

SCOPER Harness



Instruction
"Make the kitchen safe"



Initialize



Tool Guide
Usage · Preconditions



Initial Agenda
Inspect kitchen

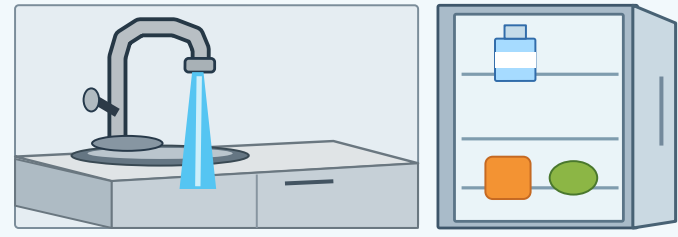
Start

Visible evidence

Selected action
(based on agenda & tool guide)

After navigation / manipulation

1 Observe



Collect visible evidence

2 Update & Decide

Evidence Memory



Faucet running



Fridge open

Task-relevant

Dynamic Agenda

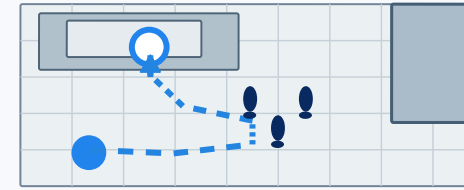
☐ Turn off faucet

☐ Close fridge

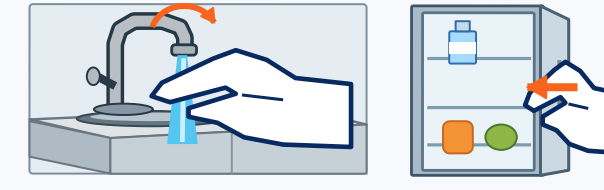
Update agenda · select action

3 Act

Navigate



Manipulate



4 Visual Verification



Before



After

Did the action succeed?

Post-action observation

Continue / recover



Failed / uncertain → recover
(inspect / replan / retry)



Confirmed
advance agenda

Loop-level Anti-deadlock Control



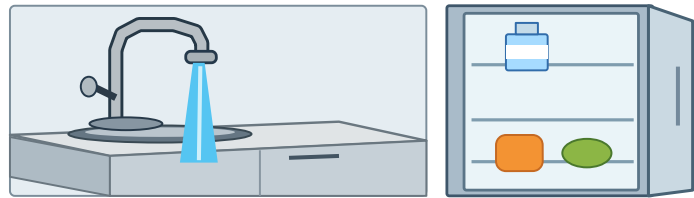
Bounded exploration
(prevent unlimited exploration)



Guide physical action when stalled
(agenda-directed manipulation)

"Make the kitchen safe" — Example Execution

1 Observe



Discover anomalies

2 Update memory & agenda



Faucet running

☐ Turn off faucet

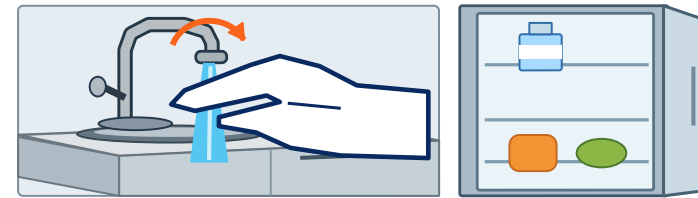


Fridge open

☐ Close fridge

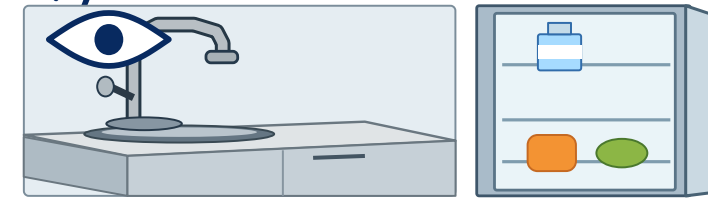
Add evidence and new tasks

3 Act



Turn off faucet

4 Verify



Observed: faucet off

5 Advance / recover



Turn off faucet



Close fridge

Next: close fridge



If still running: retry