Why Solve First-order MDPs?

- Relational desc. of (prob) planning domain in (P)PDDL:

```
(:action load-box-on-truck-in-city
 :parameters (?b - box ?t - truck ?c - city)
 :precondition (and (BIn ?b ?c) (TIn ?t ?c))
 :effect (and (On ?b ?t) (not (BIn ?b ?c))))
```

Box World: London — Paris — Berlin — Moscow

- Can solve a ground MDP for each domain instantiation:
  - 3 trucks: 
  - 2 planes: 
  - 4 boxes: 

- Or solve first-order MDP for all domain inst. at once!
  - Lift PPDDL MDP specification to first-order (FOMDP)
  - Soln makes value distinctions for all dom. instantiations!