

CAT: a market design competition

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In the past decade the market paradigm has been adopted as the *prima facie* candidate for achieving coordination between self-interested, autonomous software agents. In this context, the area of mechanism design has been increasingly applied in order to achieve desired global outcomes based on local interactions, by developing rules of interaction that align the individual needs with social desiderata. Crucially, most of the current literature considers these mechanisms or markets in isolation and ignores any competition between them. In practice, however, we see similar markets competing, including Internet auction sites such as eBay and Amazon, and stock exchanges from around the world. Similarly, we argue that competition needs to be considered within multi-agent systems when designing mechanisms for them.

Against this background, we have developed an international market-design competition called CAT (short for *catalactics*, the science of exchanges) where each entrant to the competition sets the rules of interaction, as well as a fee structure. Each market consists of a double auction exchange where, similar to a stock exchange, the role of the market is to match buyers with sellers. Our competition framework includes the set of trading agents who participate in these markets, and who will choose the market which has proven the most profitable. Given this, the goal of the market designer is to attract profitable traders and make profits by charging appropriate fees. This can be done by changing the market rules and fees dynamically as a response to changing market condition. Overall, the objective of the competition is to see whether dynamic markets outperform static ones, and to study the types of markets that emerge from such complex interactions.

The CAT market design competition is an international competition and is part of the trading-agent competition (TAC). The first competition was successfully held in conjunction with AAAI 2007, and this year's competition is going to be held in conjunction with AAAI 2008.