Project Overview

- Focus: decentralized, self-organizing networks
  - Easy to deploy; flexible; robust
- Grid "ad-hoc" wireless routing protocol
  - For smart devices, rooftop networks
  - Nodes forward each others' data
  - No infrastructure required
  - Key challenge: scale to large networks
- Chord distributed lookup algorithm
  - Foundation for peer-to-peer applications
  - Provides distributed hash table
  - Key challenges: Internet scale, robustness

Progress Through December 2001

- Hardened ad-hoc routing protocol
    - Problem: malicious network participants
    - Solution: find and try alternate paths
    - Status: designed, now evaluating
- Multi-hop radio routing with low-quality links
    - Problem: most routes contain lossy links
    - This is a serious practical problem
    - Solution: loss/signal-aware routing
    - Status: Measuring real network
        - And designing better routing algorithms

Research Plan for the Next Six Months

- Finish work on routing w/ lossy links
  - Implement and deploy solution
  - Write and submit findings
- Deploy a roof-top radio network
  - Use Grid to connect student apartments
  - Grow 4-node prototype to dozens
  - Measure real-life use of Grid
- Build Chord-based peer-to-peer applications
  - Distributed file backup
  - File sharing and indexing