Good Afternoon, Colleagues

Are there any questions?

Peter Stone
Logistics

• Programming assignment 4 — any questions?
Logistics

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- Week 5 assignments are up
Logistics

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- Discussion scheduling
Logistics

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- Final exam time: Wednesday 5/7, 10–noon
Logistics

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• Week 5 assignments are up
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• Final exam time: Wednesday 5/7, 10–noon
  – No exam
  – Final tournament and oral project presentation
Some Definitions

- Distributed Computing:
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- **Distributed AI**:

  [Further content not visible in the image]
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- **Multiagent Systems**: Behavior coordination or behavior management.
  - No necessary guarantees about other agents.
  - Individual behaviors typically simple relative to interaction issues.
Multiagent Systems

- Study, behavior, construction of possibly preexisting autonomous agents that interact with each other.
  - incomplete information for agents
  - no global control
  - decentralized data
  - asynchronous computation
Why Multiagent Systems?
Why Multiagent Systems?

(7)

- Some domains require it. (Hospital scheduling)
- Interoperation of legacy systems
- Parallelism.
- Robustness.
- Scalability
- Simpler programming.
- “Intelligence is deeply and inevitably coupled with interaction.” – Gerhard Weiss
Organizations

• Hierarchy:
Organizations

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Organizations

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Department of Computer Sciences
The University of Texas at Austin
Organizations

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• **Community of Experts**: specialists, mutual adjustment

• **Market**: bid for tasks and resources; contracts

• **Scientific community**: full solutions (perhaps with varying information) combined
Issues and Challenges

• How to break down and resynthesize the problem among agents
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- Reconciling different points of view
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• Engineering
Dimensions and issues

- cooperative vs. competitive
- communication
- trust
- recursive modeling
- coalitions
- game theory
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Convoy example
Individual Agents

What did Sycara say about reactive vs. deliberative agents?
Individual Agents

• Purely reactive agents have disadvantages
  – Can’t react to nonlocal info or predict effects on global behavior
  – hard to engineer

• Hybrid approach better

• Hard to evaluate agent architecture against one another