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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

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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

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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