What is the ART Testbed?

A tool for

**Experimentation:** Researchers can perform easily-repeatable experiments in a common environment against accepted benchmarks.

**Competitions:** Trust technologies compete against each other; the most promising technologies are identified.
What is this presentation about?

The ART TestBed architecture and the motivations behind the technical decisions.

For a more general presentation about ART

The Agent Reputation and Trust Testbed: Experimentation and Competition for Trust in Agent Societies

SESSION 4c: trust and reputation I
(Thursday, July 28 10:30-12:30)
**Testbed Game Rules**

For a fixed price, clients ask appraisers to provide appraisals of paintings from various eras. If an appraiser is not very knowledgeable about a painting, it can purchase "opinions" from other appraisers.

Appraisers whose appraisals are more accurate receive larger shares of the client base in the future.

Appraisers can also buy and sell reputation information about other appraisers.

Appraisers compete to achieve the highest earnings by the end of the game.
The Agent Reputation and Trust Testbed, 2005

**Testbed Architecture**

- **Database**
  - Houses data about messages, true painting values, appraisals, opinions, and bank balances.

- **Game Server**
  - Handles the scheduling of games.

- **Simulation Engine**
  - Controls simulation environment and manages inter-agent communication.
  - Agent skeletons facilitate researchers to implant customized internal trust representations and algorithms.

- **Agent 1, Agent 2, Agent i**
  - Allow researchers to set parameters, observe game progress in real time.

**Interface**

- **Game Setup Interface**
- **Game Monitor Interface**

---

The Agent Reputation and Trust Testbed, 2005
Game server

- Allows the user to configure new games.
  - Schedule new games
  - Add agents to a certain game

- Schedules the configured games.

- Maintains a list of running games

- Allows the user to start the monitorization of a running game
Simulation engine

- Controls the simulation environment by enforcing chosen parameters.

- Assigns clients to appraisers.

- Manages communication.

- Sequential simulation.

- Mechanism to ensure that an agent cannot block the simulation.
Simulation engine

Step 1: Client Allocations

Step 2: Reputation Transactions

Step 3: Opinion Transactions

Step 4: Reputation Weights and Received Opinions

Final Appraisals
package testbed.participants;

import testbed.messages.*;
...

public class ExampleAgent extends Agent {
    public void initializeAgent() {
        ...
    }

    public void prepareReputationRequests() {
        ...
    }

    public void prepareReputationAcceptsAndDeclines() {
        ArrayList reputationRequests = getIncomingMessages();
        ...
        sendOutgoingMessage(msg);
    }
    ...
}
User Interfaces

Game Monitor Interface: Viewing Game Data in Real-Time

Simulation engine frontend

Game server frontend

Game Setup Interface: Initiating, Joining, and Viewing Games
Conclusions

The ART Testbed provides a tool for both experimentation and competition

  - Promotes solutions to prominent trust research problems
  - Features desirable characteristics that facilitate experimentation
We want you ...  

... for the ART TestBed
How can you get involved?

Providing feedback about the ART Testbed (Discussion Board)

Downloading and use the ART Testbed Server and Agent software (Fall 2005)

Participating in the first ART Testbed Competition (Summer 2006)

Joining the ART Testbed development team
To know a little bit more...

The Agent Reputation and Trust Testbed: Experimentation and Competition for Trust in Agent Societies

SESSION 4c: trust and reputation I (Thursday, July 28 10:30-12:30)

ART Testbed Demonstration
Friday 10:30-12:30 and 2:00-3:00

ART Testbed private demonstrations
Anytime, anywhere during AAMAS-05

The ART Testbed website:
http://www.lips.utexas.edu/art-testbed

Following days in AAMAS-05