

Development of Cost-Effective Community Testbeds for Research and Experimentation

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**mmWave RCN Meeting
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Agenda

- Motivation
- State of the Art in mmWave Testbed efforts
 - Recent NSF award(s) presentation
- Group Discussion
 - Requirements, Features, Spectrum Range etc..
- Breakout
 - Spectrum
 - Universal/Modular community sourced RF+ Baseband design
 - Application Area(s) enabled
- Report Back and Readout Summary

Discussion

- NSF Mid-Scale Research Infrastructure-1 (Mid-scale RI-1)
- Spectrum > 95GHz and sub-THz is of interest
 - Push envelope to beyond where Industry is today
 - Devices/hardware/materials areas need research
 - Need for software along with h/w
 - Requirements, Features, Spectrum Range etc..

Discussion

- Build a community sourced “platform”
 - Swappable modular form
 - Multiple RF front ends : tough to do with interface specification
 - Increased baseband processing and BW requirements
 - Academia + Industry work together
 - Follow model of ROACH + CASPER from radio-astro community
- Testbed with a 10 year vision
 - Democratize mmWave Access with replicable low cost design

Quick Survey

- Show of Hands
- Topics
 - FPGA/ RFIC design/mixed signal design
 - Channel sounding
 - Mac layer Optimization
 - Network/transport
 - Application Area(s): vehicular,sensing,UAV
 - Emulation Environment (large scale) or real world deployment



mmWave Testbed Landscape

- Rutgers, Columbia University - PAWR COSMOS
- Drexel University- MRI: Development of a mmWave Software Defined Radio Network Testbed for Hybrid Measurement and Emulation
- CMU – CRI: Mobile mm-wave MIMO Network Testbed
- University of Buffalo – A Programmable Testbed for Wideband 60 GHz WLANs with Phased Arrays
- Florida International University - mmWave-based Vehicular Communications
- Idaho National Lab –
- Virginia Tech – CORNET
- NYU- Aditya Dhananjaya
- UW Madison - Parmesh
- ORBIT, DARPA SC2 – not mmWave