The UMBC TAGA Demo

- **What we have developed and achieved**
  - Travel Agent Game in Agentcities (TAGA)
  - A FIPA compliant agent framework that extends and enhances the Trading Agent Competition (TAC)
  - TAGA won the *Best Student Entry in the Agentcities sponsored Agent Technology Competition* held in Feb. 2003 in Barcelona

- **Features:**
  - Open Market Framework
  - Auction services are developed to enrich the Agentcities environment
  - The use of Semantic Web languages (OWL) improves agent interoperability
  - OWL-S is employed to support agent service registration, discovery and invocation

- **TAGA demonstrates agent and semantic web technology working together**
- **Inspired by TAC, TAGA is designed as a general framework for running agent-based travel market simulations and games**
- **Our Objectives:**
  - Develop an open framework for building trading game simulation
  - Develop a MAS research test-bed for studying intelligent agent and semantic web technologies
The TAGA Game and Players

- **Game Objective:** develop strategies for different agents to achieve their objectives
- Game participants can choose to implement/play agents with different roles and objectives:

<table>
<thead>
<tr>
<th>Role</th>
<th>Objectives</th>
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<tbody>
<tr>
<td>Customer Agent (CA)</td>
<td>✗ Find travel arrangements   ✗ Save $$</td>
</tr>
<tr>
<td>Travel Agent (TA)</td>
<td>✗ Satisfy customers’ needs   ✗ Maximize profits</td>
</tr>
<tr>
<td>Web Service Agent (WSA)</td>
<td>✗ Sell “goods” (e.g., plane tickets, hotel rooms)   ✗ Maximize profits</td>
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- **TAGA provides Agent Shell**
  - Download the source code, customize the parameters, and play the game
  - Users can also develop customized agent strategies
  - Agents follow well-defined, industry supported standards for agent communication languages and protocols

- Based on TAGA, researchers can develop more advanced agent models involving distributed trust, social norms, reputations models, security and privacy considerations.
Our Demo Will Show:

1. The architectural design of TAGA, including ontologies, Agent Communications Language, Protocol and agent shell.

2. The runtime feature of TAGA game server: a multi-tier semantic web application involving web servers, remote Java applications, FIPA agent systems, global Agentcities, the Semantic Web and web services.

3. The runtime interaction of different TAGA agents including the complete cycle of a typical TAGA scenario.

4. How to customize and extend the TAGA for research and teaching purposes.
(1) A new customer with particular travel constraints and preferences sends CFP message to BBA;
(2) BBA forwards the CFP to registered TAs.
(3) Each TA contacts the necessary ASAs and SAs, independently decides how to respond;
(4) TA sends CA a travel itinerary proposal, including the travel date, travel service units, price and penalty;
(5) CA compares proposals, ultimately selecting one TA based on price, penalty and TA’s reputation;
(6) The chosen TA attempts to purchase the service units in the itinerary from the ASAs and SAs;
(7) All transactions are reported to the MOA, who will verify them and transfers money from buyer to seller.
• TAGA is constantly running as part of the Agentcities network (http://www.agentcities.net);
• The TAGA server publishes travel and auction services to DF, responses to the travel service requests and maintains the integrity of the game.
• The TAGA agents, implemented in Jade or AAP, can dynamically join and leave without interrupting the execution of other agents;
• TAGA has robust Apache + MySQL web back-end system and a highly customizable PHP web scripting front-end.
TAGA Now and in the Future

Now
- A Sourceforge project
- Built on FIPA standards: Agentcities + April Agent Platform (AAP) + JADE
- Employs OWL in agent communication
- Uses OWL-S in Web Service registrations
- Robust & persistent web server backend (MySQL + PHP + Apache)

In the Future
- Ontology sharing and ontology mapping
- Interact with existing Agentcity services and web services
- Support hand-hold devices
- Develop TAGA toolkit for teaching agent technology and Semantic Web.

For more info: http://taga.umbc.edu

- We successfully demonstrated TAGA and won a prize in the Agent Technology Competition (Barcelona 2003) organized by Agentcities.NET.

- For more information, visit http://taga.umbc.edu for
  - Mailing lists
  - Source code download
  - News and Documents
  - Contact info
  - And more…