WICAT: an NSF Sponsored Consortium of Universities and Industry

• WICAT: Daughter of CATT
  – Initially funded by NYSTAR

• WICAT Partners
  – 4 Universities (Poly, UVA, Virginia Tech, Auburn)
  – 25 Companies
  – 5 Federal and State agencies
Research Areas

- Cooperative communications
- Video over wireless
- Efficient power electronics for energy harvesting
- Wireless network security
- Channel prediction for mobile-to-mobile communication
- Single carrier OFDM for long term evolution
Cooperative Communications

- One or more neighboring mobiles assist in message transmission
- Assistance can involve physical and/or MAC layers
- Implementations in progress using software defined radios
- Faculty: E. Erkip, S. Panwar, M. Knox, T. Korakis, P. Liu
Video Over Wireless

• Transmission using multiple channels
• How video applications can make use of co-op communication
• Relating perceived quality to packet loss
• Multicasting video in wireless networks
• Faculty: Y. Wang, S. Panwar, E. Erkip
Energy Harvesting

• Piezoelectric element converts body motion into electrical energy

• Efficient power electronics converts piezoelectric output to usable voltage
  – 82% efficiency

• Faculty: D. Czarkowski
Wireless Network Security

- Hardware assurance
- Forensics & data recovery
- Bootstrapping security between mobiles
- Faculty: R. Karri, N. Memon, N. Saxena
Channel Prediction

• Rapid computation for mobile-to-mobile communication
• Faculty: H. Bertoni

Cellular Long Term Evolution

• Single channel OFDM
• Faculty: D. Goodman