Robert Morris and Frans Kaashoek

Project Overview

- Theme: decentralized, self-organizing networks
  - Easy to deploy; flexible; robust
- Area 1: Grid "ad-hoc" wireless routing protocol
  - For smart devices or rooftop networks
  - Nodes forward each others' data
  - No infrastructure required
  - Key challenge: scale to large networks
- Area 2: Chord distributed lookup algorithm
  - Foundation for peer-to-peer applications
  - Provides distributed hash table
 - Key challenges: Internet scale, robustness
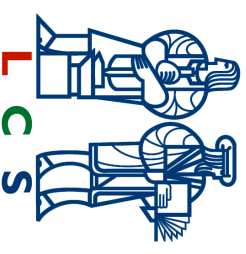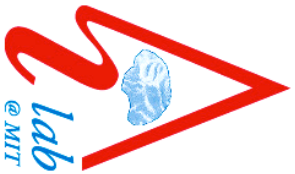
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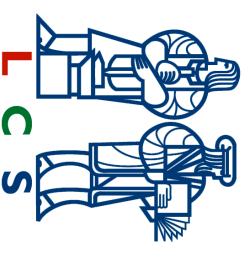
Progress Through June 2002

- Roof-top Grid net development:
  - Expanded to 10 nodes in Cambridge apartments
    - Density still not high enough for production use
  - Finished design+simulation of secure ad-hoc routing
- Link-quality-aware routing for Grid:
  - Measured link quality on indoor and rooftop nets
  - Simulated effects on existing routing protocols
- Designed "Ivy" peer-to-peer read/write file system
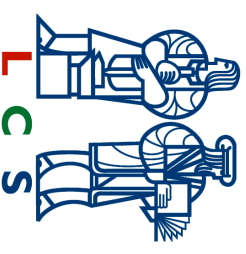 - Based on Chord/DHash
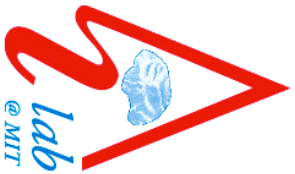
Research Plan for the Next Six Months

- Continue designing link-quality-aware routing
  - Difficult due to complexity of radio behavior
- Improve roof-top net
  - More nodes, careful node placement
- Design peer-to-peer keyword search/indexing
- Develop Ivy file system
  - Focus is on consistency semantics