Project Overview

- Developing models, analysis methods for distributed systems, focusing on cooperative group activities in networks.
- Agent communication, group communication
- Dynamic:
  - Participants come and go, change location.
  - Network topology changes, components fail and recover.
- Implementations complex; hard to build/understand/analyze
- Use formal modeling/analysis methods:
  - I/O automata, pi calculus, knowledge-based methods
  - Extend, combine methods
- Case studies: CSCW, e-commerce, distributed databases
Progress Through June 2000

• Agents
  – Dynamic I/O Automata
  – Travel agent case study

• Group communication
  – Scalable group membership for WANs
  – Client-server Virtually Synchronous Group Communication
  – Dynamic configuration service
  – Totally ordered multicast with QoS
  – Availability study of dynamic voting
Research Plan for the Next Six Months

• Agents
  – DIOA improvements
  – Extension to time
  – NePi2 implementation model
  – Erdos application model

• Group communication
  – Scalable reliable multicast
  – Group communication in WANs
    • Implementation and performance analysis
  – Continue work on TO-Mcast with QoS
    • Study Atomic broadcast