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

• Group Communication
  – Scalable group membership for WANs
  – Group communication for WANs
  – Inheritance-based modeling and verification
  – Totally-ordered multicast with QoS guarantees
  – Availability study for dynamic voting algorithms

• Dynamic Systems
  – DIOA model

• NTT Visit by Attie, Lynch: DIOA and agent-based -- computing; NePi2 semantics using IOA
Research Plan for the Next Six Months

• Group Communication
  – Performance evaluation of GC services, algorithms
  – New GC services, algorithms with QoS guarantees

• Dynamic Systems
  – DIOA tech report
  – Add structure: Agents, objects
  – DIOA + liveness + timing