



Mobility and Wireless

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Efficient mobile architecture/infrastructure

- Grand Challenge:
 - Research multi-layer approaches that incorporate new paradigms like disconnection and multi-hopping.
 - Integrates well with the wired infrastructure.
- Experiments Required:
 - Testbed should include multiple, different networks
 - With open interfaces at all layers (if possible)
 - And integrate realistic mobility models that take into account social interactions (resembling actual human mobility)
- Industry/Academic Relationship:
 - Cellular providers may need to open up their infrastructure a little
 - Open APIs for handheld devices..



Multi-Radio interoperability

- Grand Challenge:
 - Dynamic spectrum sensing
 - Multi-radio co-existence
 - Cooperative transmission technologies
- Experiments Required:
 - Plug-n-play multi-radio platforms available to the community (flexible/fully programmable)
 - Focusing on understanding all layers of communication (especially how low layers govern higher layer performance)
- Industry/Academic Relationship:
 - Industry can help with open platforms
 - Industry can help with frequency allocation for experimentation



Privacy and Security

- Grand Challenge:
 - The penetration of wireless technology makes the network a greater part of your life – how can you design protocols that are privacy preserving? (both wireless and wired)
 - Encryption is not enough
 - Naming and addressing may need to be an integral part of this challenge
- Experiments Required:
 - Blackhat experiments to quantify the extent of privacy leakage today across wireless and wired networks
 - Needs to provide a definition of “reasonable expectation” in the security domain and may affect the original GENI design
 - Experiments will help us understand the right amount of integration of privacy preservation across all layers.
- Industry/Academic Relationship: