

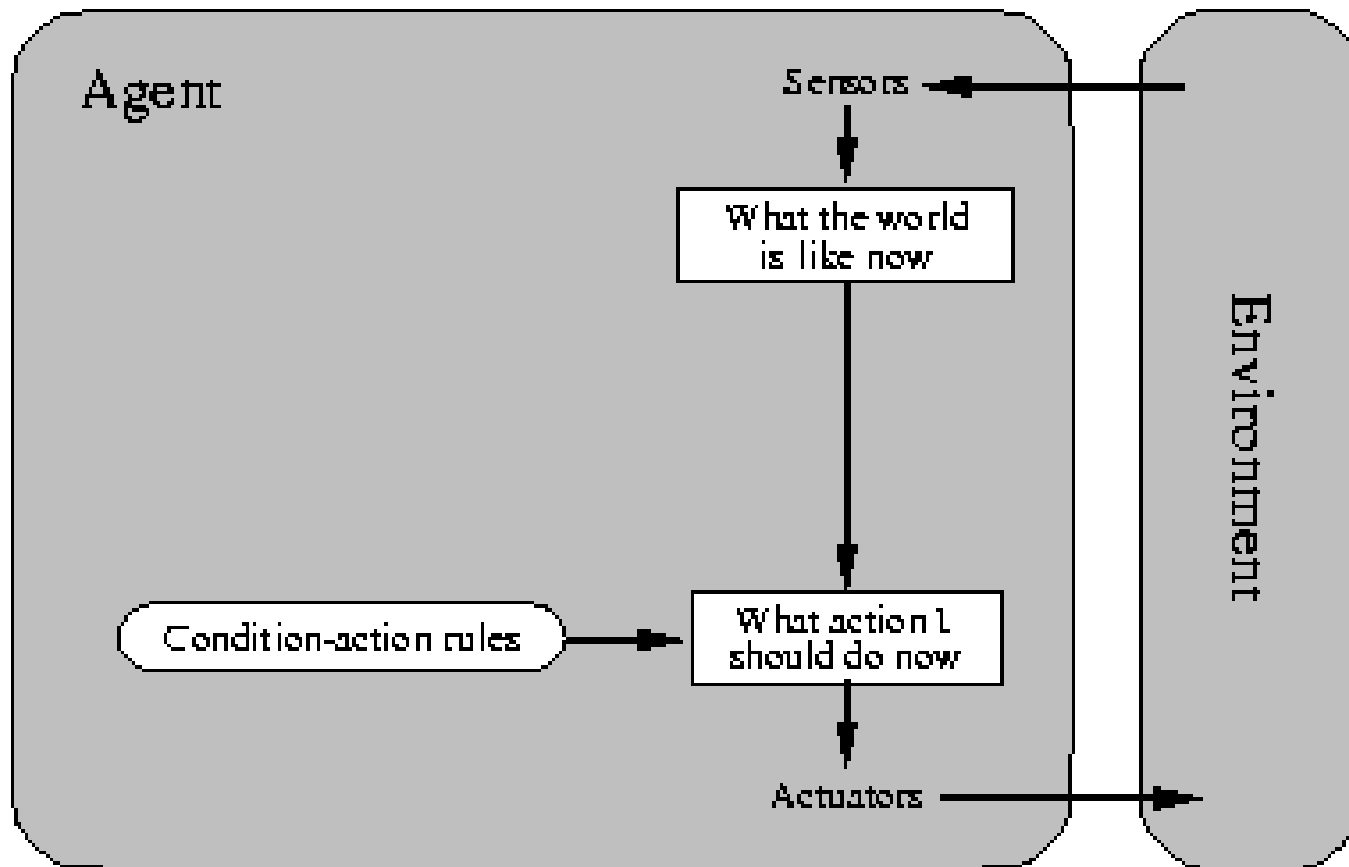
Types of intelligent agents

Types of Agents

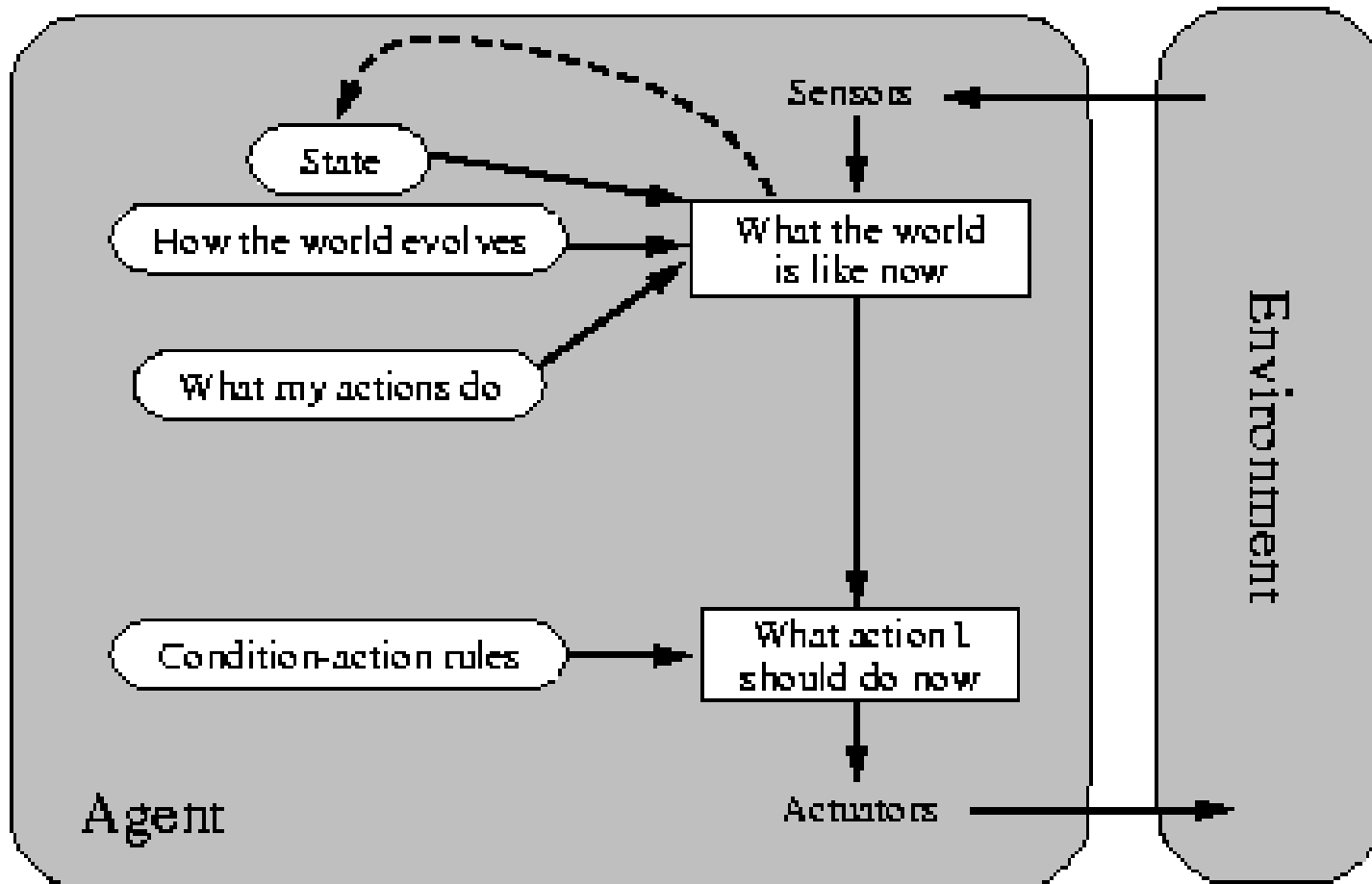
- Reflex Agent
- Reflex Agent with State
- Goal-based Agent
- Utility-Based Agent

- Learning Agent

Reflex Agent



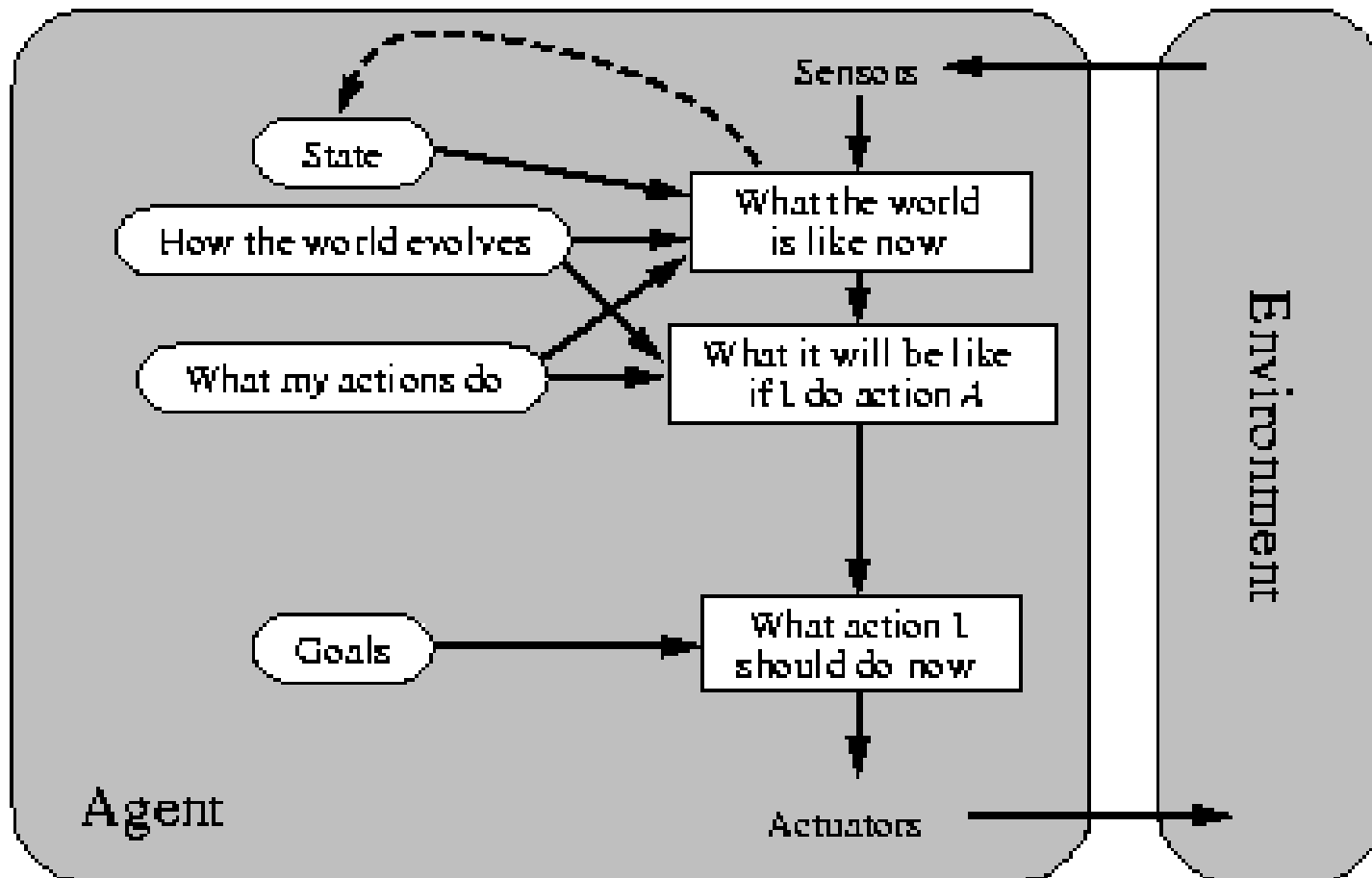
Reflex Agent with State



State Management

- Reflex agent with state
 - Incorporates a **model** of the world
 - Current state of its world depends on percept history
 - Rule to be applied next depends on resulting state
- $state' \leftarrow next\text{-state}(state, percept)$
 $action \leftarrow select\text{-action}(state', rules)$

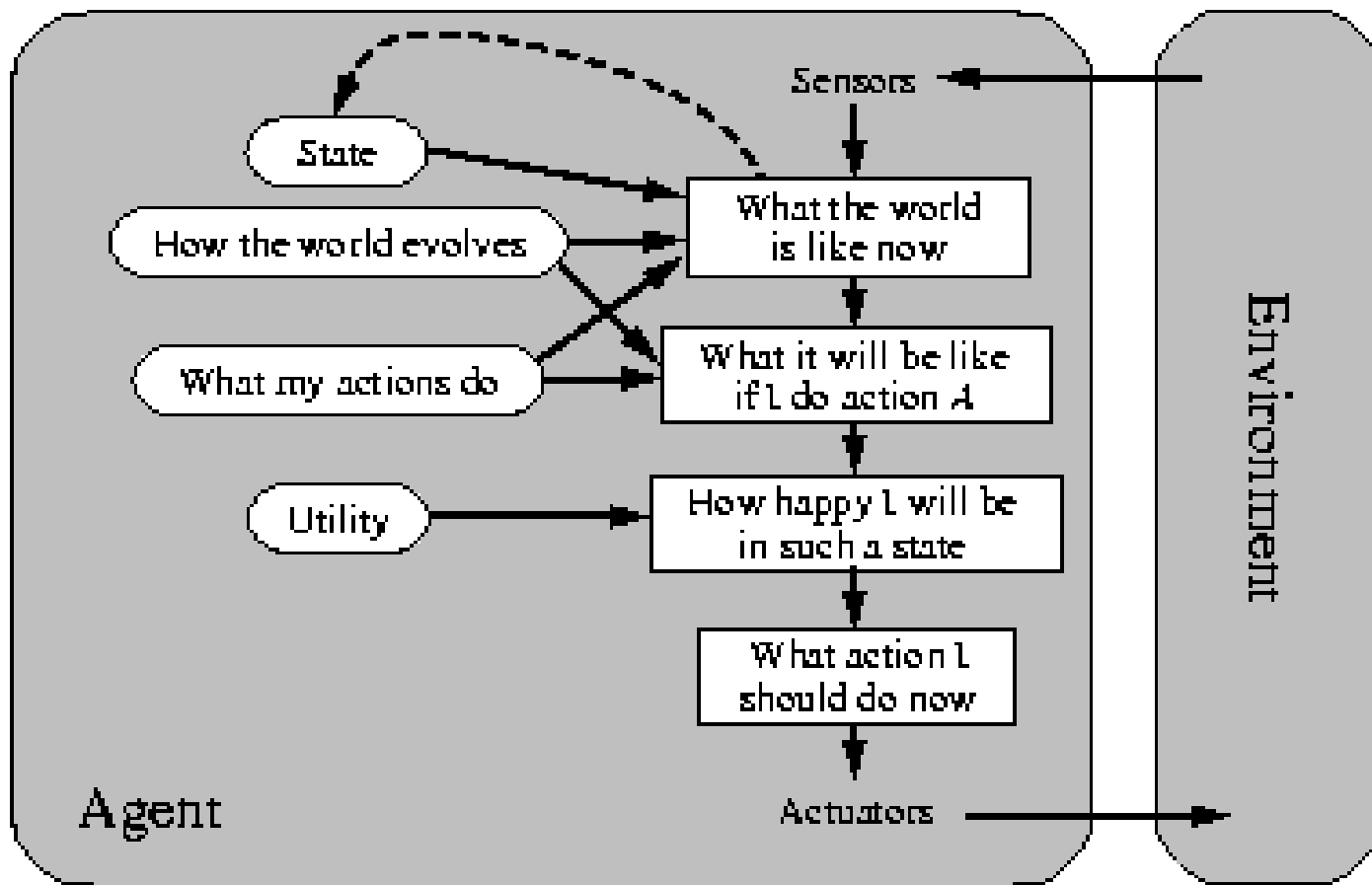
Goal-based Agent



Incorporating Goals

- Rules and “foresight”
 - Essentially, the agent’s rule set is determined by its goals
 - Requires knowledge of future consequences given possible actions
- Can also be viewed as an agent with more complex state management
 - Goals provide for a more sophisticated next-state function

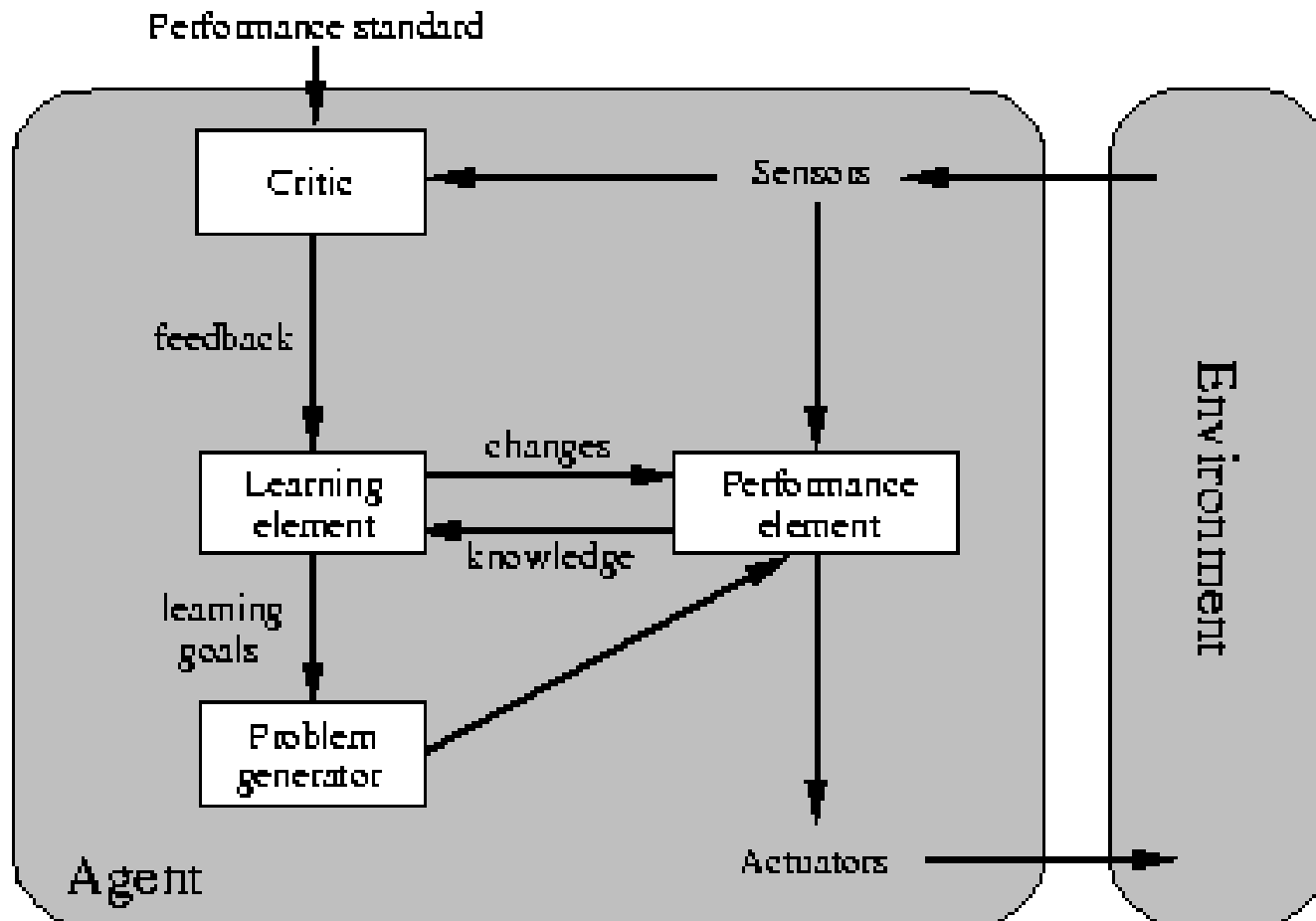
Utility-based Agent



Incorporating Performance

- May have multiple action sequences that arrive at a goal
- Choose action that provides the best level of “happiness” for the agent
- Utility function maps states to a measure
 - May include tradeoffs
 - May incorporate likelihood measures

Learning Agent



Incorporating Learning

- Can be applied to any of the previous agent types
 - Agent \leftrightarrow Performance Element
- Learning Element
 - Causes improvements on agent/ **performance element**
 - Uses feedback from **critic**
 - Provides goals to **problem generator**