Separating representation, reasoning, and implementation for interaction management

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Most current interaction management toolkits include ...

1. A representation formalism for specifying states and actions;
2. A reasoning strategy for carrying out action selection;
3. A technical framework to aid in modular system development.

In the related research area of AI planning, the main goal is also action selection. However, planning researchers make widespread use of common representation languages (PDDL, PPDDL, RDDL, ...), largely due to the regular International Planning Competitions.

Benefits to the planning community:
- Clear separation between modelling a planning domain and implementing an engine for solving problems in that domain.
- Planning domains and engines can be shared, leading to the development of common benchmarks.
- Representation language themselves can be studied and compared directly in order to understand the tradeoffs.

Case study: AI planning for interaction management in JAMES (james-project.eu)
- Interaction management performed by PKS domain-independent planner
- State and action representations defined separately from reasoning tools and infrastructure
- Planner could be swapped out for comparison

This means that comparing representation or reasoning strategies requires re-implementing an entire system across frameworks.