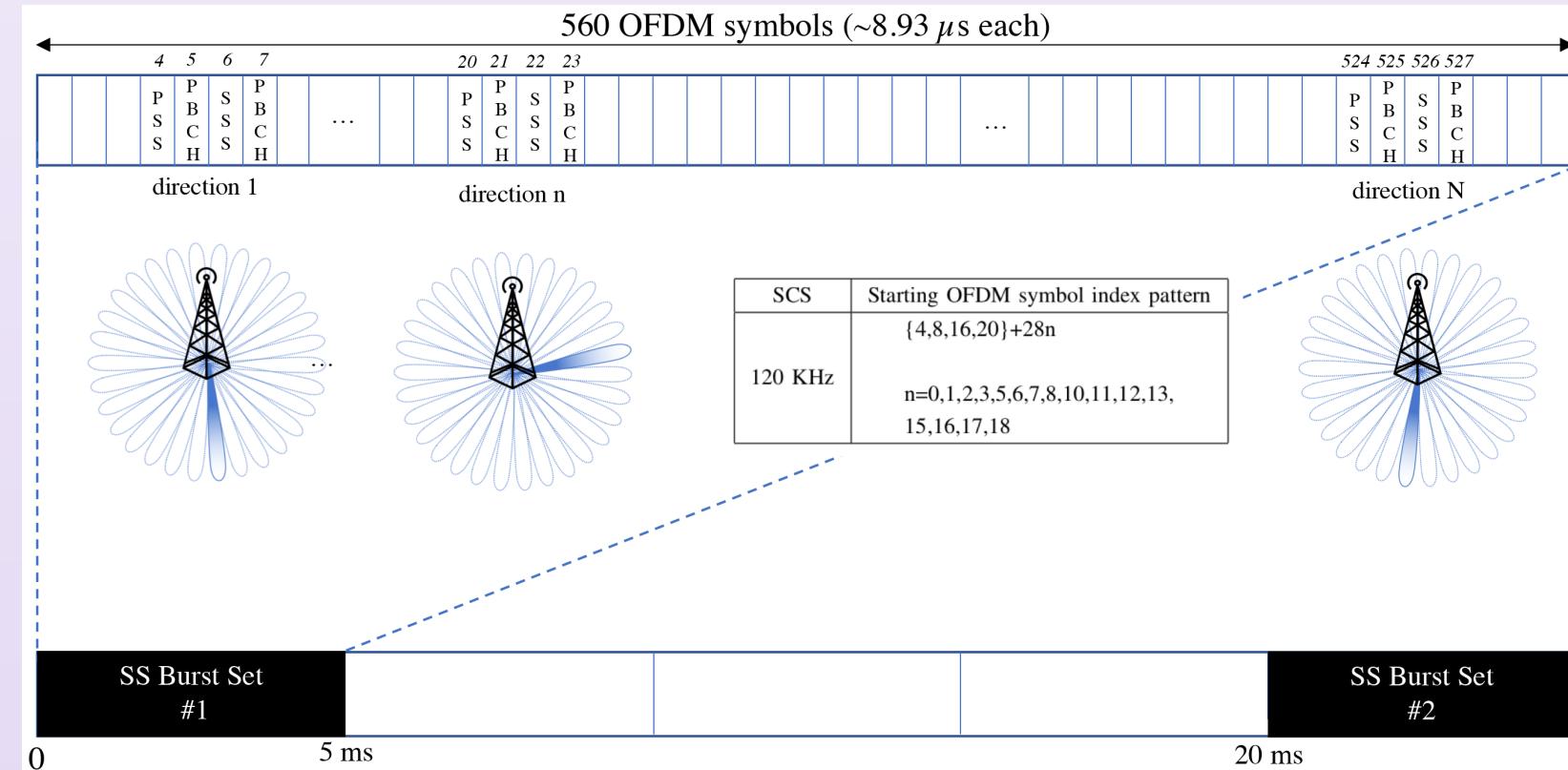


# ns-3 mmWave 5G Cellular Network Simulator

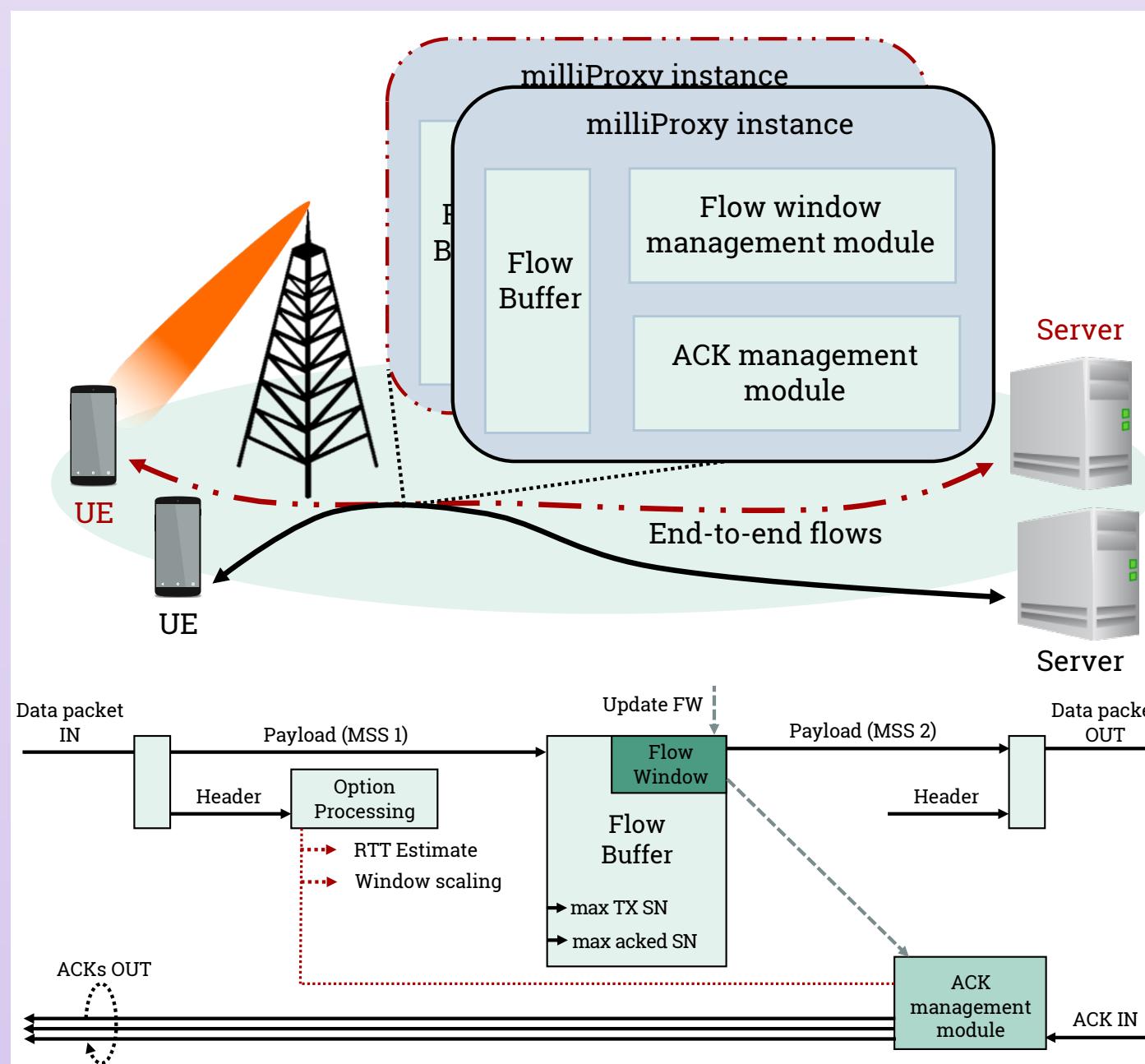
Menglei Zhang, Michele Polese, Tommaso Zugno, Marco Mezzavilla, Sundeep Rangan, Michele Zorzi  
NYU Wireless, NY – University of Padova, Italy

## NEW ARCHITECTURES

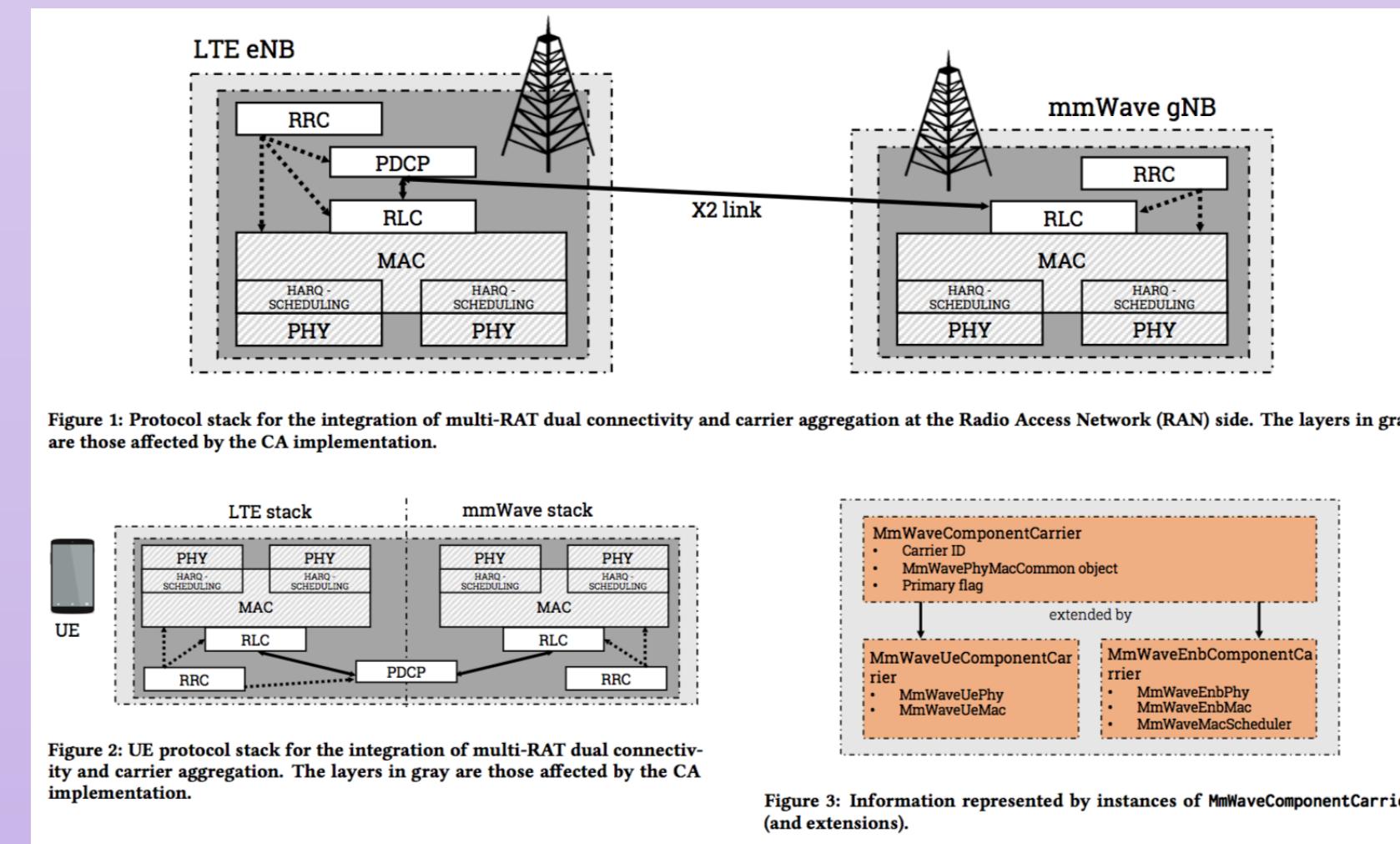
### 3GPP NR SS blocks [1]



### milliProxy\* [2]

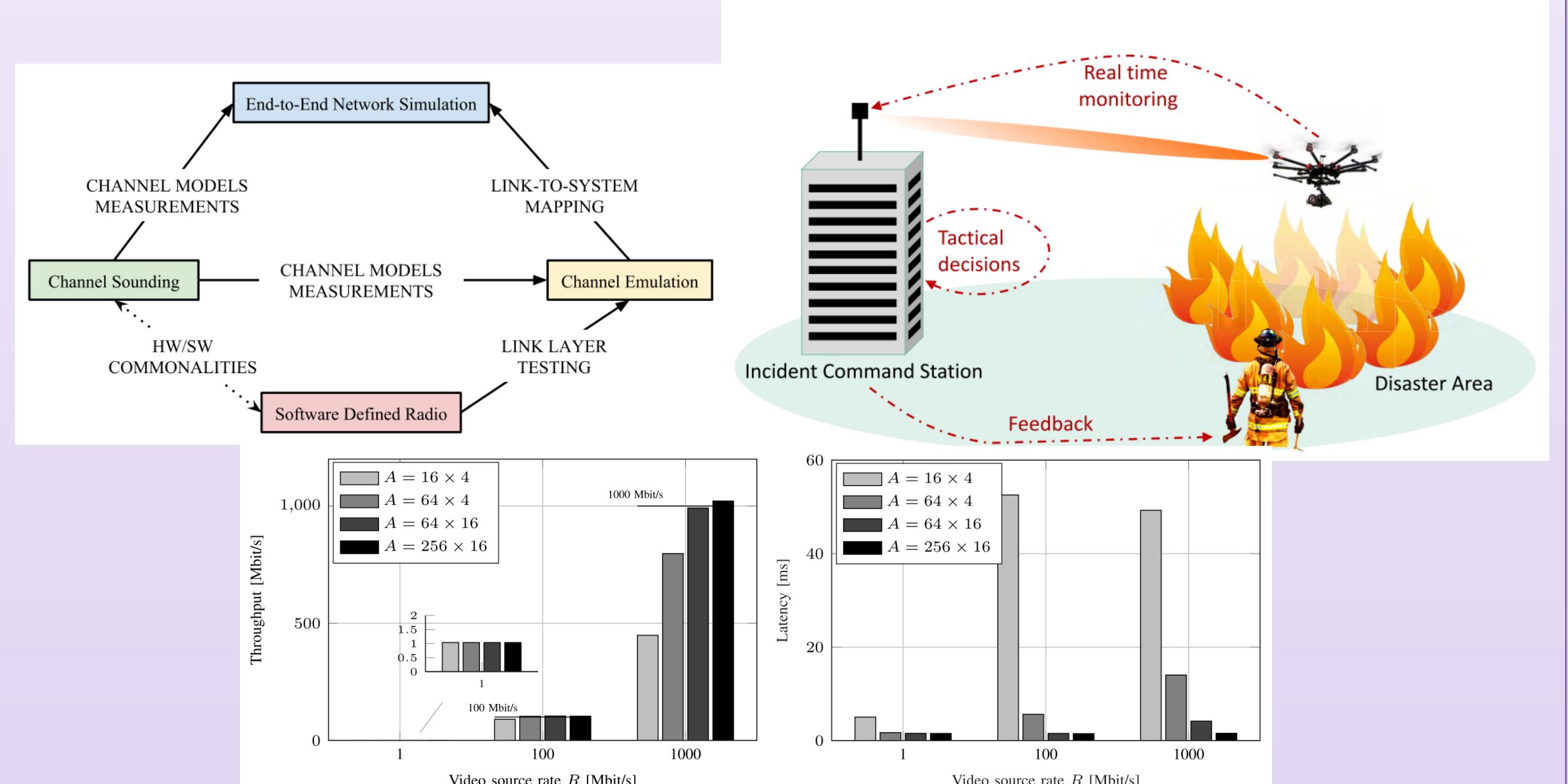


### Carrier Aggregation [3]

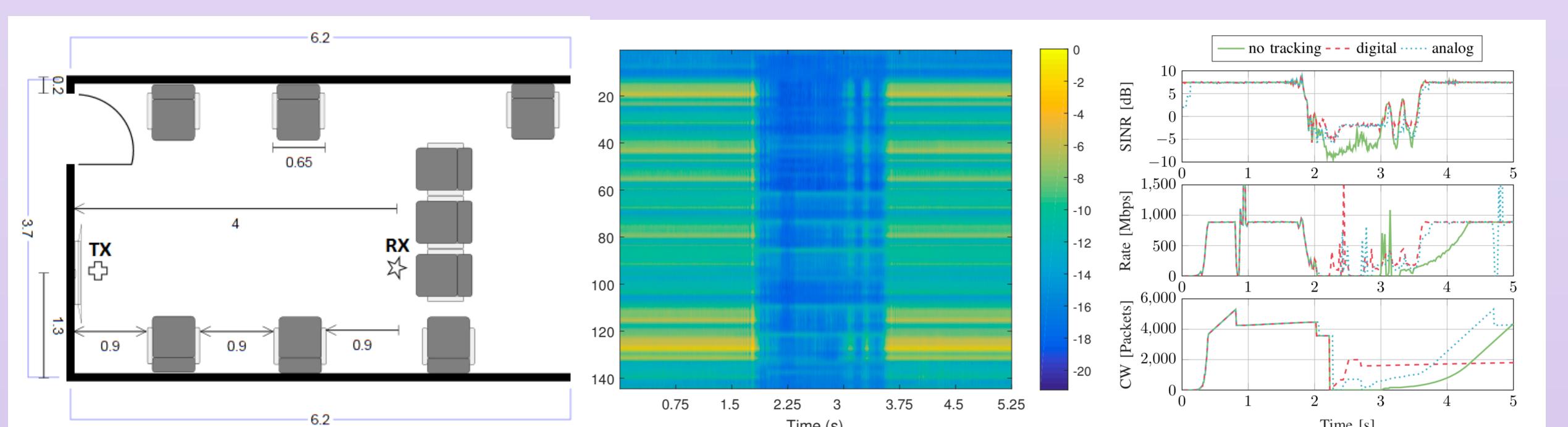


## NEW RESULTS

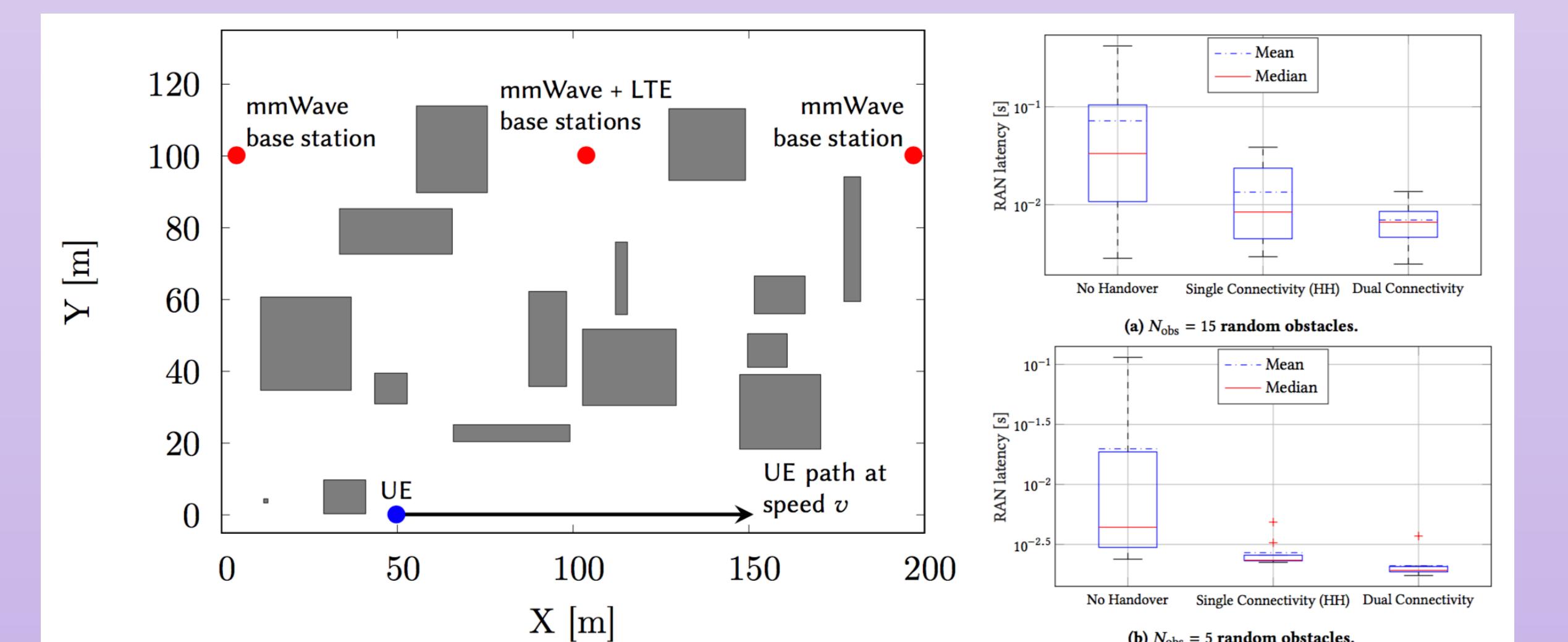
### NIST Public Safety [4, 5]



### Measurement Data with Beam tracking [6]



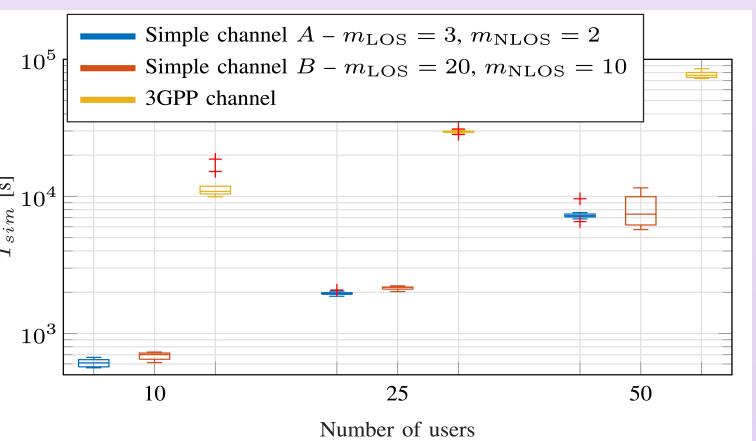
### TCP mobility\* [7]



## NEXT STEPS

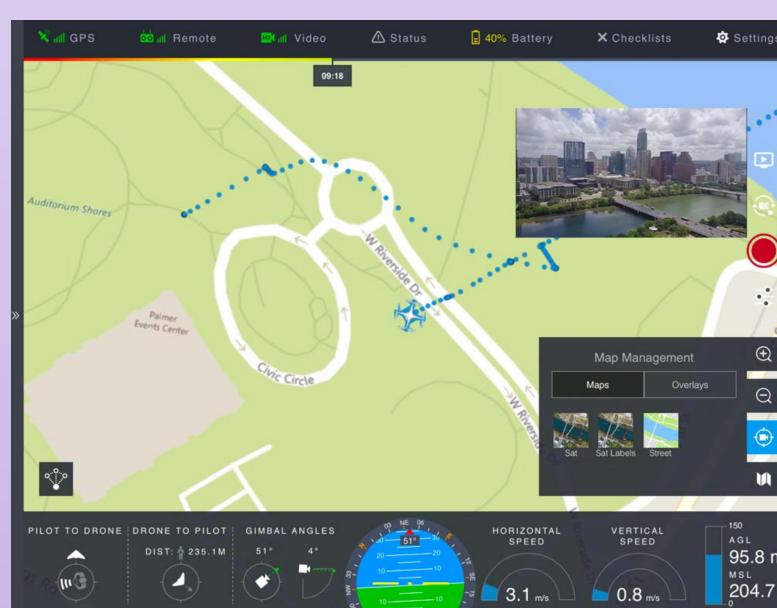
### Integration with the ns-3 App Store

### Channel model optimization [8]



### Relaying\*

### Vehicular and drone communication



## References

\* Check out the “Integrated Access and Backhaul at mmWave Frequencies” and “Improving TCP performance on mmWave cellular networks” posters for more info!

- [1] C. Herranz et al., “End-to-end Performance of mmWave Directional Synchronization”, submitted to ACM MSWiM 2018.
- [2] M. Polese et al., “milliProxy: a TCP Proxy Architecture for 5G mmWave Cellular Systems”, Asilomar 2017.
- [3] T. Zugno et al., “Integration of Carrier Aggregation and Dual Connectivity for the ns-3 mmWave Module”, WNS3 2018
- [4] M. Mezzavilla et al., “Public Safety Communications above 6 GHz: Research and Opportunities”, IEEE Access 2018.
- [5] M. Polese et al., “mmWave for Future Public Safety Communications”, i-TENDER 2017.
- [6] C. Sleizak et al., “Understanding End-to-End Effects of Channel Dynamics in Millimeter Wave Cellular”, IEEE SPAWC 2018.
- [7] M. Polese et al., “Mobility Management for TCP in mmWave Networks” Proceedings of the 1st ACM Workshop on Millimeter-Wave Networks and Sensing Systems 2017. ACM, 2017.
- [8] M. Polese, M. Zorzi, “Impact of Channel Models on the End-to-End Performance of mmWave Cellular Networks”, IEEE SPAWC 2018