

“Shuffling Cards”

Simple Story Modelling for Planning

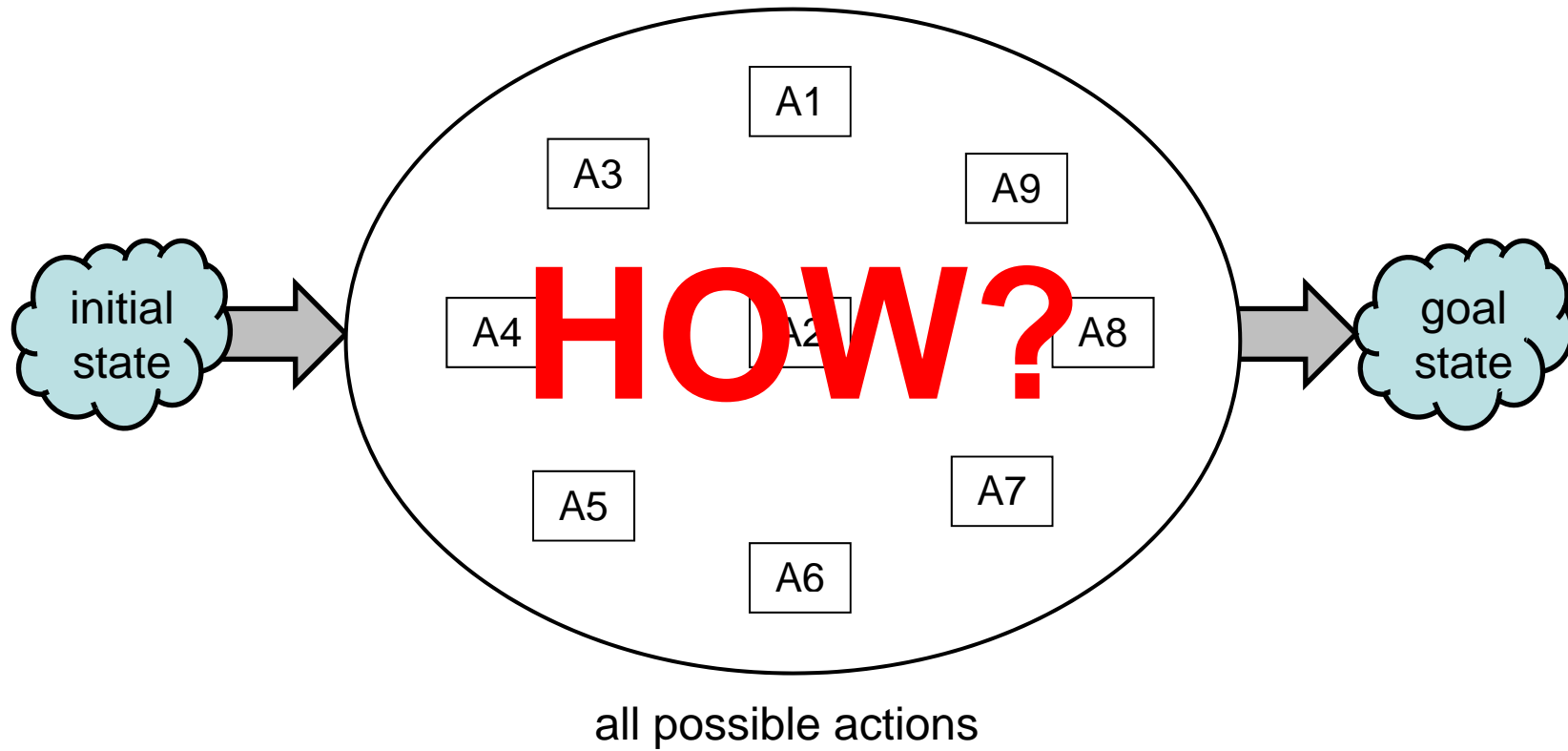
Steve Hoffmann

Overview

1. Basics

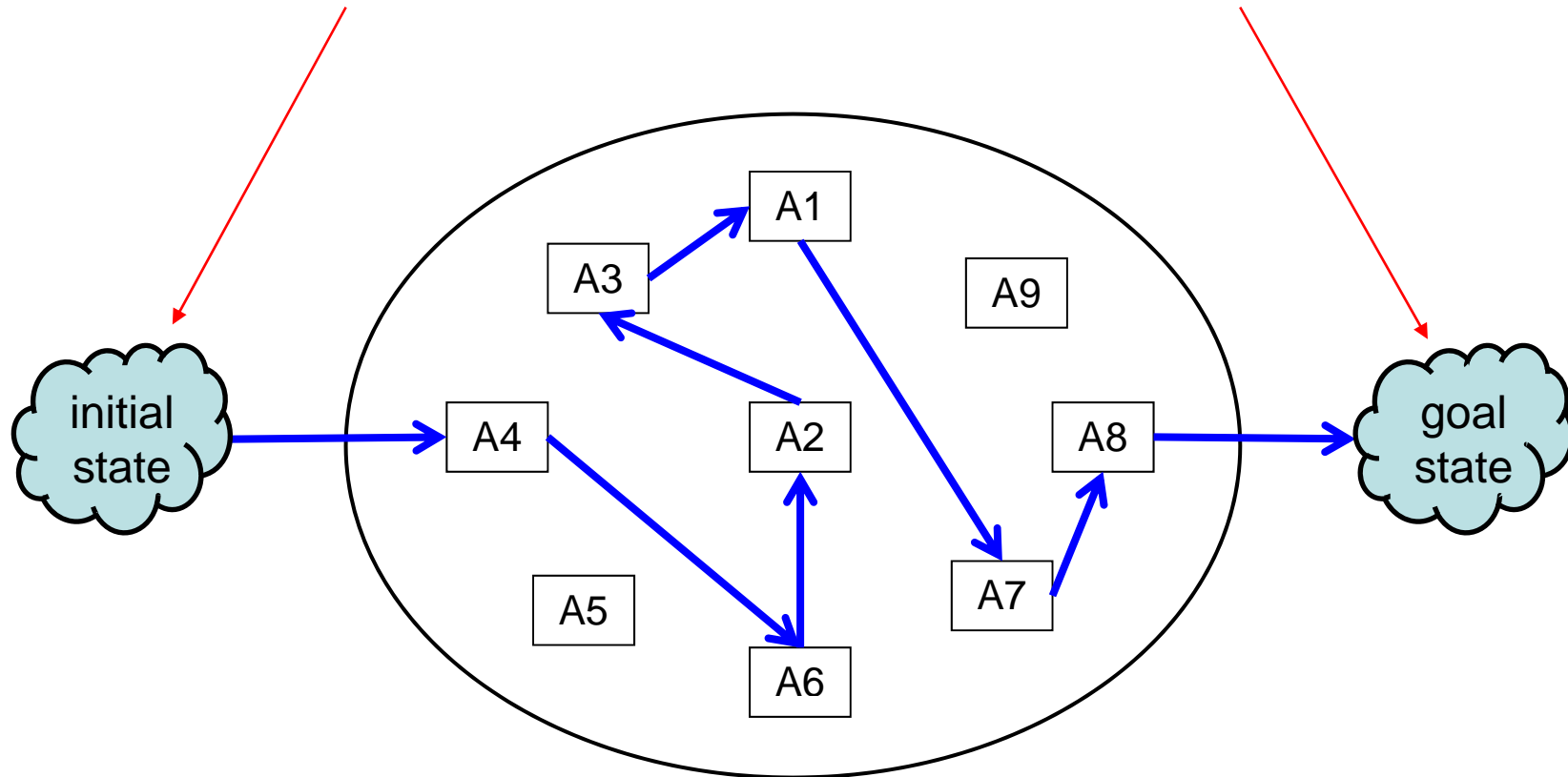
**2. Demonstration:
Card Game (James Bond Parody)**

1. Basics



1. Basics

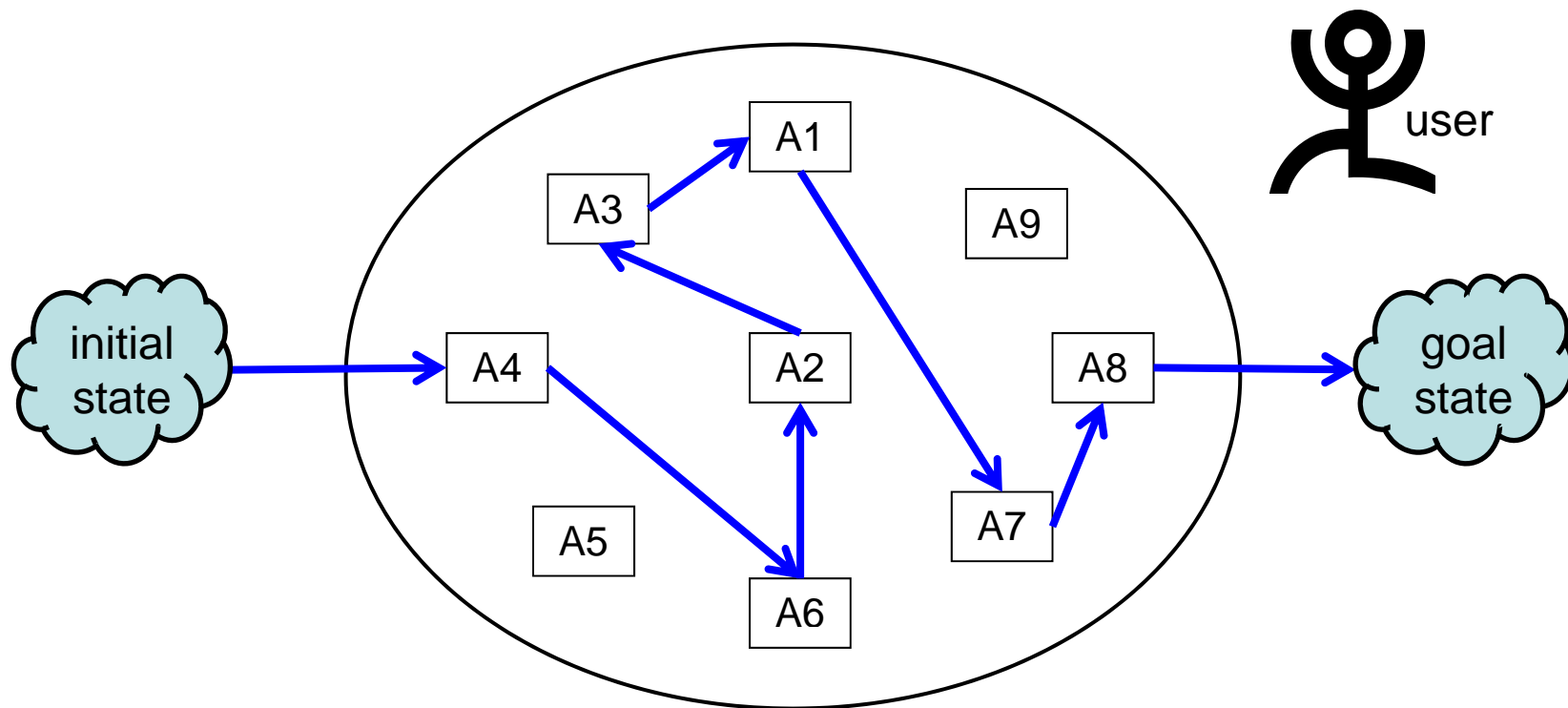
PLANNING is the search for a **SEQUENCE OF ACTIONS** that transforms an **INITIAL WORLD STATE** into a desired **GOAL STATE**.



PLANNING

1. Basics

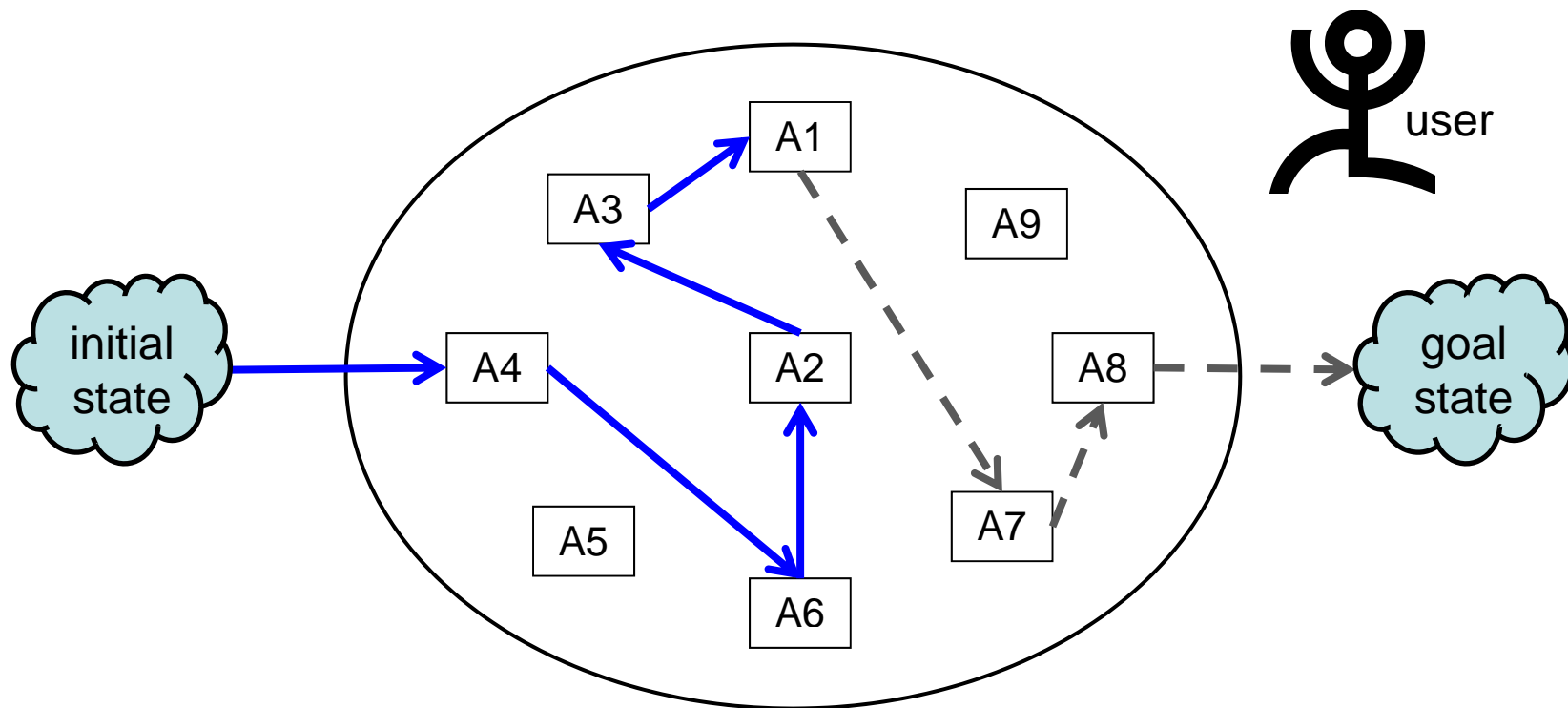
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PLANNING

1. Basics

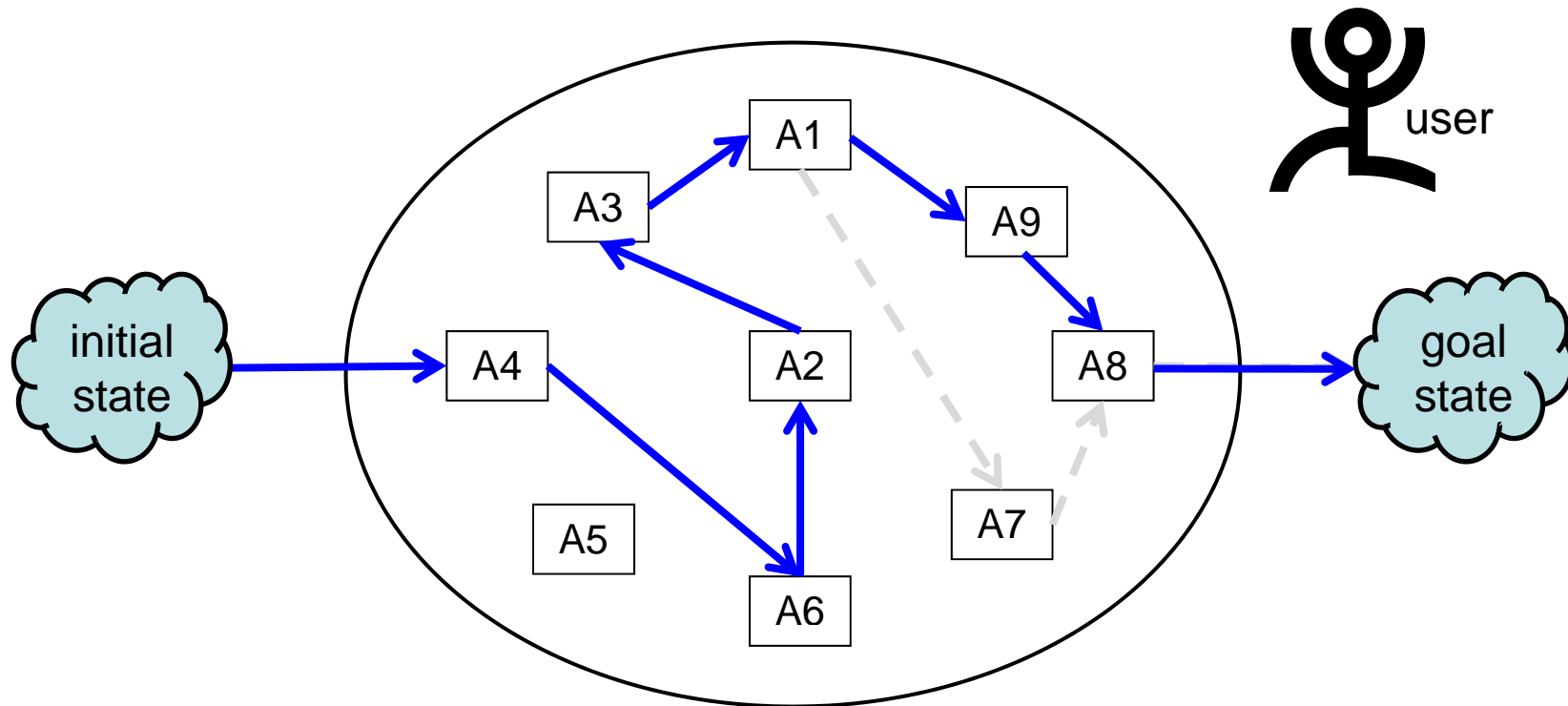
PLANNING is the search for a **SEQUENCE OF ACTIONS** that transforms an **INITIAL WORLD STATE** into a desired **GOAL STATE**.



PLANNING

1. Basics

PLANNING is the search for a **SEQUENCE OF ACTIONS** that transforms an **INITIAL WORLD STATE** into a desired **GOAL STATE**.



PLANNING

1. Basics

PROPOSITIONS are facts.

P02 woman has cigarette in hand

P01 helpless woman

P03 cigarette is not lighted

1. Basics

A **STATE** describes the current situation of the world with **PROPOSITIONS**

PROPOSITIONS are facts

STATE

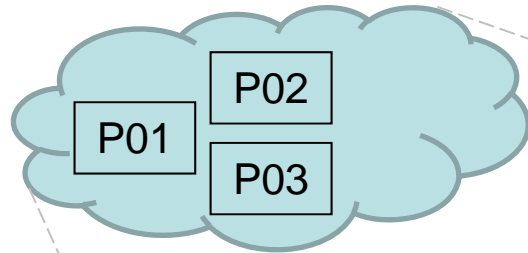
P02 woman has cigarette in hand

P01 helpless woman

P03 cigarette is not lighted

1. Basics

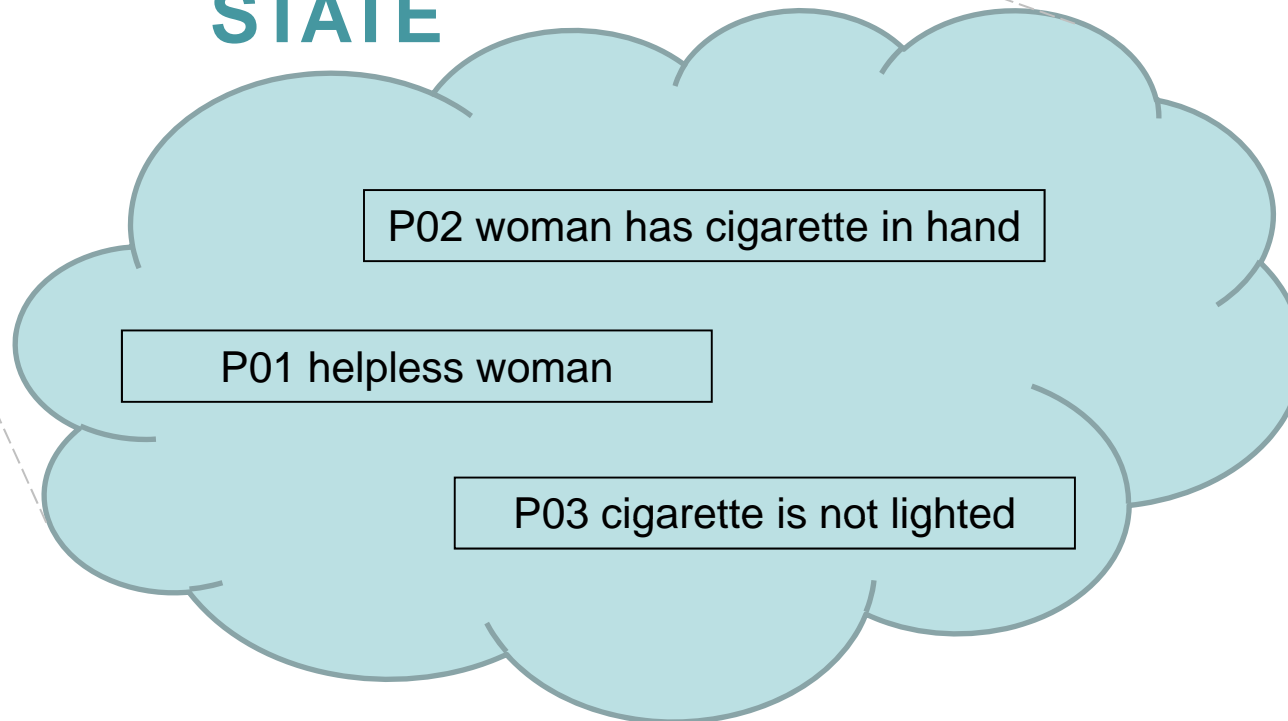
STATE



A **STATE** describes the current situation of the world with **PROPOSITIONS**.

PROPOSITIONS are facts.

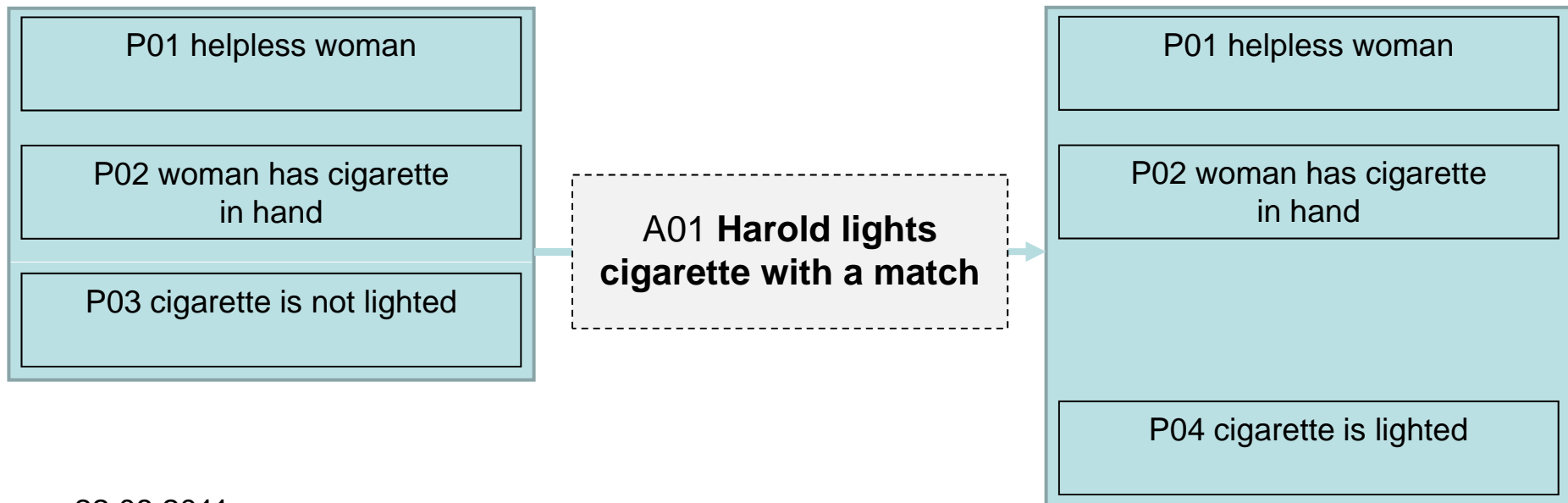
STATE



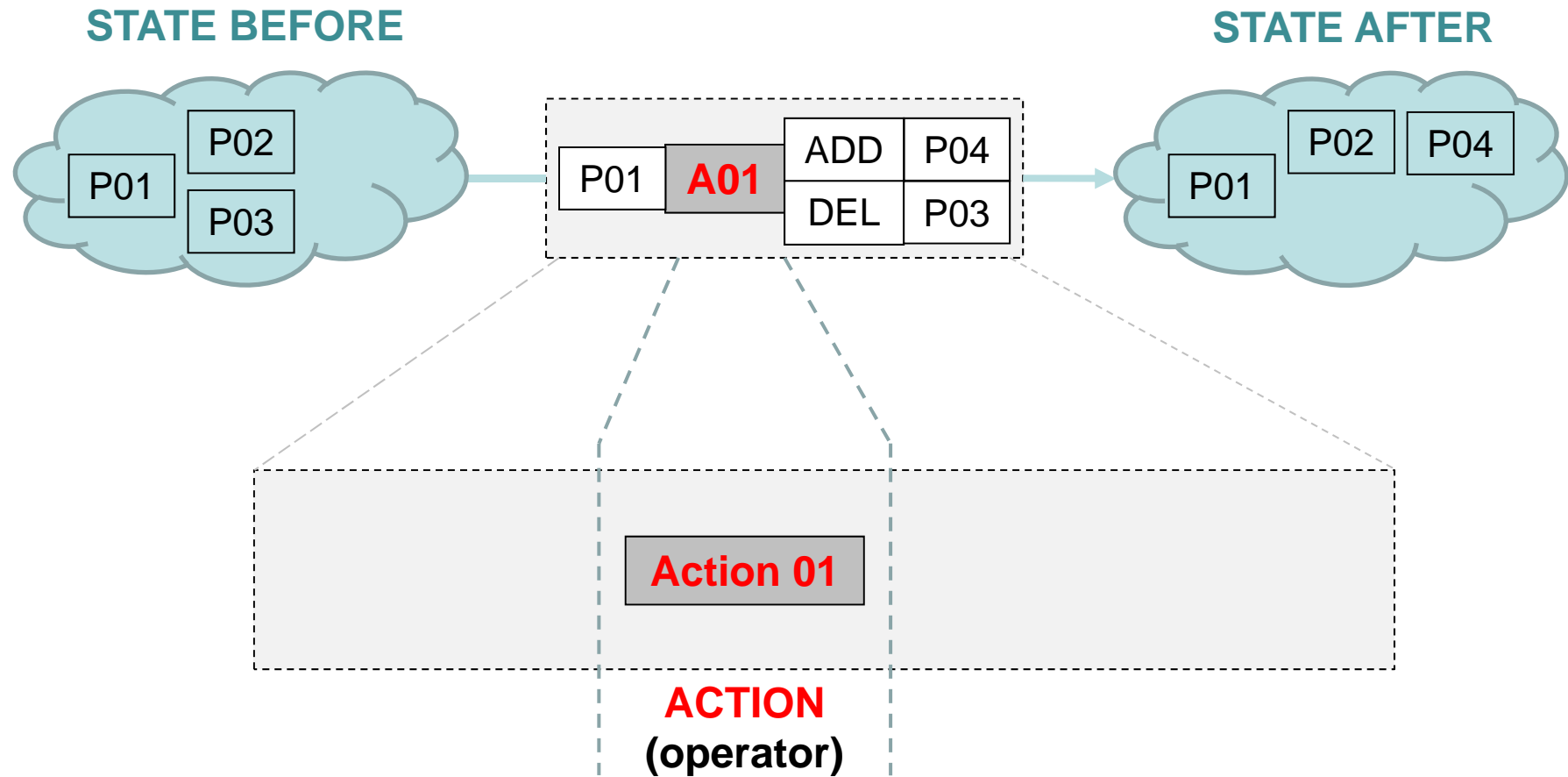
1. Basics



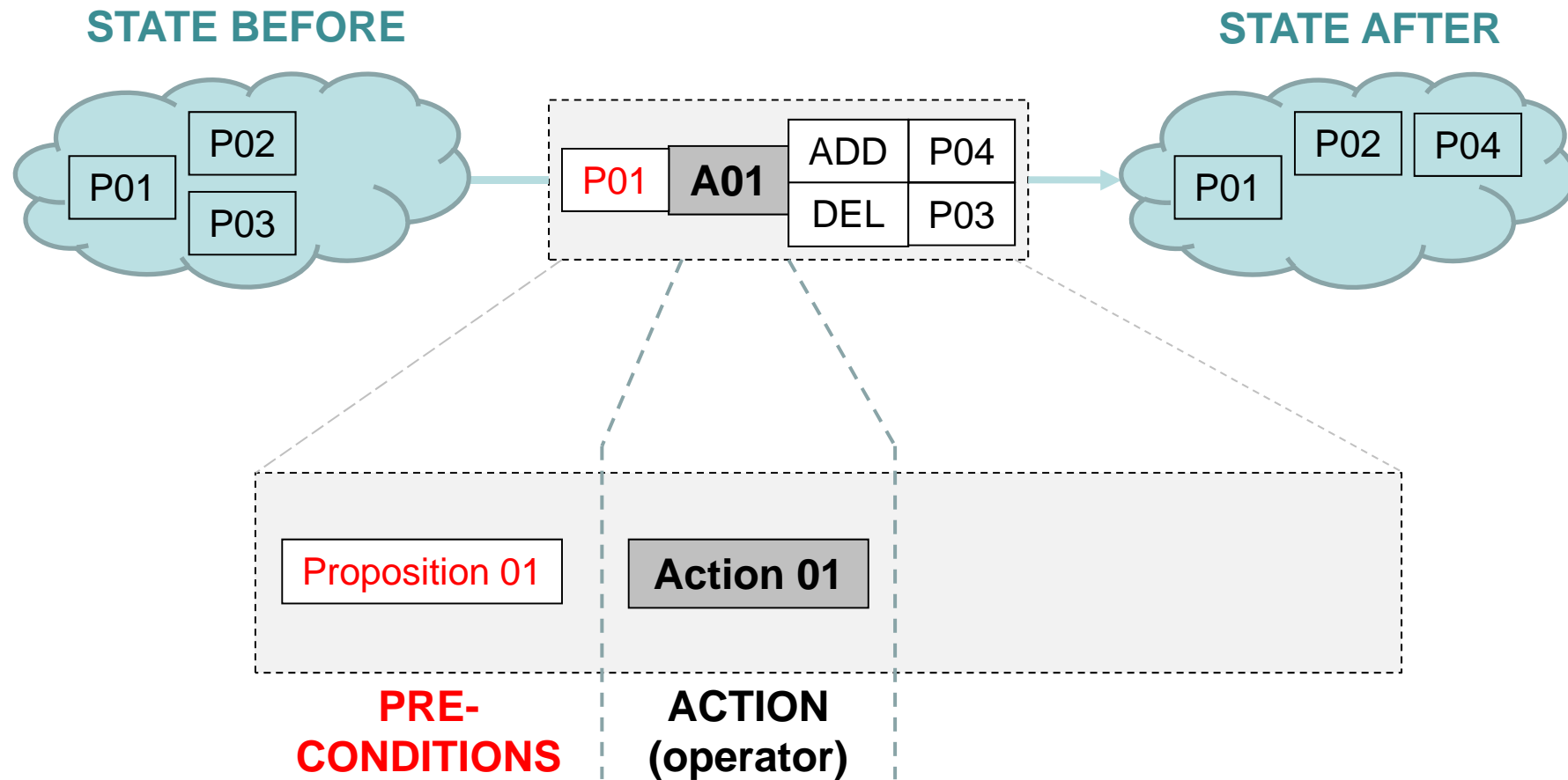
An **ACTION** can change one **STATE** into another **STATE**.



1. Basics

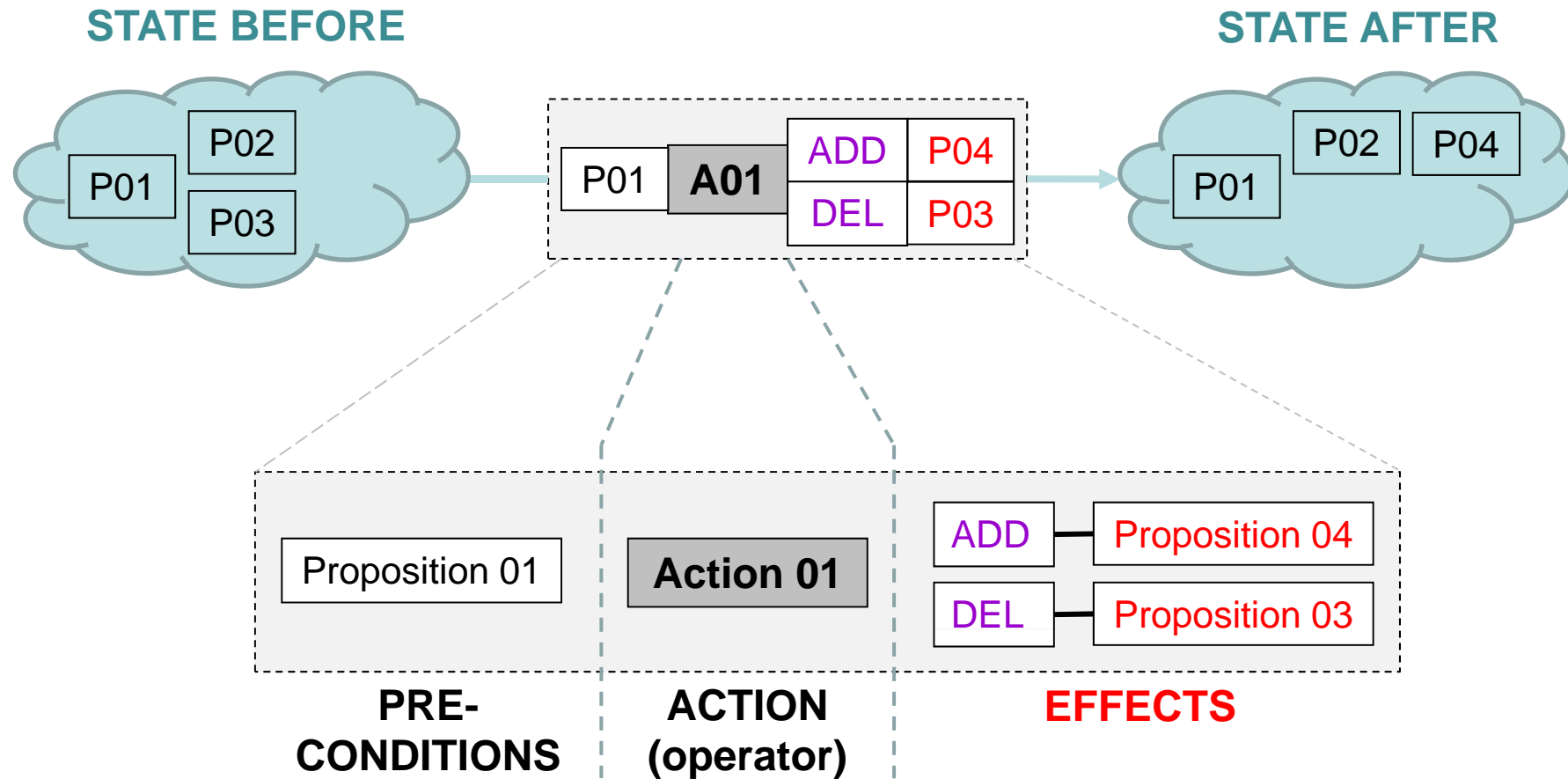


1. Basics



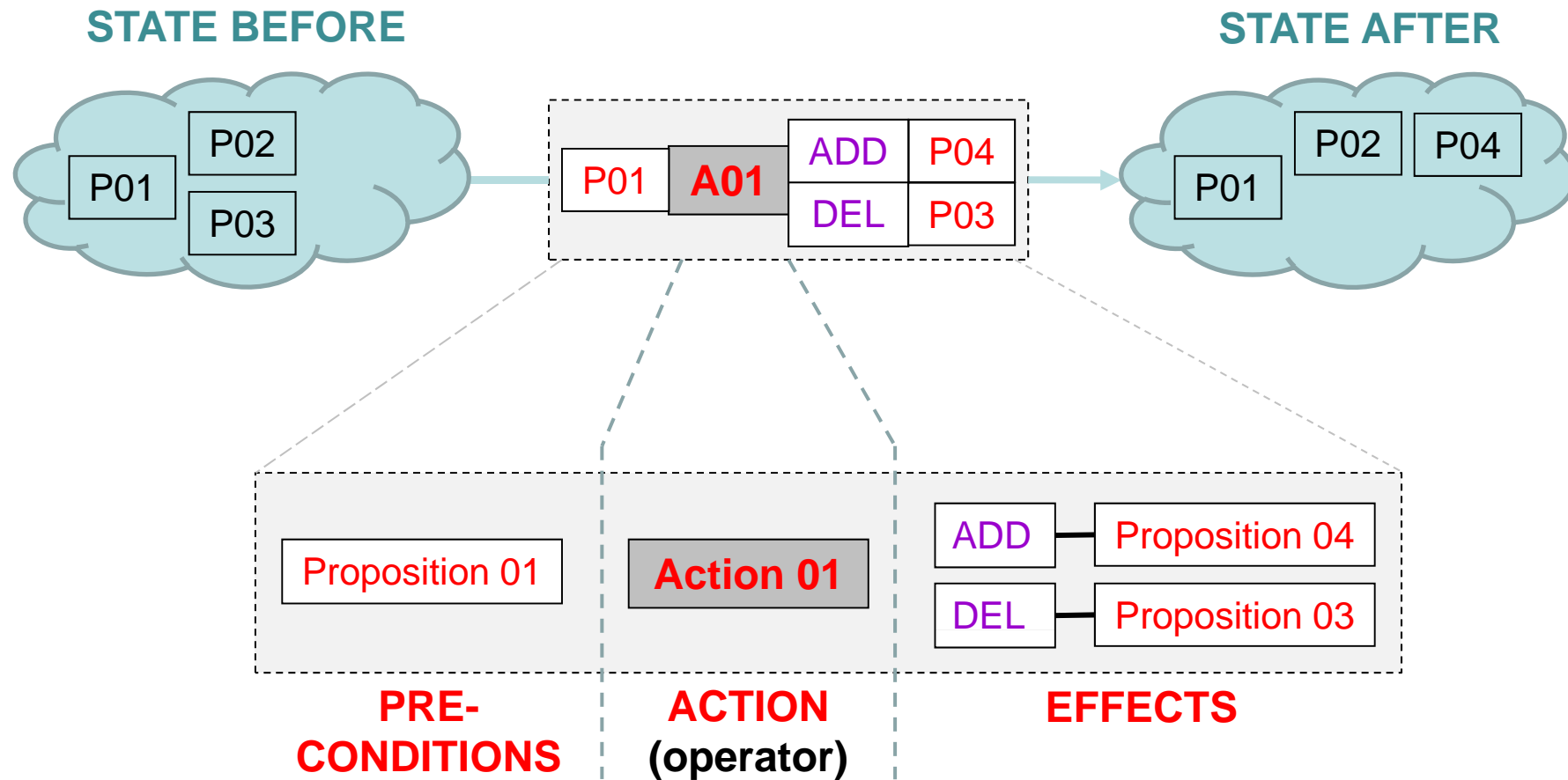
ACTIONS have PRECONDITIONS.
PRECONDITIONS are PROPOSITIONS (= facts).

1. Basics



ACTIONS have **EFFECTS**.
EFFECTS are **PROPOSITIONS** (= facts) and
they can be **ADDED** and/or **DELETED**.

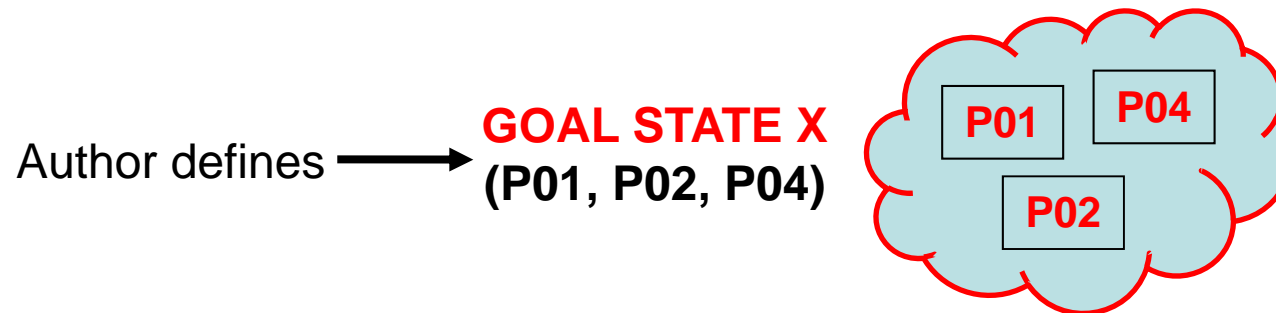
1. Basics



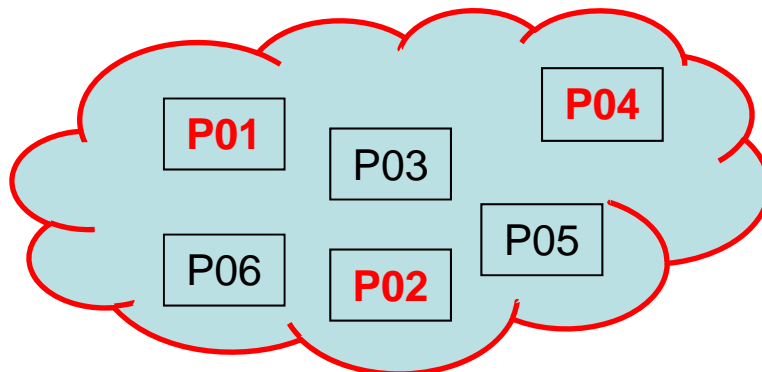
The Author creates **ACTIONS**, **PRECONDITIONS** and **EFFECTS**.
The Planner creates **STATES** and the **SEQUENCE OF ACTIONS**
during the planning process.

1. Basics

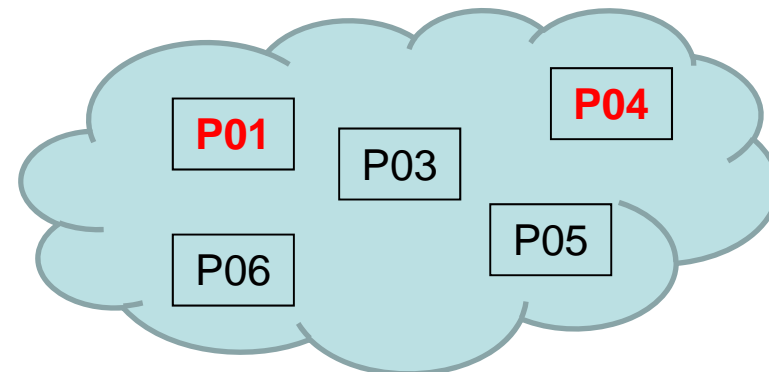
Special states are the **INITIAL STATE** (1) and **GOAL STATES** (min. 1).
A **GOAL STATE** is defined by its **GOAL PROPOSITIONS** (goal facts).



Every state with matching **PROPOSITIONS** (facts) becomes a **GOAL STATE**.

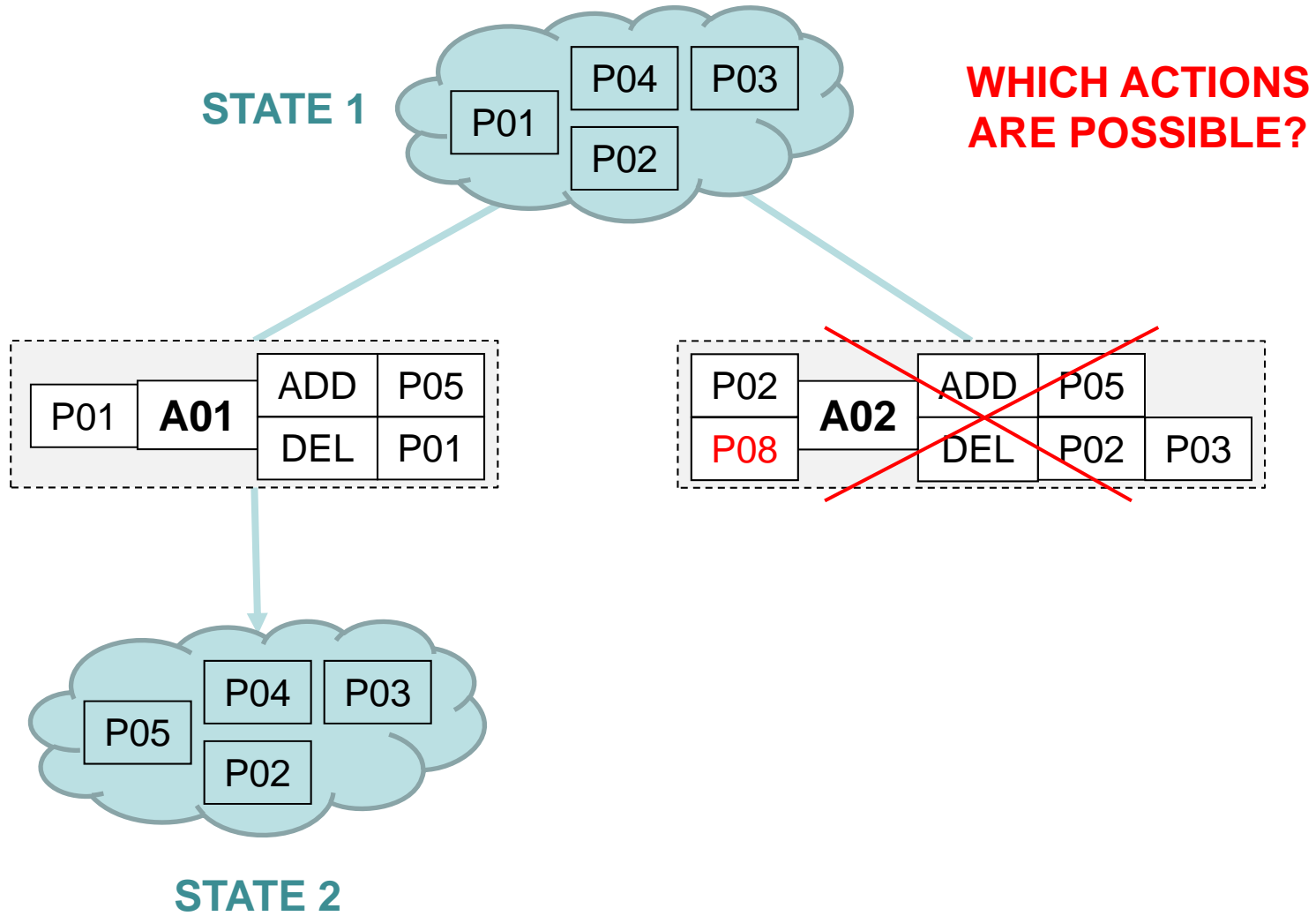


STATE Y \rightarrow GOAL STATE

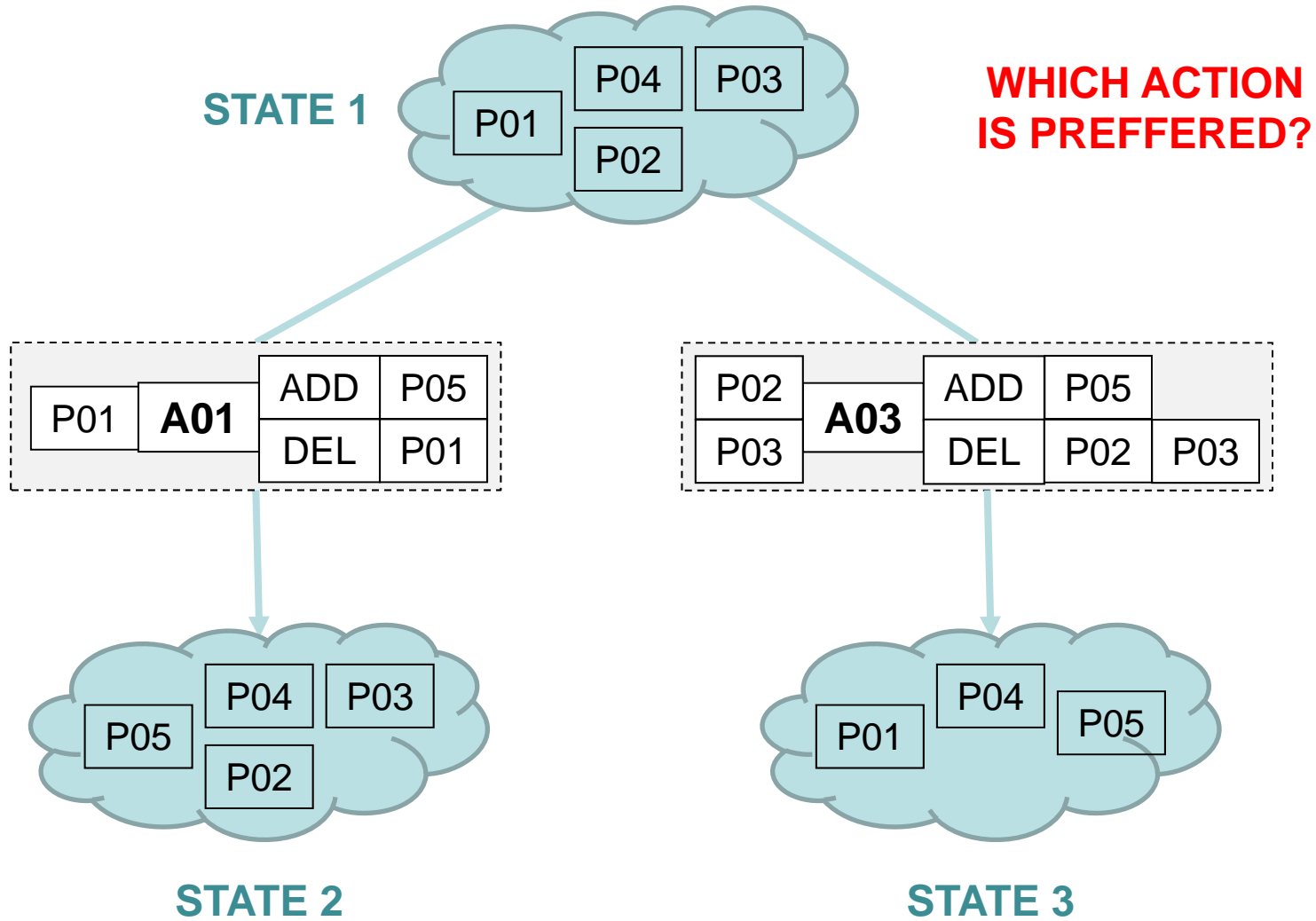


State Z \rightarrow NO GOAL STATE
(P2 is missing)

1. Basics



1. Basics



2. Demonstration

CARD GAME

2. Demonstration

„Harold in trouble“ – a James Bond Parody Scenario

Dramatis personae

- evil **Silvertoe**, blackmails the world with start of killer satellite
- **Mister Seven**, top agent, has to open negotiations with Silvertoe (or stop him)
- **Harold**, Sevens clumsy temporary assistant and wannabe womanizer
- a lady, party guests and a (pitiful) poodle

WE ARE THE PLANNER

→ **WE** keep care of **everybody** and **everything** (the **world**, too) but Mister Seven

USER is Mister Seven

→ **WE** (the planner) **cannot directly** influence Mister Sevens actions

2. Demonstration

„Harold in trouble“ – a James Bond Parody Scenario

Setting

- garden party in Silvertoes castle
- Mister Seven already begun negotiations with Silvertoe in corner of garden
- Harold is free to roam „But don't do something stupid, Harold!“

Goal

- Silvertoe has to break off negotiations to create suspense
- **raise Silvertoes anger level from 0 to 3**
- **WE** let Harold do something stupid ... and what about the poodle? 😊

Thank you!

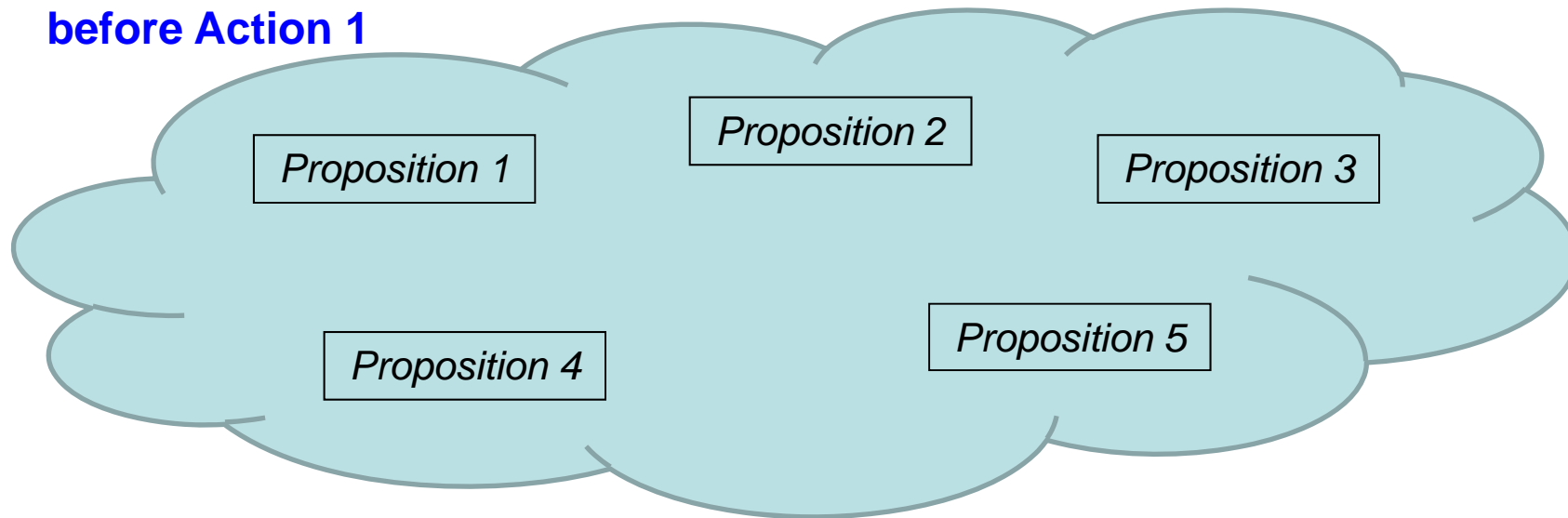
And now: Let's play!

Additional Examples

Example 1

Additional Examples

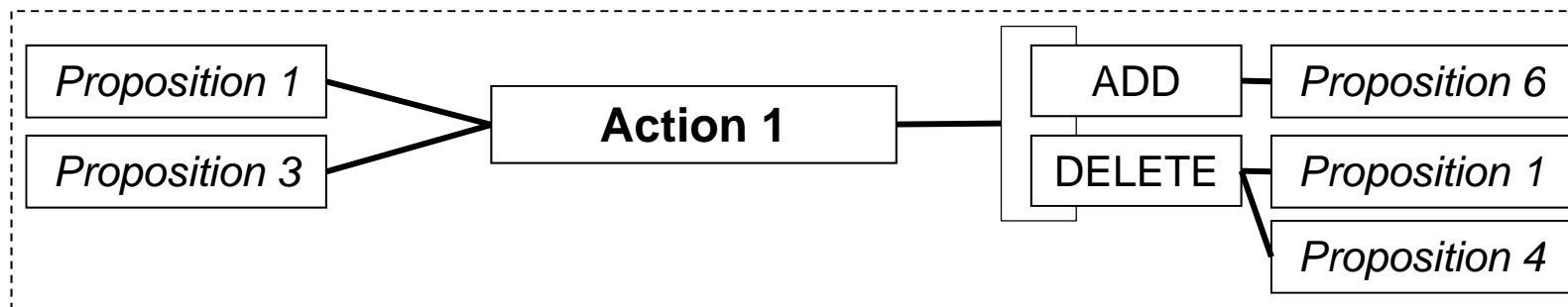
WORLD STATE
before Action 1



PRECONDITIONS

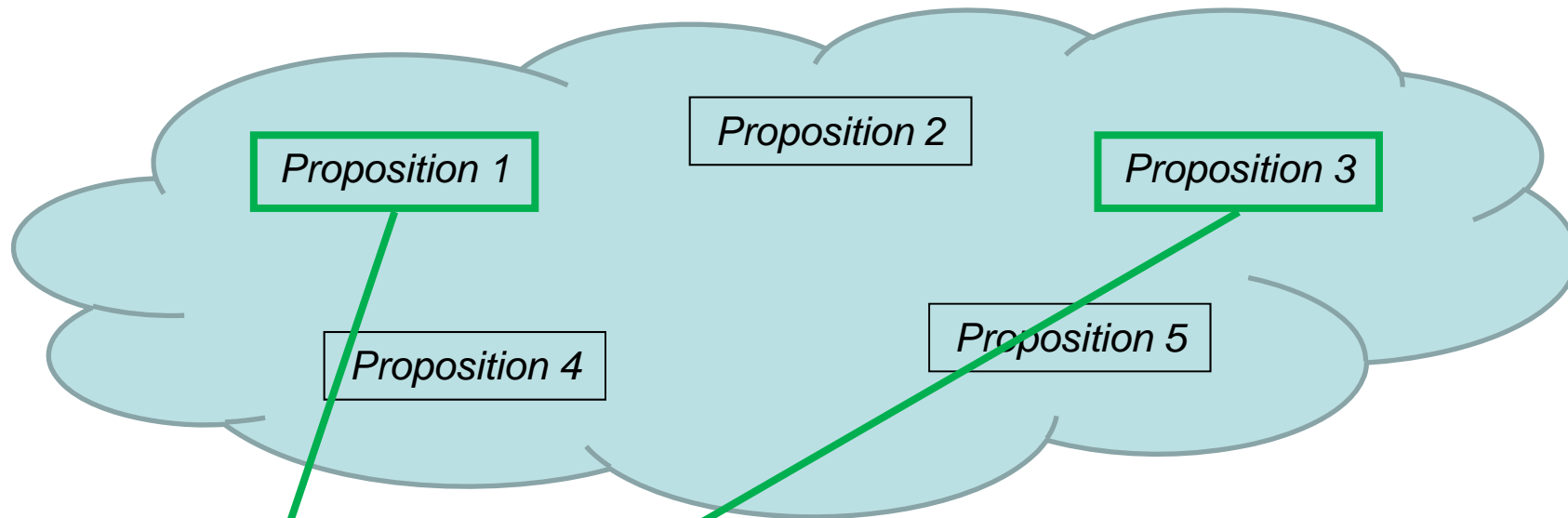
OPERATION

EFFECTS (postconditions)



Additional Examples

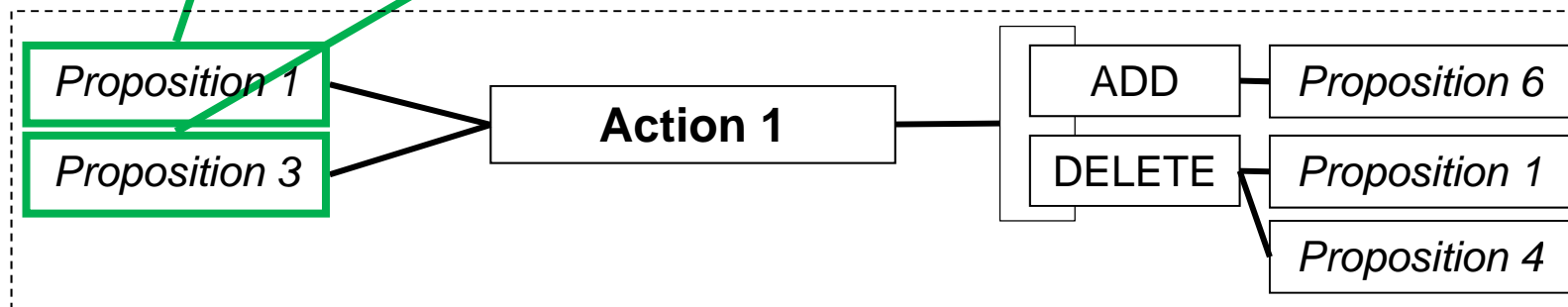
WORLD STATE



PRECONDITIONS

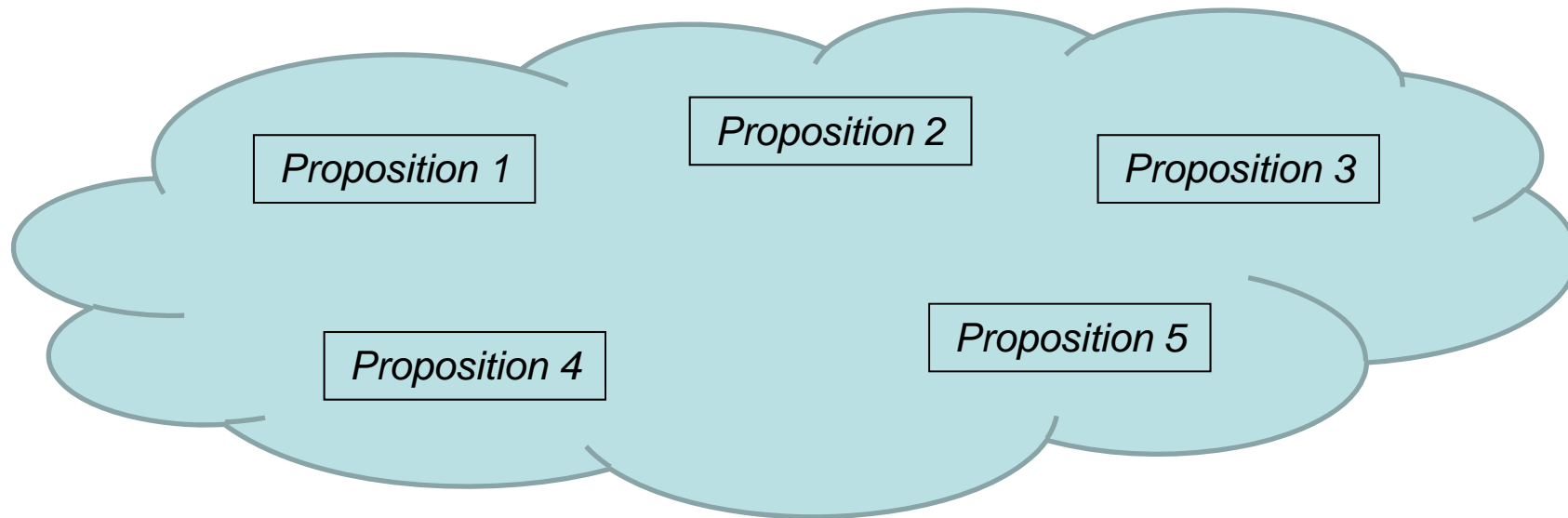
OPERATION

EFFECTS (postconditions)



Additional Examples

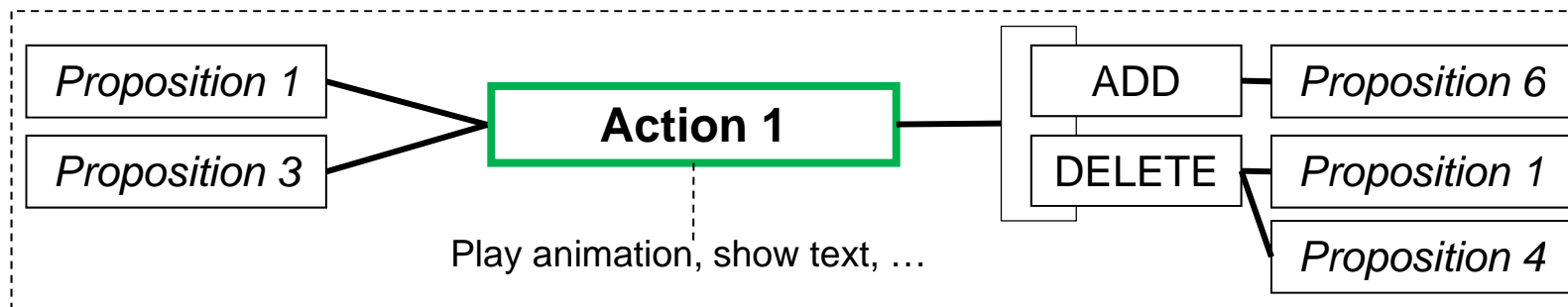
WORLD STATE



PRECONDITIONS

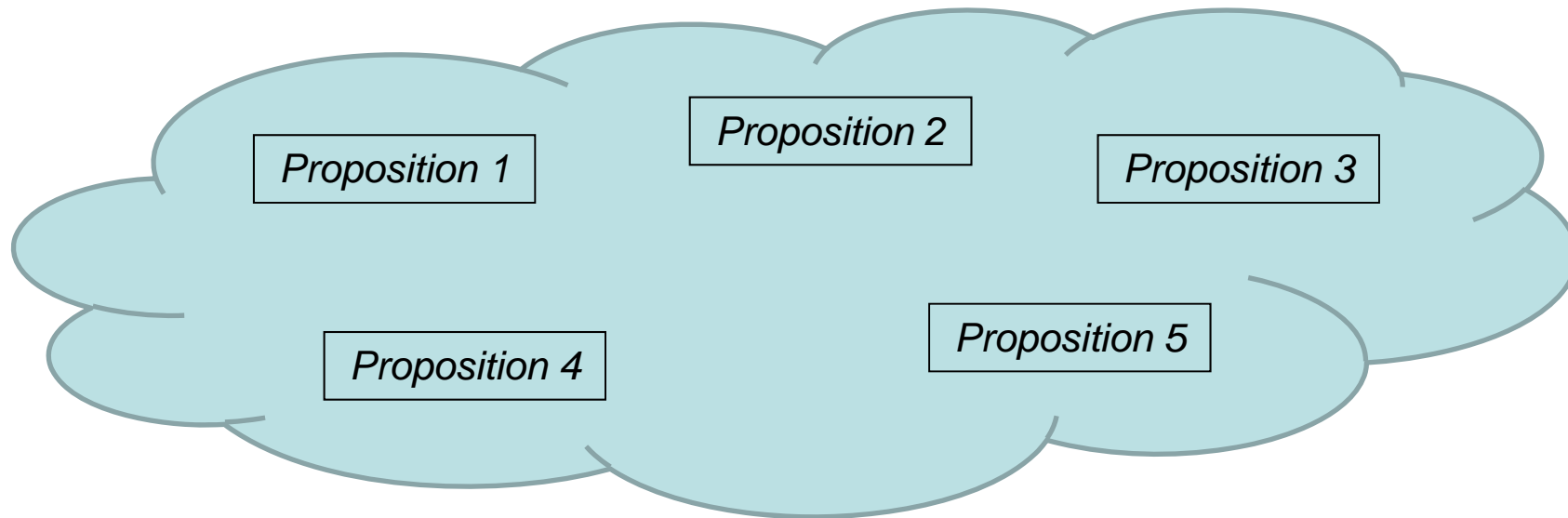
OPERATION

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Additional Examples

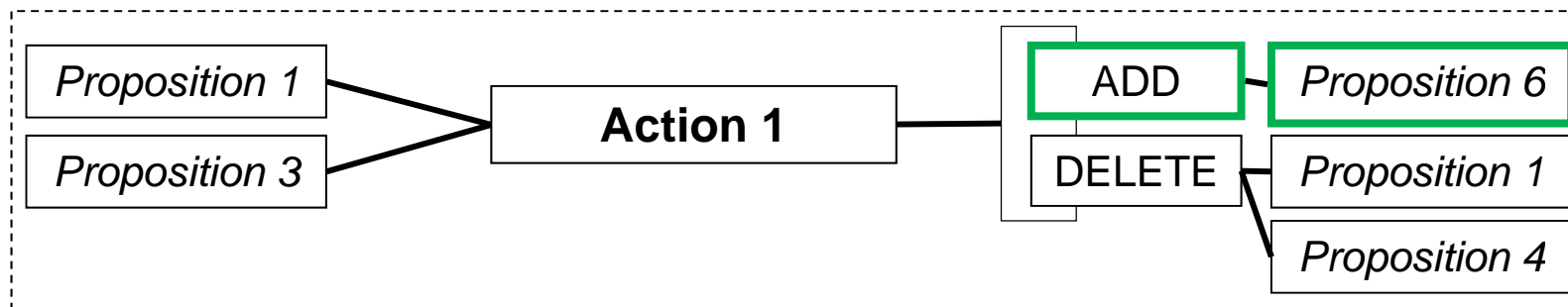
WORLD STATE



PRECONDITIONS

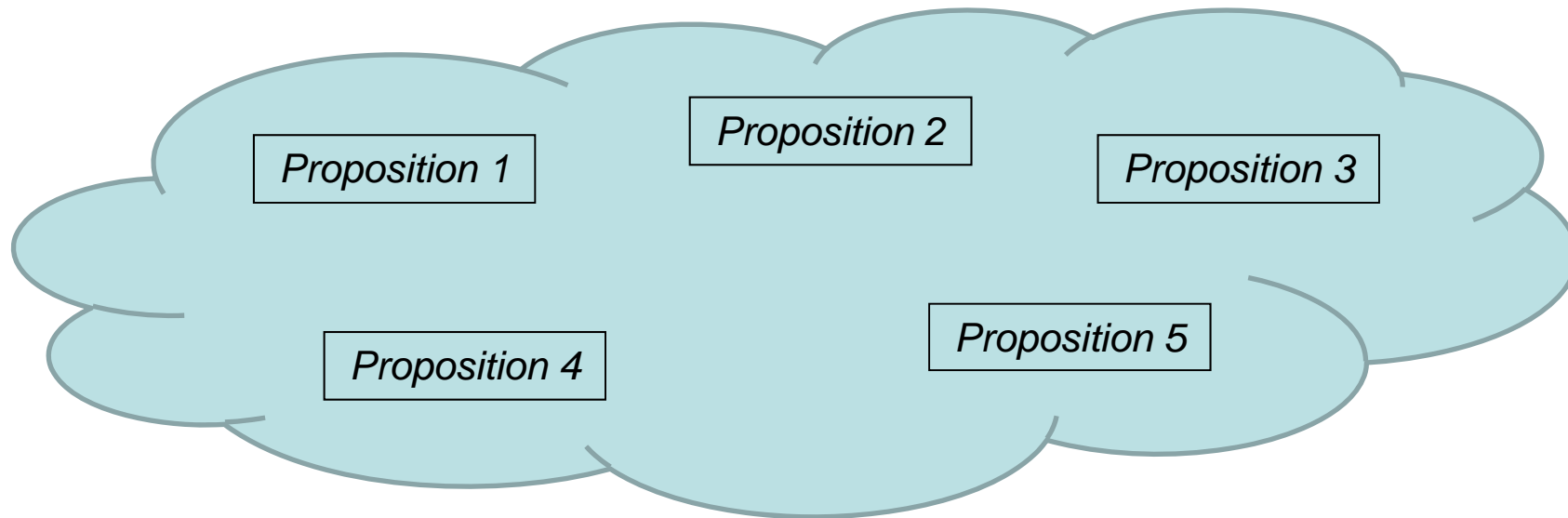
OPERATION

EFFECTS (postconditions)



Additional Examples

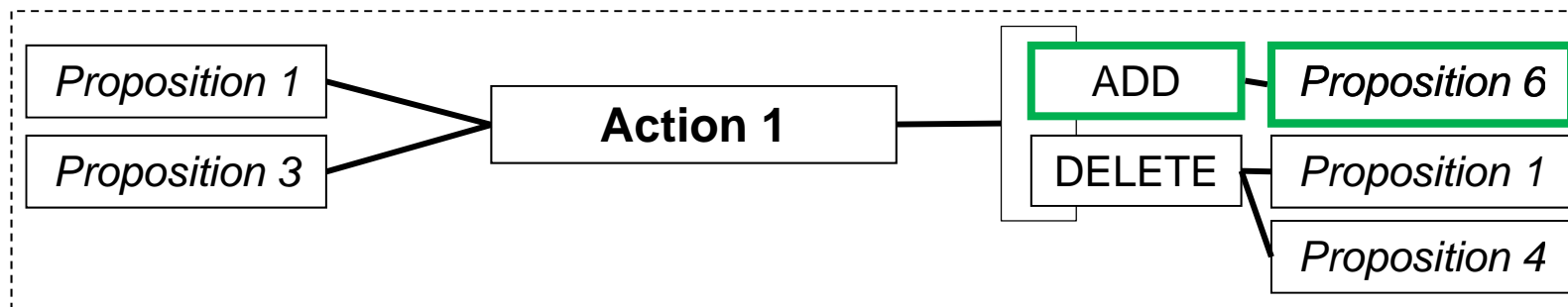
WORLD STATE



PRECONDITIONS

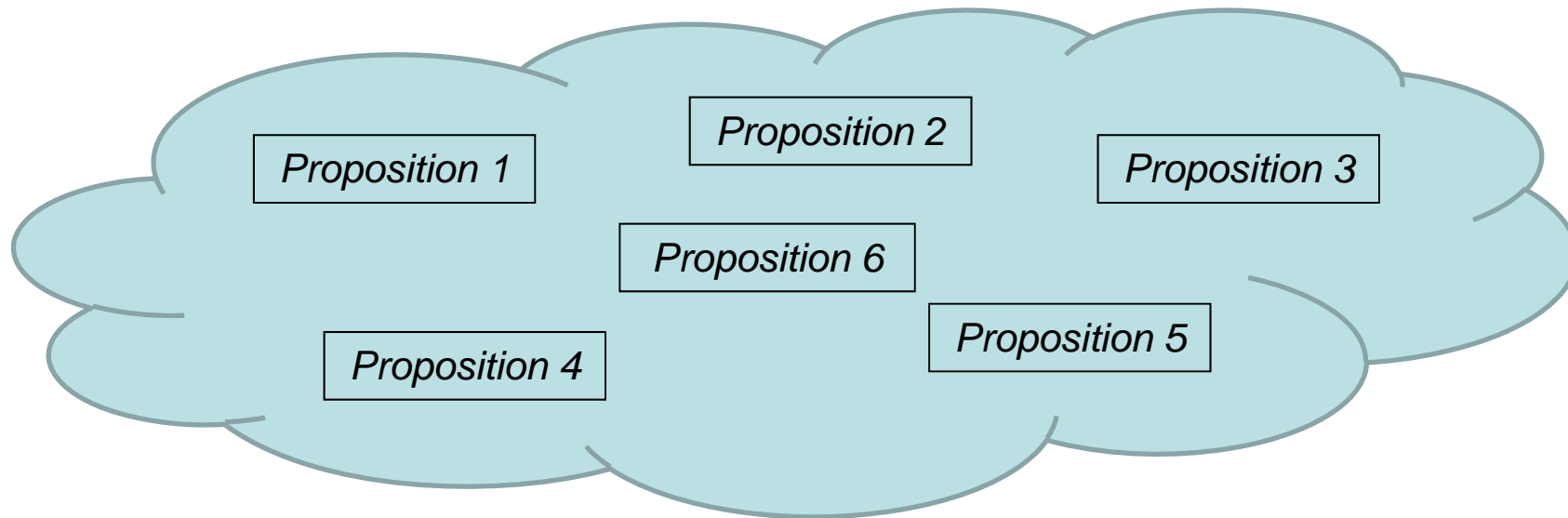
OPERATION

EFFECTS (postconditions)



Additional Examples

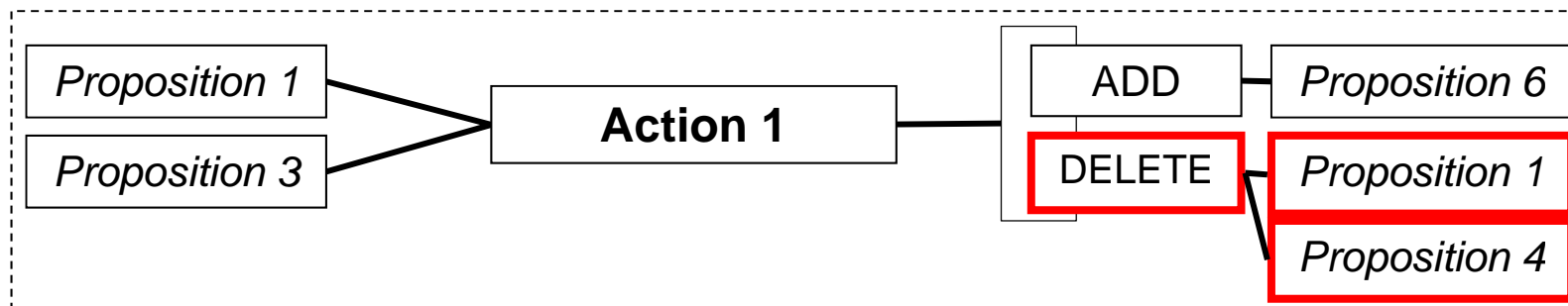
WORLD STATE



PRECONDITIONS

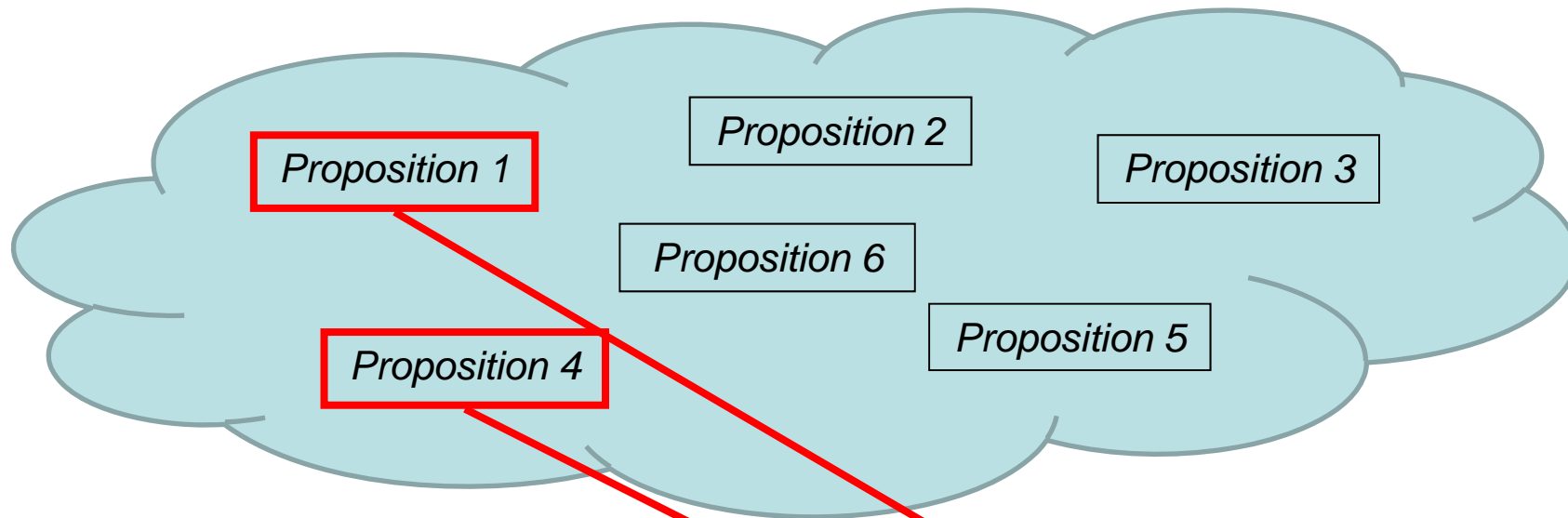
OPERATION

EFFECTS (postconditions)



Additional Examples

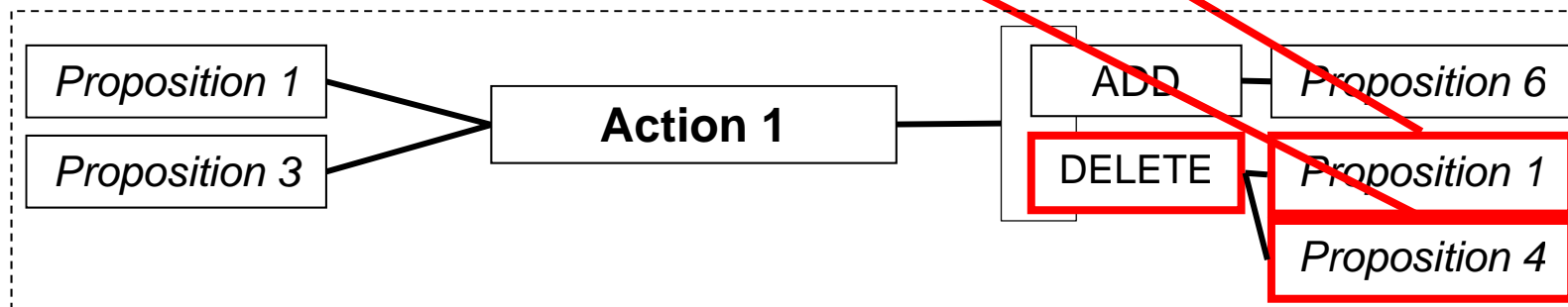
WORLD STATE



PRECONDITIONS

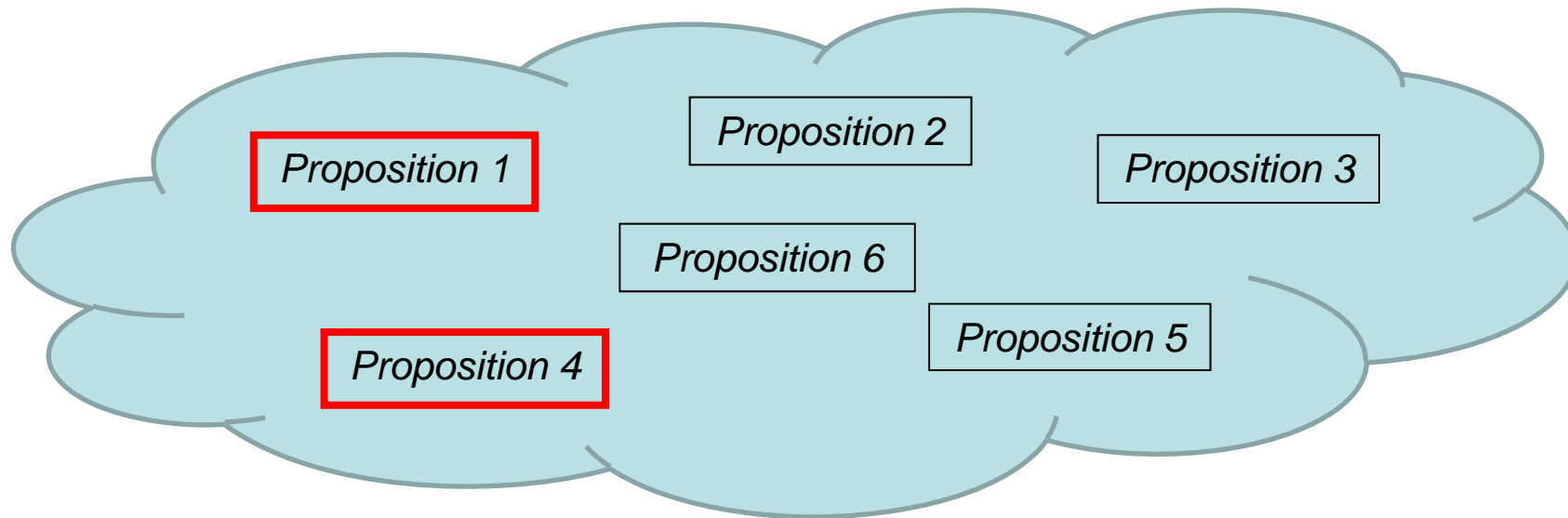
OPERATION

EFFECTS (postconditions)



Additional Examples

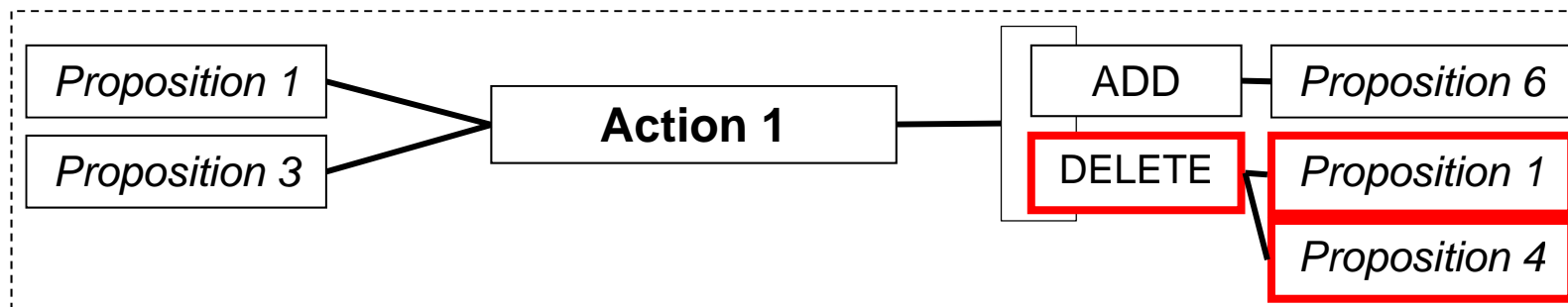
WORLD STATE



PRECONDITIONS

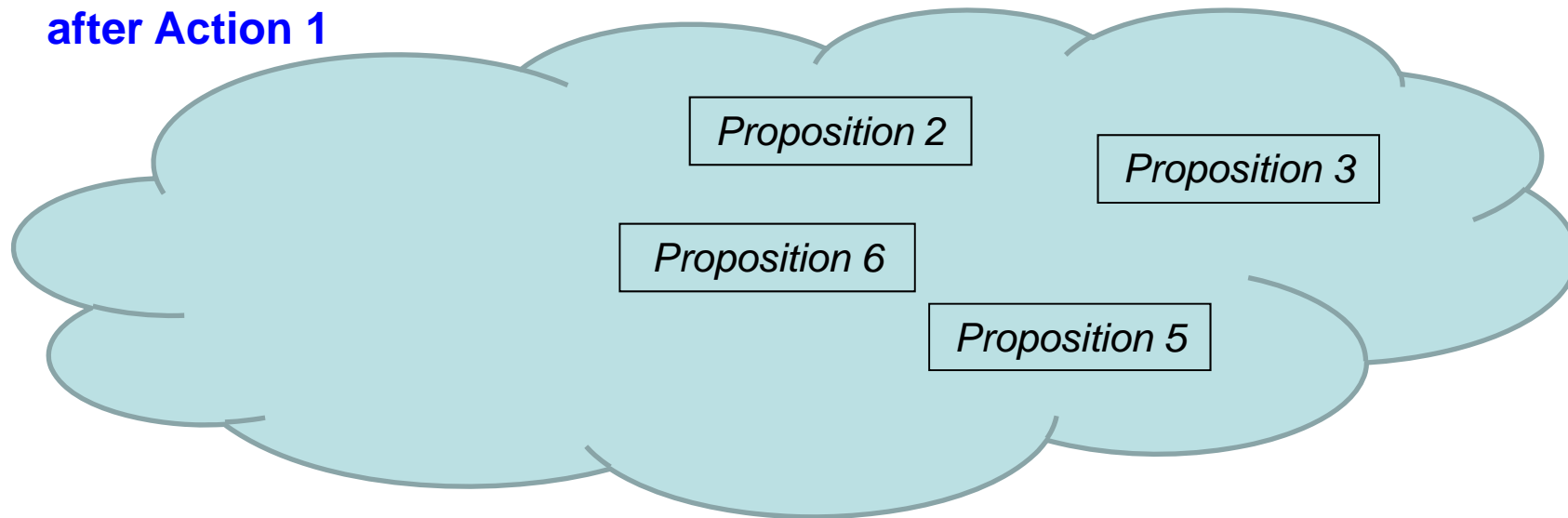
OPERATION

EFFECTS (postconditions)



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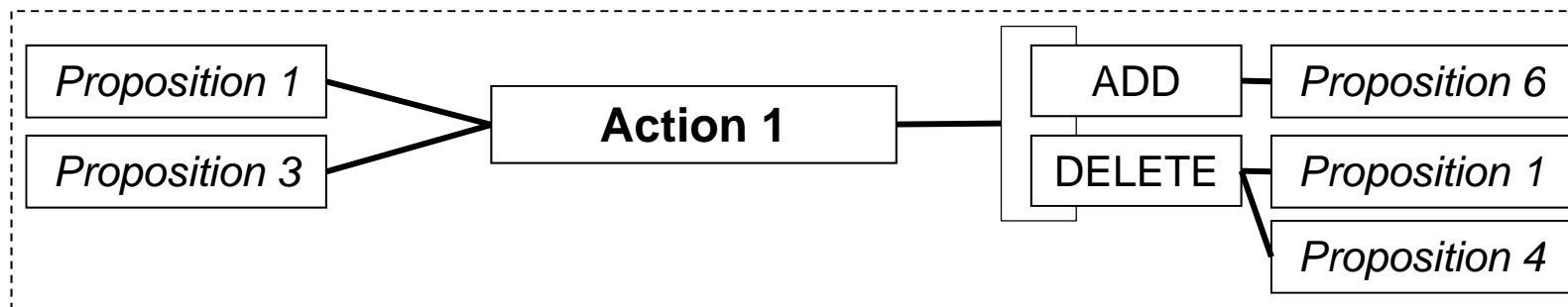
WORLD STATE
after Action 1



PRECONDITIONS

OPERATION

EFFECTS (postconditions)

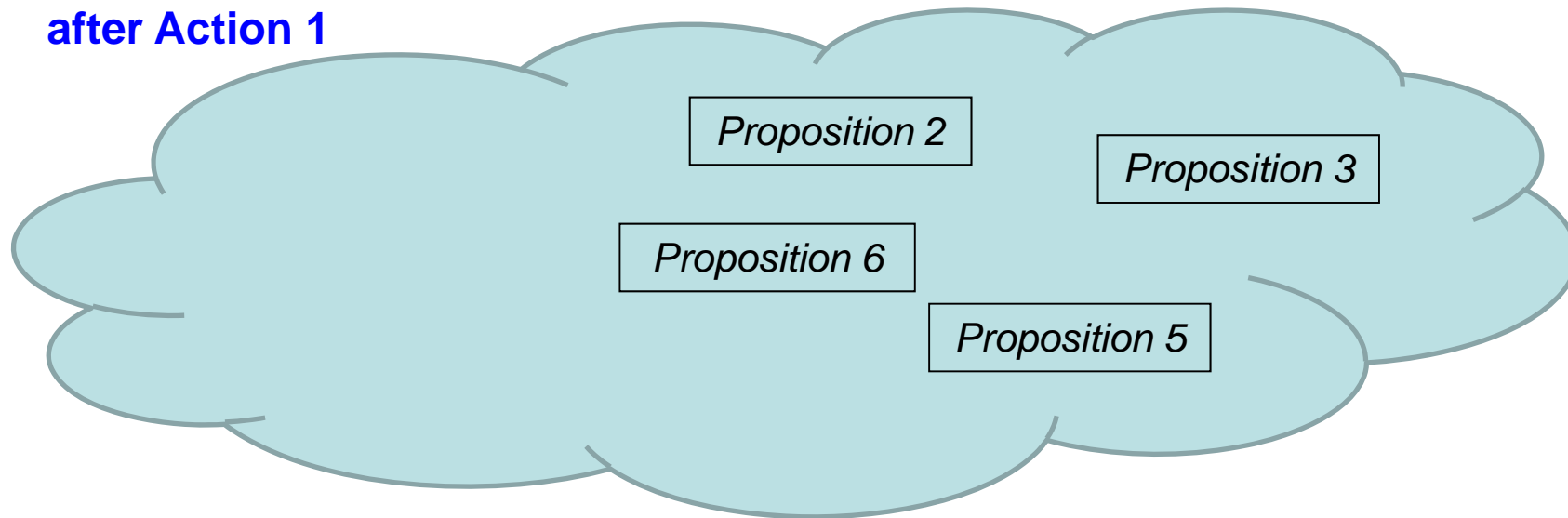


Additional Examples

Example 2

Additional Examples

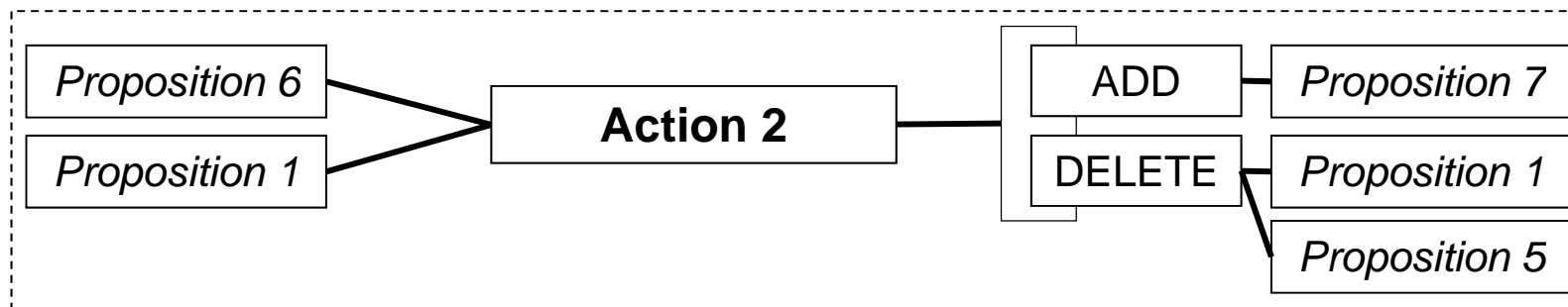
WORLD STATE
after Action 1



PRECONDITIONS

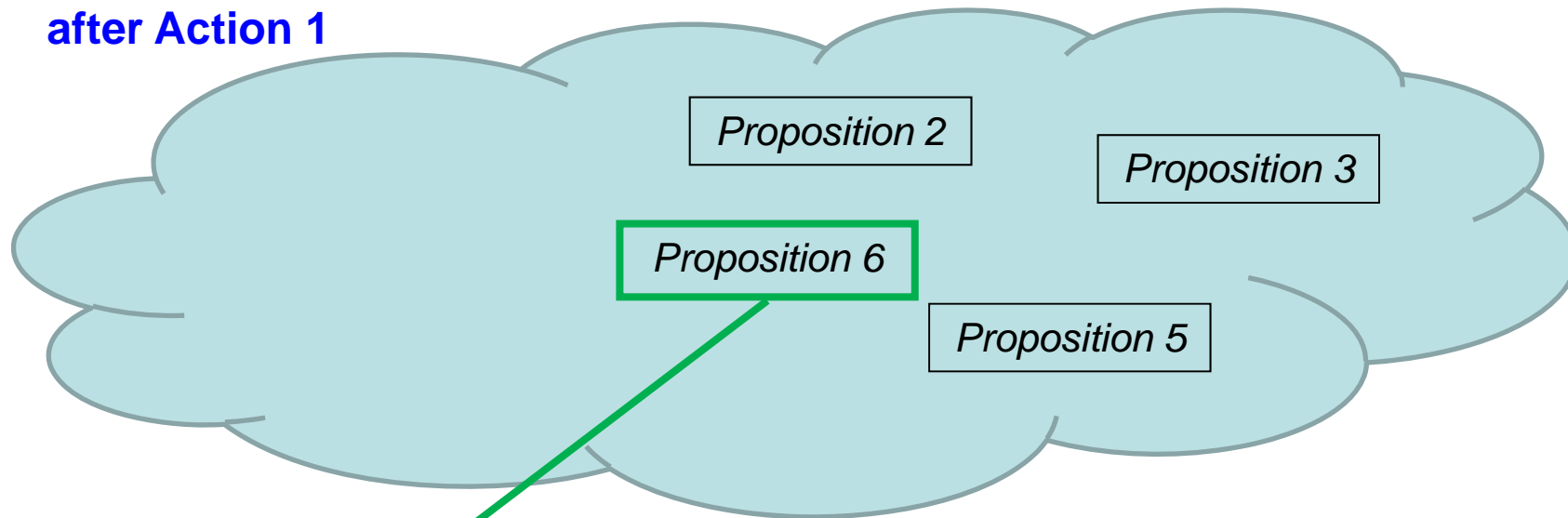
OPERATION

EFFECTS (postconditions)



Additional Examples

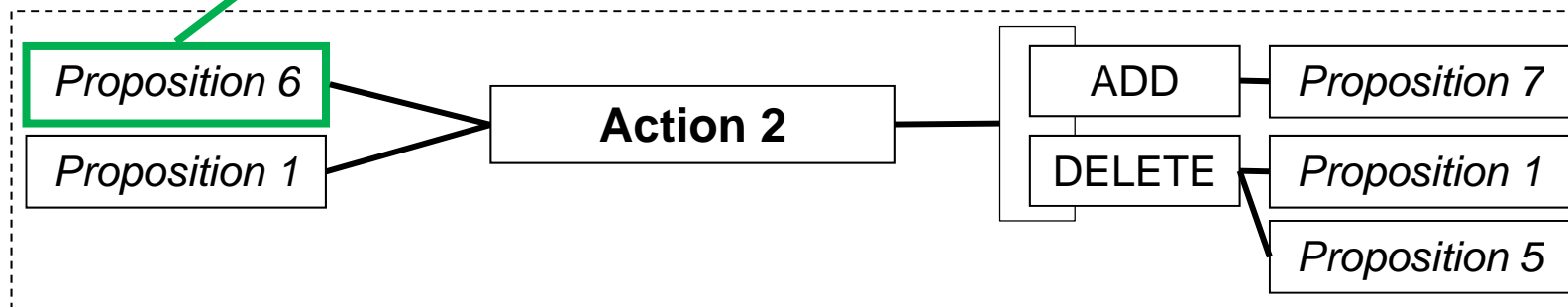
WORLD STATE
after Action 1



PRECONDITIONS

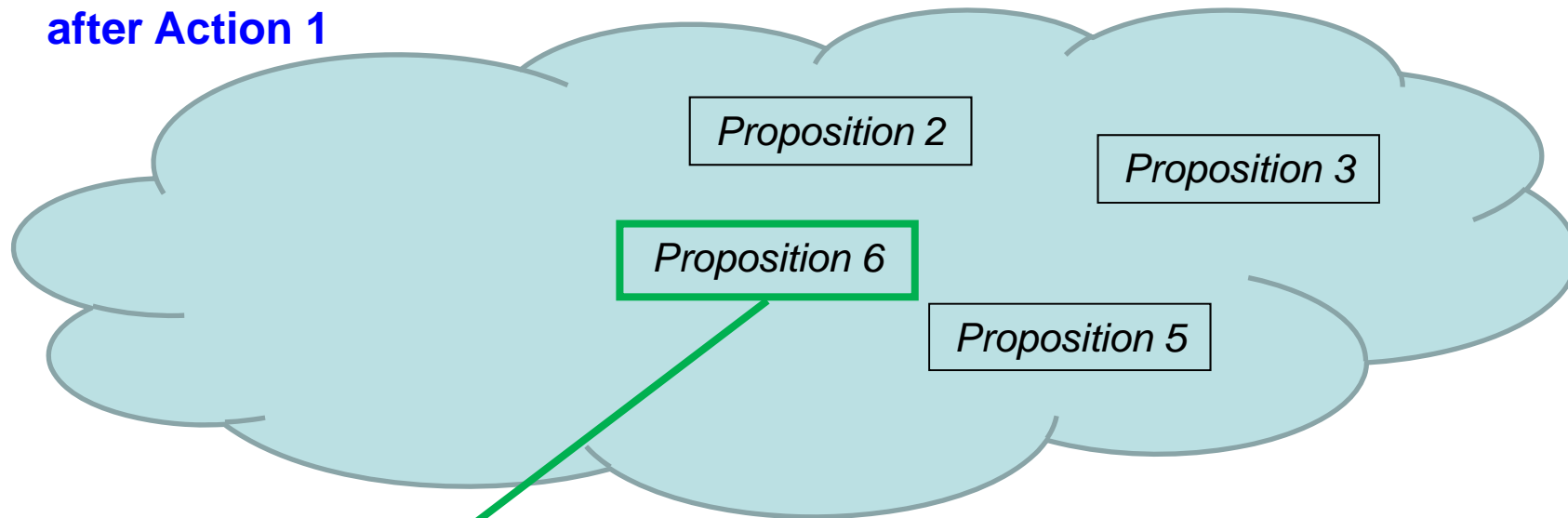
OPERATION

EFFECTS (postconditions)



Additional Examples

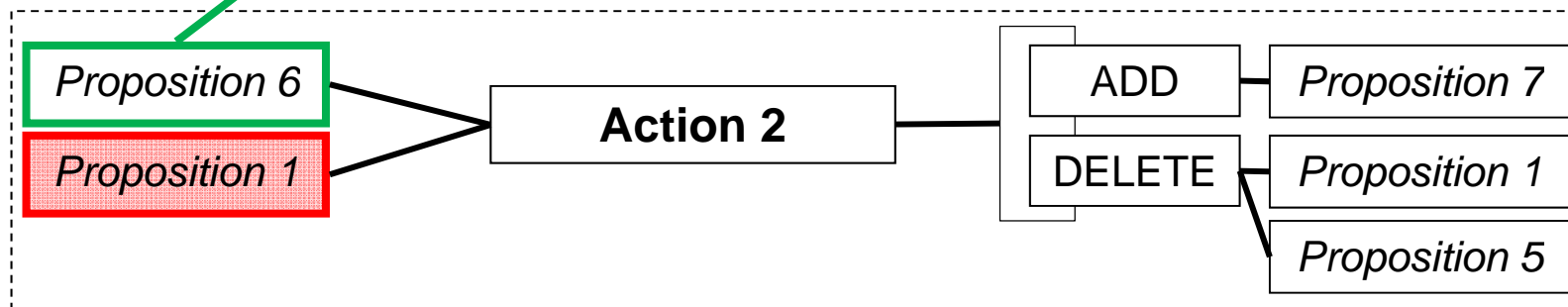
WORLD STATE
after Action 1



PRECONDITIONS

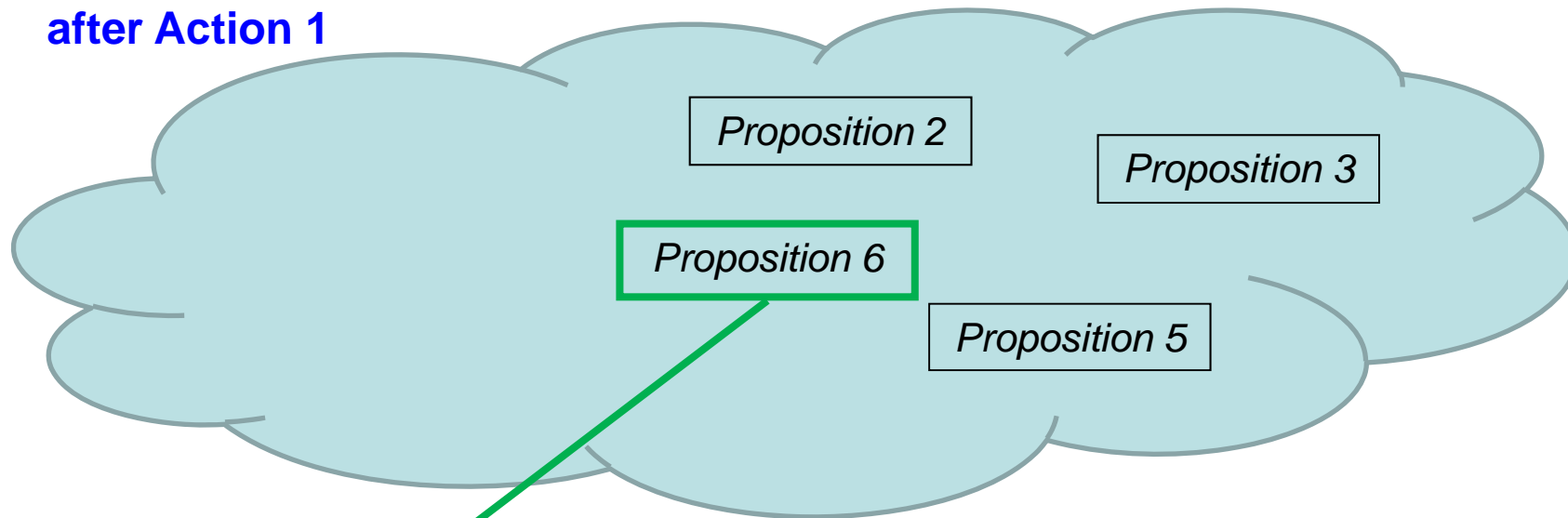
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Additional Examples

WORLD STATE
after Action 1



PRECONDITIONS

OPERATION

EFFECTS (postconditions)

