Planning in AI

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Source : https://www.aiai.ed.ac.uk/project/plan/ooc/

Human Planning and Acting

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- acting after planning:

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- people plan only when strictly necessary

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- AI planning:
  - computational study of this deliberation process

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- engineering goal of AI:

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- engineering goal of AI:
  build intelligent entities
  - build planning software for choosing and organizing actions for autonomous intelligent machines

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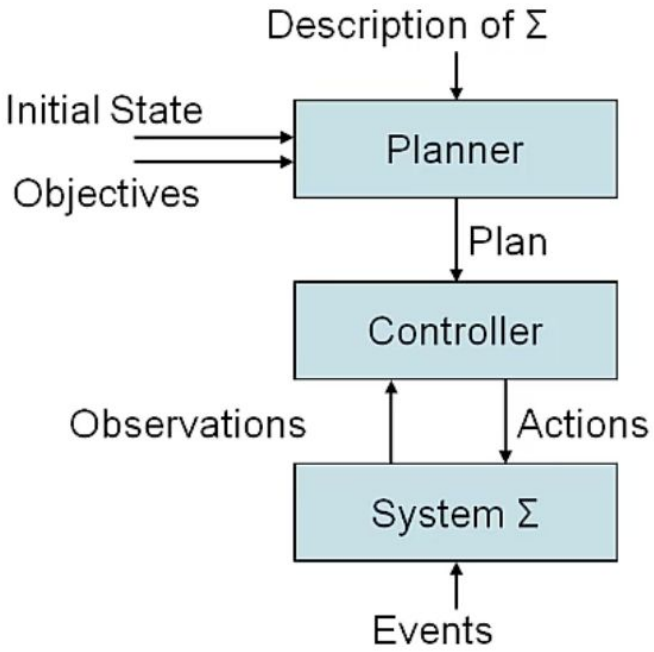
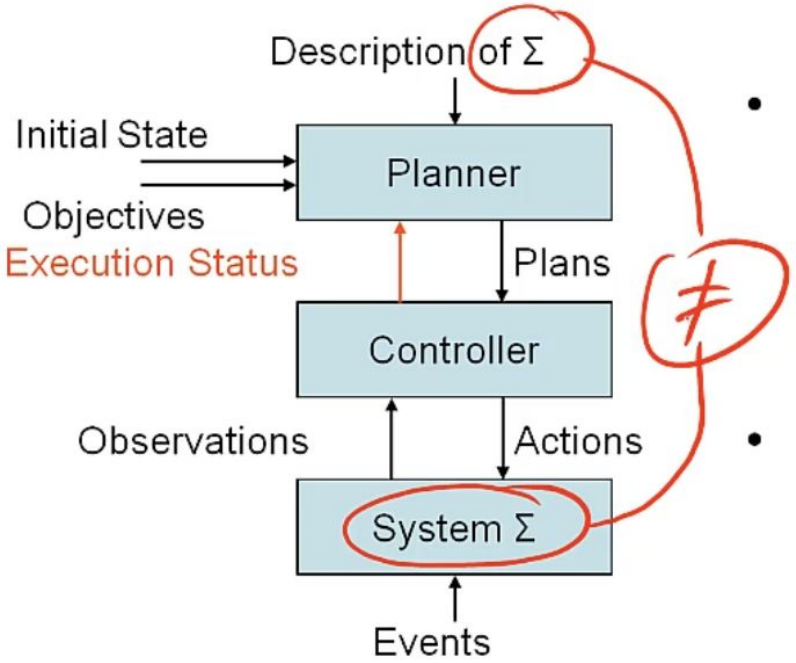
- domain-independent planning complements domain-specific planning

Planning and Plan Execution



- planner:
  - given: description of Σ, initial state, objective
  - generate: plan that achieves objective
- controller:
  - given: plan, current state (observation function: $\eta: S \rightarrow O$)
  - generate: action
- state-transition system:
  - evolves as actions are executed and events occur

Dynamic Planning



- problem: real world differs from model described by Σ
- more realistic model: interleaved planning and execution
  - plan supervision
  - plan revision
  - re-planning
- dynamic planning: closed loop between planner and controller
  - execution status

Toy Problems vs. Real-World Problems

Toy Problems/Puzzles

- concise and exact description
- used for illustration purposes (e.g. here)
- used for performance comparisons

Real-World Problems

- no single, agreed-upon description
- people care about the solutions