

Distributed Production Scheduling Using Federated Agent Architecture

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Abstract. Making a production system readily reconfigurable in a bid to adapt to very fluid demand profile is pertinent to cost reduction and facility utilization objectives of the system. We consider a production scheduling methodology based on federated agent architecture designed for a flexible job shop with dynamic demand. The interaction protocol within the social network is based on a facilitated auction mechanism. Facilitator agents are responsible for coordinating information flow between a controller agent and processors in different job centers. These facilitators interact in such a way as to reduce tardiness of tasks once an order is accepted by the controller agent. This model employs competition at job centers to maximize financial returns and uses cooperation among facilitator agents to minimize weighted tardiness.

Keywords: Multiagent System, Production Scheduling, Auction-Based Scheduling, Federated Agent Architecture.