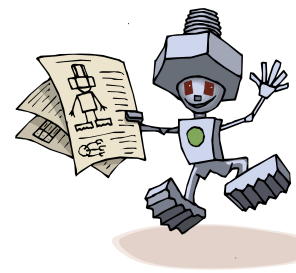


MinneTAC – An Autonomous Supply-Chain Trading Agent

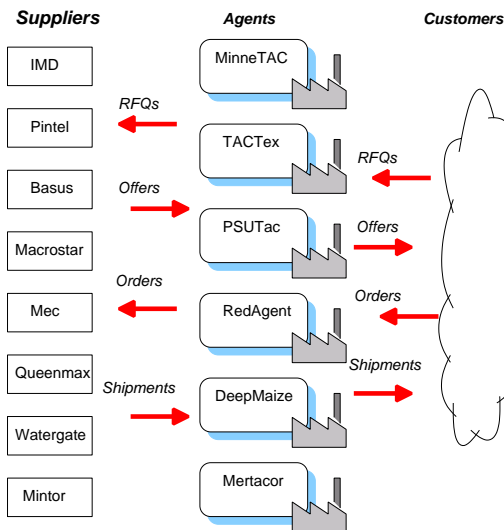
Amrudin Agovic, Peter Cooner, Wolfgang Ketter, Dane Kuiper, Jun Luo, John Nelson, David Schnitzlein, Eric Sodomka, Jeff Woolley, John Collins, and Maria Gini



TAC SCM

TAC SCM is an international competition where autonomous agents compete to maximize profits in a computer-assembly scenario.

Agents must buy parts from suppliers, assemble computers out of them, and sell the computers at auction to customers. The agent with the highest bank balance at the end of the game wins. Each game runs for 220 virtual days.



Agent decision processes

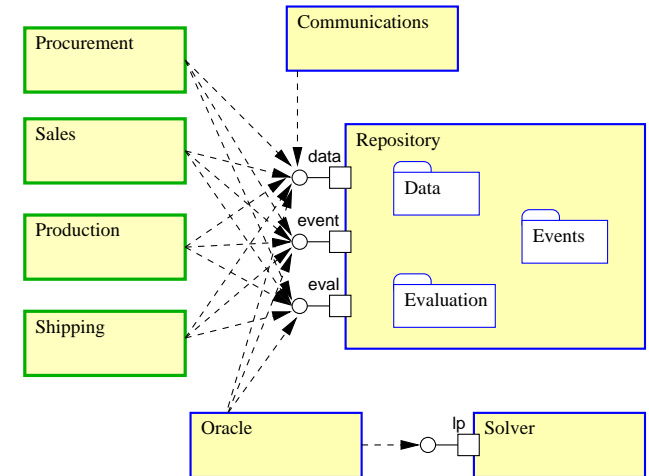
Every day each agent needs to decide

- Procurement:** how many parts to buy, from which supplier, for what delivery date, and at what reserve price. Supplier pricing is a function of demand. Suppliers make offers if they can meet agent requests. Rejecting offers damages the reputation of an agent.
- Sales:** at what price to sell its computers (if any) in response to customer demand. Computers are sold at auction, the lowest price offer wins.
- Production:** which computers to produce in its factory. Factory capacity is limited, so the agent must use its production cycles carefully.
- Shipping:** which computers to ship to customers. If computers are not shipped on time a late penalty is charged and, at some point, the order is canceled.

<http://www.cs.umn.edu/tac>

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MinneTAC architecture



Repository serves as an internal database, maintains the state of the system, and notifies other components of changes in state. All other activity is driven by these state changes.

Communications handles communication with the game server.

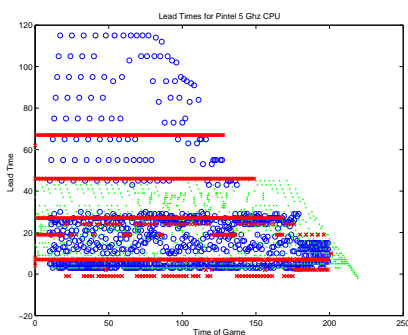
Procurement procures parts. It must issue RFQs to suppliers and decide whether to accept offers that are returned.

Sales makes offers in response to customer RFQs. It must decide, for each RFQ, whether to bid and at what price.

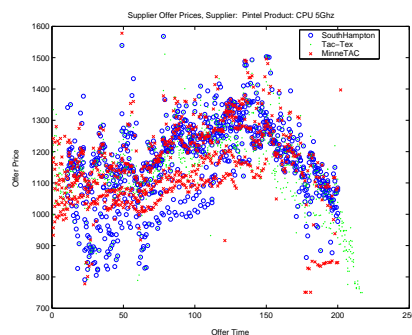
Production schedules the manufacturing facility. It may build and maintain target finished goods inventory levels, or it may build only to meet existing customer orders.

Shipping ships product to customers.

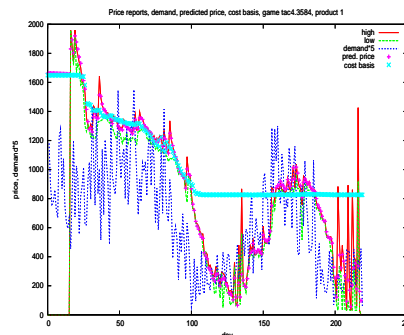
Oracle predicts future demand and availability.



Supplier lead times



Supplier offer prices



Customer demand and prices