



6.3.2

## Configure a behavior

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# Behavior configuration

FlexBE App

FlexBE App

Onboard Status:  
online

Behavior Dashboard

Statemachine Editor

Runtime Control

Configuration

New Behavior

Edit Code

Check Behavior

Load Behavior

Save Behavior

Version: 2.3.0

Overview

Package  
flexbe\_behaviors

Name  
Pick part from conveyor

Description  
This is a behavior for the hrwros\_factory simulation that pick a part from the conveyor belt using Robot 1

Tags  
factory automation, robot arm, pick

Author  
Rosa Maessen

Date  
Tue Feb 22 2022

Behavior Parameters

These parameters can be set by the operator when this behavior is started via Runtime Control. Each parameter is identified by a unique variable name and displayed by using a label and providing usage advice. Depending on their type, some parameters may require additional specification. Parameters can be accessed as `self.parameter_name`.

Enum  Add

Private Configuration

Variables enable easy configuration of constant internal values which are used multiple times. They are read-only and cannot be used in private functions.

=  Add

Private Functions

Defines which functions can be referenced by states that accept functions as parameters. Make sure that the interface of each function matches the requirements of the respective state. These functions can be implemented later in the generated code. Functions can be accessed as `self.function_name`.

State Machine Userdata

The userdata of a state machine can be used to pass any data from one state to another. Userdata values may be changed by states during runtime. Make sure you define default values for all userdata keys.

=  Add

State Machine Interface

Defines how the state machine of this behavior can be accessed when embedded in another behavior.

Outcomes  
finished  
failed  
 Add

Input Keys  
 Add

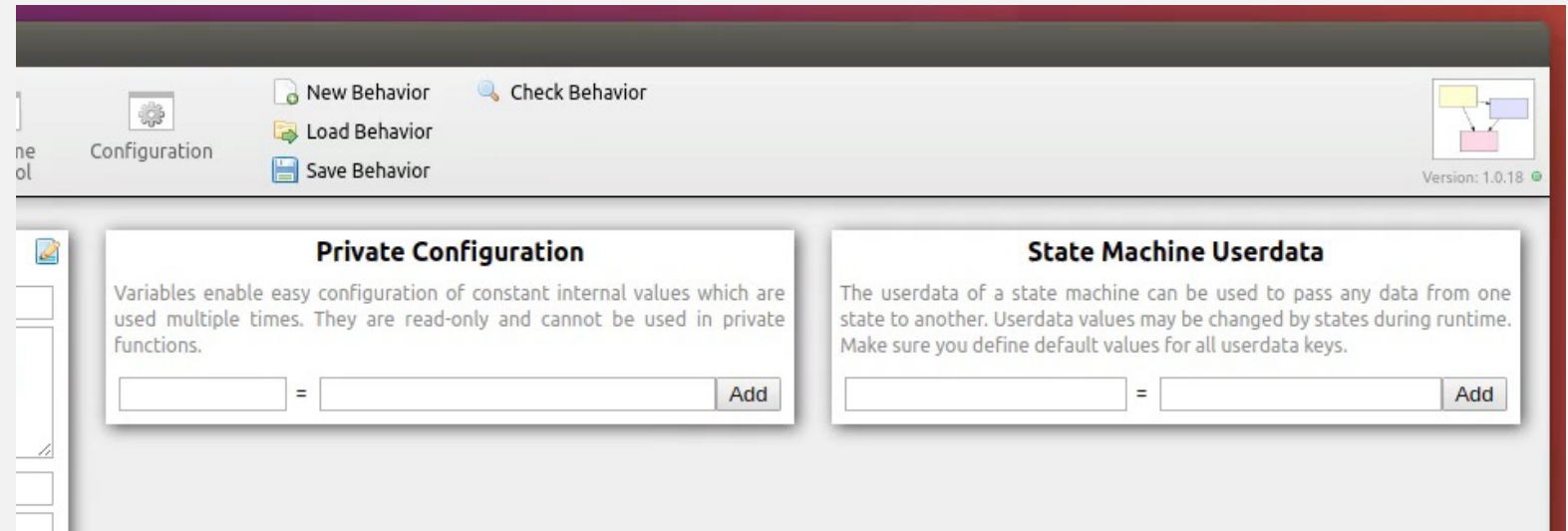
Output Keys  
 Add

# Behavior constants

- **Constant** values used in our behavior.
- FlexBE variables defined in **Private Configuration**.

hrwros.srdf

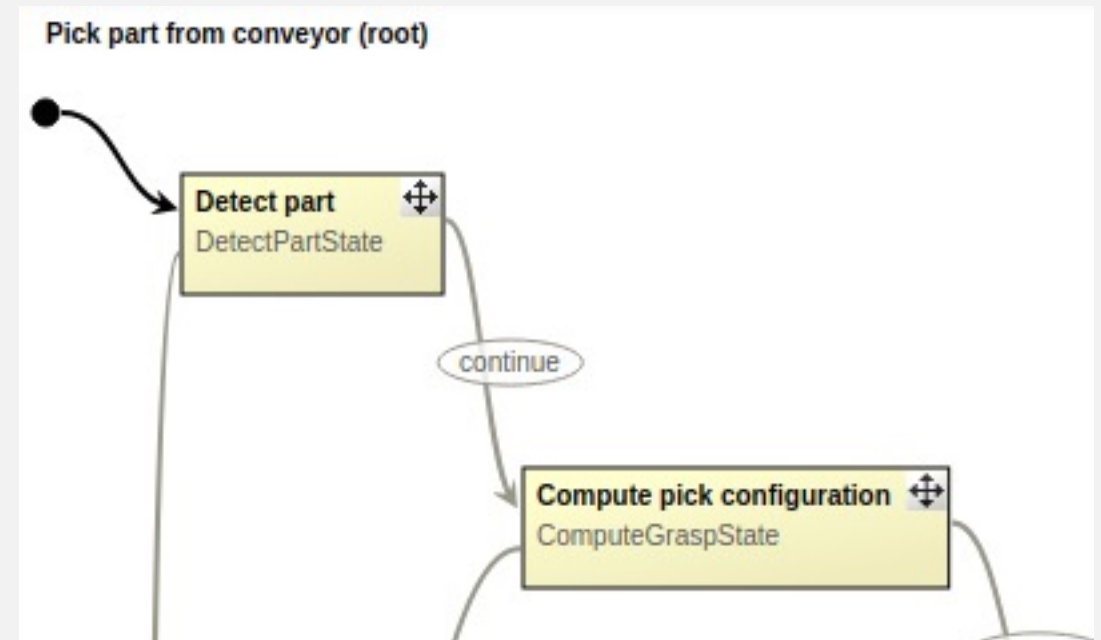
```
12      <group name="robot1">
13          <chain base_link="robot1_base_link" tip_link="v
14      </group>
```



# Userdata

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- Data can flow between states and **change at runtime**.
- **Userdata** variables in FlexBE
- Default values required.
- pose of the part to pick
- robot configuration for picking

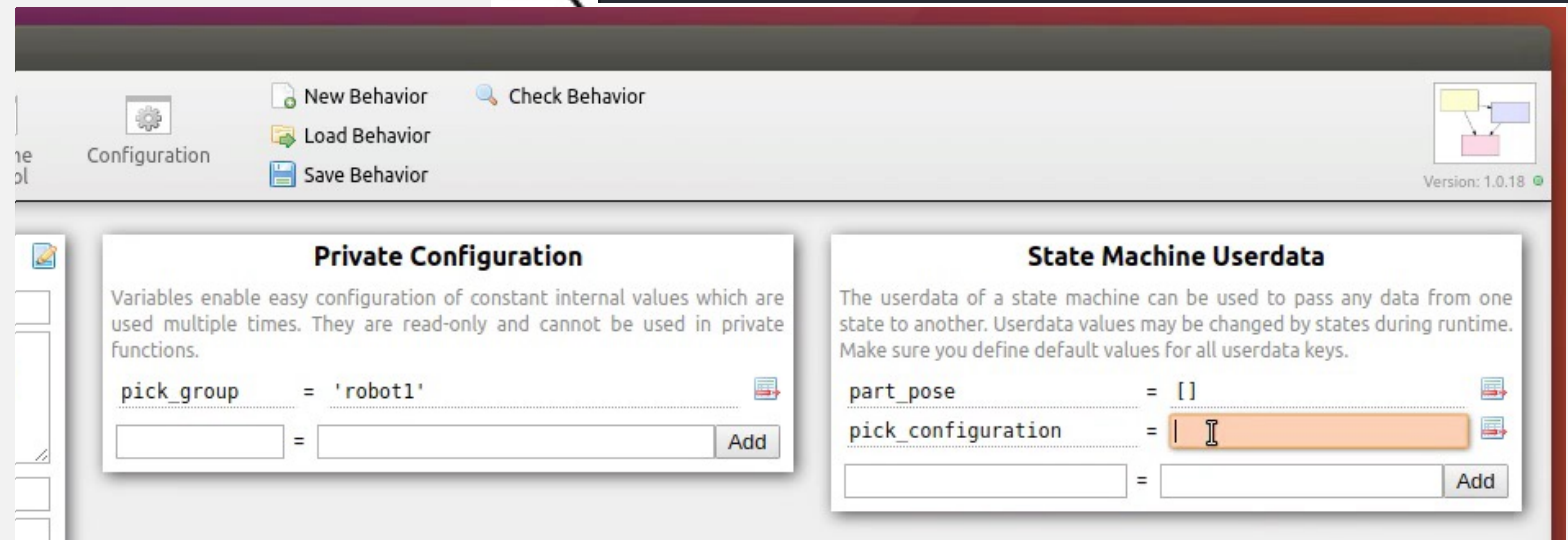


# Userdata

- Data can flow between states and **change at runtime**.
- **Userdata** variables in FlexBE
- Default values required.

## hrwros.srdf

```
43 <group_state name="r1home" group="robot1">
44   <joint name="robot1_elbow_joint" value="1.57" />
45   <joint name="robot1_shoulder_lift_joint" value="1.57" />
46   <joint name="robot1_shoulder_pan_joint" value="1.57" />
47   <joint name="robot1_wrist_1_joint" value="1.57" />
48   <joint name="robot1_wrist_2_joint" value="1.57" />
49   <joint name="robot1_wrist_3_joint" value="0" />
50 </group_state>
```



# Userdata

- Data can flow between states and **change at runtime**.
- **Userdata** variables in FlexBE
- Default values required.

## hrwros.srdf

```
43     <group_state name="r1home" group="robot1">
44         <joint name="robot1_elbow_joint" value="1.57">
45         <joint name="robot1_shoulder_lift_joint" value="1.57">
46         <joint name="robot1_shoulder_pan_joint" value="1.57">
47         <joint name="robot1_wrist_1_joint" value="1.57">
48         <joint name="robot1_wrist_2_joint" value="1.57">
49         <joint name="robot1_wrist_3_joint" value="0">
50     </group_state>
```

Pick p

The screenshot shows the FlexBE App interface. At the top, there's a toolbar with icons for 'New Behavior', 'Load Behavior', 'Save Behavior', 'Edit Code', and 'Check Behavior'. Below the toolbar, the main area is divided into two panels. The left panel is titled 'Private Configuration' and contains a list of variables with their values: 'pick\_group' is 'robot1', 'home1' is '[1.24, -1.57, 1.57, -1.57, -1.57, 1.57]', 'gripper1' is 'vacuum\_gripper1\_suction\_cup', and 'names1' is '['robot1\_shoulder\_pan\_joint', 'robot1\_wrist\_1\_joint', 'robot1\_wrist\_2\_joint', 'robot1\_wrist\_3\_joint']'. The right panel is titled 'State Machine Userdata' and contains a list of variables with their values: 'part\_pose' is '[]', 'pick\_configuration' is '[]', and 'home1' is 'home1'. There are also input fields and an 'Add' button at the bottom of each panel.

FlexBE App

Configuration

Private Configuration

Variables enable easy configuration of constant internal values which are used multiple times. They are read-only and cannot be used in private functions.

pick\_group = 'robot1'

home1 = [1.24, -1.57, 1.57, -1.57, -1.57, 1.57]

gripper1 = "vacuum\_gripper1\_suction\_cup"

names1 = ['robot1\_shoulder\_pan\_joint', 'robot1\_wrist\_1\_joint', 'robot1\_wrist\_2\_joint', 'robot1\_wrist\_3\_joint']

State Machine Userdata

The userdata of a state machine can be used to pass any data from one state to another. Userdata values may be changed by states during runtime. Make sure you define default values for all userdata keys.

part\_pose = []

pick\_configuration = []

home1 = home1

Add