

The background features a light gray illustration of a robotic arm with a gripper, positioned over a table. On the table are several blocks: a red block with the number '1', a blue block with 'HELLO', a blue block with 'WORLD', a red block with '3', and a red block with '2'. A sign with the ROS logo and the text 'ROS' is visible in the bottom left. The entire scene is set against a light yellow background with a horizontal band.

# 6.4.1

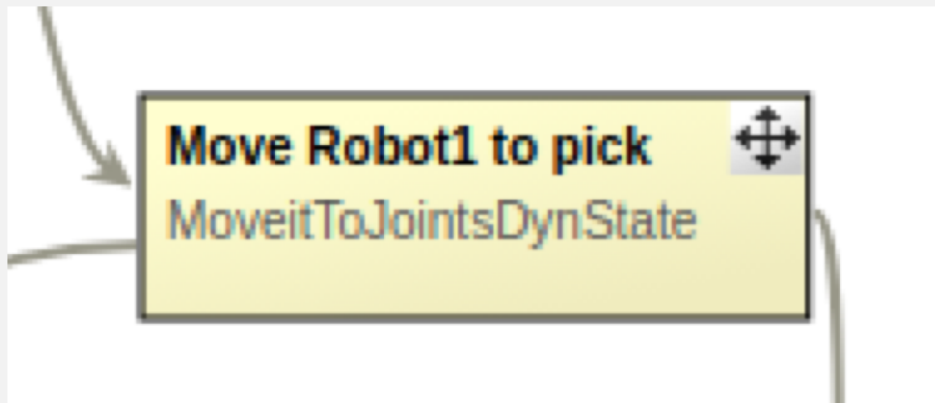
## Developing new FlexBE States

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# Remember

## FlexBE State:

- concrete use of one of the capabilities by the ROS nodes in the system to perform a concrete action.



### Move Robot1 to pick

*MoveitToJointsDynState*

Uses Moveit to plan and move the specified joints to the target configuration.

#### Parameters

move\_group: pick\_group  
action\_topic: '/move\_group'

#### Required Autonomy Levels

reached: Off ▼  
planning\_failed: Off ▼  
control\_failed: Off ▼

#### Input Key Mapping


joint\_values: pick\_configuration  
joint\_names: joint\_names


# FlexBE State implementations design

Separate application-specific behavior (FlexBE SM) from capabilities (ROS nodes):

- A state implementation should be an interface to a node that implements the capability
  - *FlexBE State are **internally** implemented **clients** that request specific actions,*
  - *little computation in the state code itself.*

**MoveitToJointsDynState**  
*Uses MoveIt to plan and move the specified joints to the target configuration.*

**Move Robot1 to pick**   
MoveitToJointsDynState

**Move Robot to Home configuration**   
MoveitToJointsDynState

capability to move to a given configuration

/move\_group



# Also

State properties:

- Parameters
- Input & Output keys
- Outcomes

External interface of a state implementation to configure it for a concrete application.

## Move Robot1 to pick

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### Required Autonomy Levels

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### Input Key Mapping

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# FlexBE State implementation

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## What?

- Internally: robot operation by using a client.
- External Interface to configure it for a concrete application:
  - Parameters
  - Input & Output keys
  - Outcomes

## How?

- The FlexBE State Lifecycle