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Interleaving Planning and Execution in a Multiagent Team Planning Environment

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Abstract

Agents in a multiagent system may need to share information and services. For this, they need to be able to interleave deliberative planning with execution of actions. The deliberative planning is needed to decide which actions to perform to achieve an objective, whereas execution of some of the actions is needed to make a more informed decision on the other actions and to access services provided by other agents.

HITaP is a planner that interleaves planning and execution: using HITaP an agent can, during planning, gather information by either direct inspection of the domain or by firing queries to other agents and recording their answers. Interleaving planning and execution, as provided by HITaP, plays a crucial role in an agent's ability to construct shared plans with other agents and to manage the negotiation process that leads to agreement with the agent's teammates on these plans.

HITaP is implemented and currently used as planning module for agents in the RETSINA multiagent system. These agents cooperate to solve problems in different domains that range from portfolio management to command and control decision support systems.

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