

As mobile data traffic increases exponentially, the need for technologies that deliver reliable higher bandwidth and millisecond latency in future wireless systems will be paramount. The challenge will be to find additional spectrum or co-exist with current incumbents in the frequency space for both government regulatory agencies and industry standards organizations. The strategy required for building large city scale testbeds that allow researchers to contribute solutions to this challenge will include

- Working with currently deployed operational cellular networks to obtain rich anonymized usage data sets opening up new research directions.
- Using Universities as containment access facilities to be the epicenter for large deployment of programmable radio hardware and core network services.
- Need to support various types of wireless access technologies in the same core network where the macro, small cell and personal cell Base Station are mixed and overlapped.
- Developing programmable research devices that give researchers visibility to the user and application behavior on client side devices. Project ARA handsets is an example of such a device.
- Engaging local agencies such as city governments, campus administration and local utility companies to solve the logistical issues (rooftop, roadside, campus access) for deployment of such a testbed.

Abhimanyu Gosain is currently the wireless system engineer for the NSF GENI project CNS-1125515. He is also the Co-PI for Enhancing the ORBIT Testbed with LTE and Cloud Radio Processing under NSF CNS-1513110. He was the Co-Chair for the NSF workshop on Future Research Infrastructure for the Wireless Edge. He was also involved in the CitySense project supported under NSF CNS-0551535. He has developed the overall system design and architecture for GENI WiMAX and LTE deployments and coordinated deployments at GENI Wireless sites.