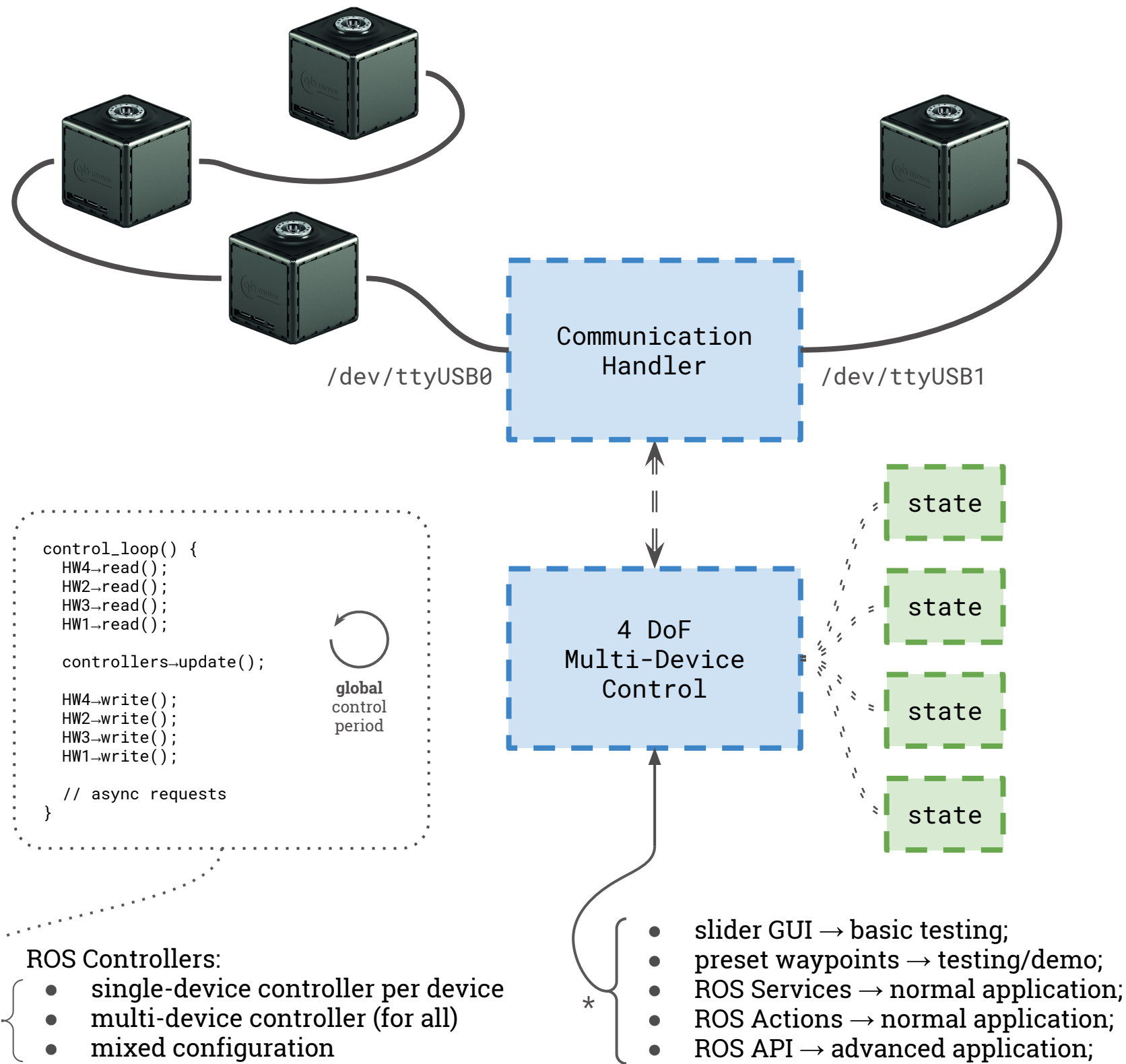


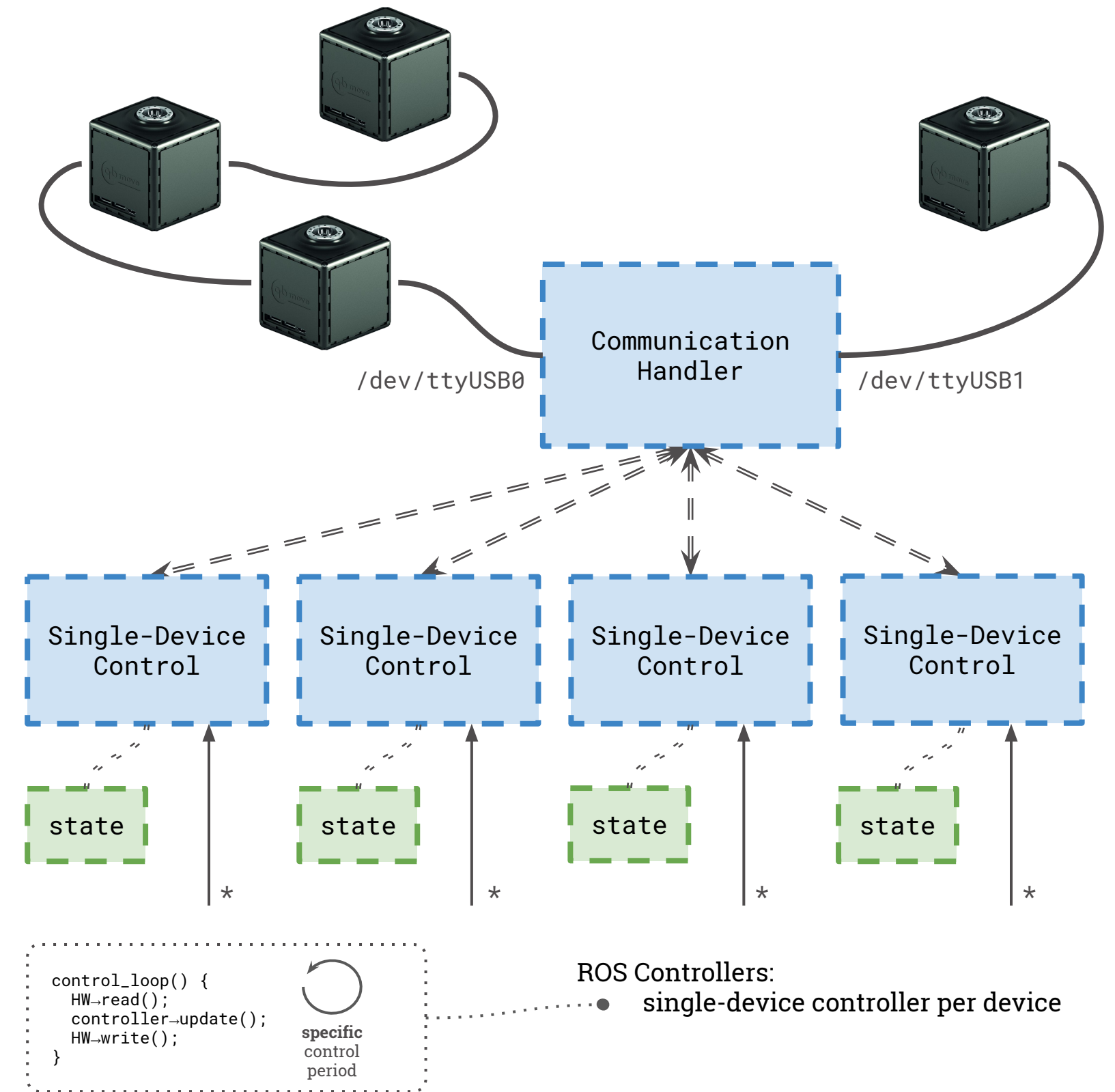
ROS packages

qb robotics®

# one synchronous control node



# asynchronous control nodes



# multi-device synchronous setup

```
<launch>
  <!-- robot settings -->
  <arg name="control_duration" default="0.01" doc="The duration of the control loop [s]." />
  <arg name="robot_hardware" default="[cube1, cube2, cube3]" doc="The robot hardware interface namespaces, e.g. [device1, device2, ...]" /> ⚠
  <arg name="robot_name" default="3dof_chain" doc="The unique robot namespace." />
  <arg name="robot_namespace" default="$(arg robot_name)" doc="The unique robot namespace." />
  <arg name="robot_package" default="qb_chain" doc="The base package name prefix for the robot configurations [urdf, rviz, ...]" />
  <arg name="source_list" default="[control/joint_states]" doc="The joint_states source list for the joint_state_publisher." />
  <!-- read/write settings -->
  <arg name="get_currents" default="true" doc="Choose whether or not to retrieve current measurements from the device." />
  <arg name="get_positions" default="true" doc="Choose whether or not to retrieve position measurements from the device." />
  <arg name="get_distinct_packages" default="false" doc="Choose whether or not to retrieve current and position measurements from the device in two distinct packages." />
  <arg name="max_repeats" default="3" doc="The maximum number of consecutive repetitions to mark retrieved data as corrupted." />
  <arg name="set_commands" default="true" doc="Choose whether or not to send command positions to the device." />
  <arg name="set_commands_async" default="false" doc="Choose whether or not to send commands without waiting for ack." />
  <!-- initialization settings -->
  <arg name="activate_on_initialization" default="false" doc="Choose whether or not to activate the motors on node startup." />
  <arg name="rescan_on_initialization" default="false" doc="Choose whether or not to rescan the serial ports on node startup." />
  <!-- launch settings -->
  <arg name="standalone" default="false" doc="Choose whether or not to start the Communication Handler." />
  <arg name="use_controller_gui" default="false" doc="Choose whether or not to use the controller GUI." />
  <arg name="use_rviz" default="true" doc="Choose whether or not to use rviz." />
  <arg name="use_waypoints" default="false" doc="Choose whether or not to use the waypoint references." />

  <include file="$(find qb_device_driver)/launch/communication_handler.launch" if="$(arg standalone)" />

  <include file="$(find qb_device_bringup)/launch/device_bringup.launch" pass_all_args="true">
    <arg name="device_id" value="1" />
    <arg name="device_name" value="cube1" /> ⚠
    <arg name="device_type" value="qbmove" />
  </include>
  <include file="$(find qb_device_bringup)/launch/device_bringup.launch" pass_all_args="true">
    <arg name="device_id" value="2" />
    <arg name="device_name" value="cube2" /> ⚠
    <arg name="device_type" value="qbmove" />
  </include>
  <include file="$(find qb_device_bringup)/launch/device_bringup.launch" pass_all_args="true">
    <arg name="device_id" value="3" />
    <arg name="device_name" value="cube3" /> ⚠
    <arg name="device_type" value="qbmove" />
    <!-- override global settings -->
    <arg name="get_currents" value="false" />
    <arg name="get_positions" value="true" />
    <arg name="max_repeats" value="1" />
    <arg name="set_commands" value="false" />
  </include>

  <include file="$(find qb_device_bringup)/launch/robot_bringup.launch" pass_all_args="true" />
</launch>
```

# single-device setup

```
<launch>
  <!-- device info -->
  <arg name="device_id" default="1" doc="The ID of the device [1, 128]." />
  <arg name="device_type" value="qbmove" doc="The type of the device [qbhand, qbmove, ...]" />
  <arg name="device_name" default="$(arg device_type)$ (arg device_id)" doc="The unique device name used in the yaml controller configurations (also in the urdf if not already specified there)." /> ⚠
  <!-- robot settings -->
  <arg name="control_duration" default="0.01" doc="The duration of the control loop [s]." />
  <arg name="robot_hardware" default="[$ (arg device_name)]" doc="The robot hardware interface namespaces, e.g. [device1, device2, ...]" />
  <arg name="robot_name" default="$(arg device_type)" doc="The unique robot namespace." /> ⚠
  <arg name="robot_namespace" default="$(arg device_name)" doc="The unique robot namespace." />
  <arg name="robot_package" default="qb_move" doc="The base package name prefix for the robot configurations [urdf, rviz, ...]" />
  <arg name="source_list" default="[control/joint_states]" doc="The joint_states source list for the joint_state_publisher." />
  <!-- read/write settings -->
  <arg name="get_currents" default="true" doc="Choose whether or not to retrieve current measurements from the device." />
  <arg name="get_positions" default="true" doc="Choose whether or not to retrieve position measurements from the device." />
  <arg name="get_distinct_packages" default="false" doc="Choose whether or not to retrieve current and position measurements from the device in two distinct packages." />
  <arg name="max_repeats" default="3" doc="The maximum number of consecutive repetitions to mark retrieved data as corrupted." />
  <arg name="set_commands" default="true" doc="Choose whether or not to send command positions to the device." />
  <arg name="set_commands_async" default="false" doc="Choose whether or not to send commands without waiting for ack." />
  <!-- initialization settings -->
  <arg name="activate_on_initialization" default="false" doc="Choose whether or not to activate the motors on node startup." />
  <arg name="rescan_on_initialization" default="false" doc="Choose whether or not to rescan the serial ports on node startup." />
  <!-- launch settings -->
  <arg name="standalone" default="false" doc="Choose whether or not to start the Communication Handler." />
  <arg name="use_controller_gui" default="false" doc="Choose whether or not to use the controller GUI." />
  <arg name="use_rviz" default="true" doc="Choose whether or not to use rviz." />
  <arg name="use_waypoints" default="false" doc="Choose whether or not to use the waypoint references." />

  <include file="$(find qb_device_driver)/launch/communication_handler.launch" if="$(arg standalone)" />

  <include file="$(find qb_device_bringup)/launch/device_bringup.launch" pass_all_args="true" />

  <include file="$(find qb_device_bringup)/launch/robot_bringup.launch" pass_all_args="true" />
</launch>
```



The use of `combined_robot_hw::CombinedRobotHW` requires the ROS Parameter `robot_hardware` to be set and filled with all the device name list.

# packages overview

