Project Overview

Project goals
Better communication, not just better networks
Faster innovation, deployment of applications
Easier adaptation using cross-layer optimization
To current operating conditions
To application requirements
Graceful degradation

Research areas
New signal processing algorithms
Network protocols that exploit flexibility
End-to-end analysis of soft physical layers
Adaptable physical layer for wireless communication
Provides information about current conditions
  Power consumption, latency, error rate, ...
Receives application requests
  Lower power, lower error rate, increase bit rate, ...
Selects strategy
  Use new channel(s), modulation, ...
Physical layer algorithms
  Direct waveform synthesis for transmission
  Efficient filter for channel separation
  Processing proportional to output sample rate
  Efficient multithreshold detector
Research Plan for the Next Six Months

RadioActive networks
Negotiated transmission format
Vertical handoffs between administrative domains
Wireless communications for patient monitoring
Improved deployment of operating room equipment
  Low power sensors coupled to high power processors
  Reduced clutter (cables, bulky equipment)
Better separation, modularity
  Transducers — acquire analog signals
  Software — analyzes signals, integrates info
  Processors — run the software
  User interface — present information