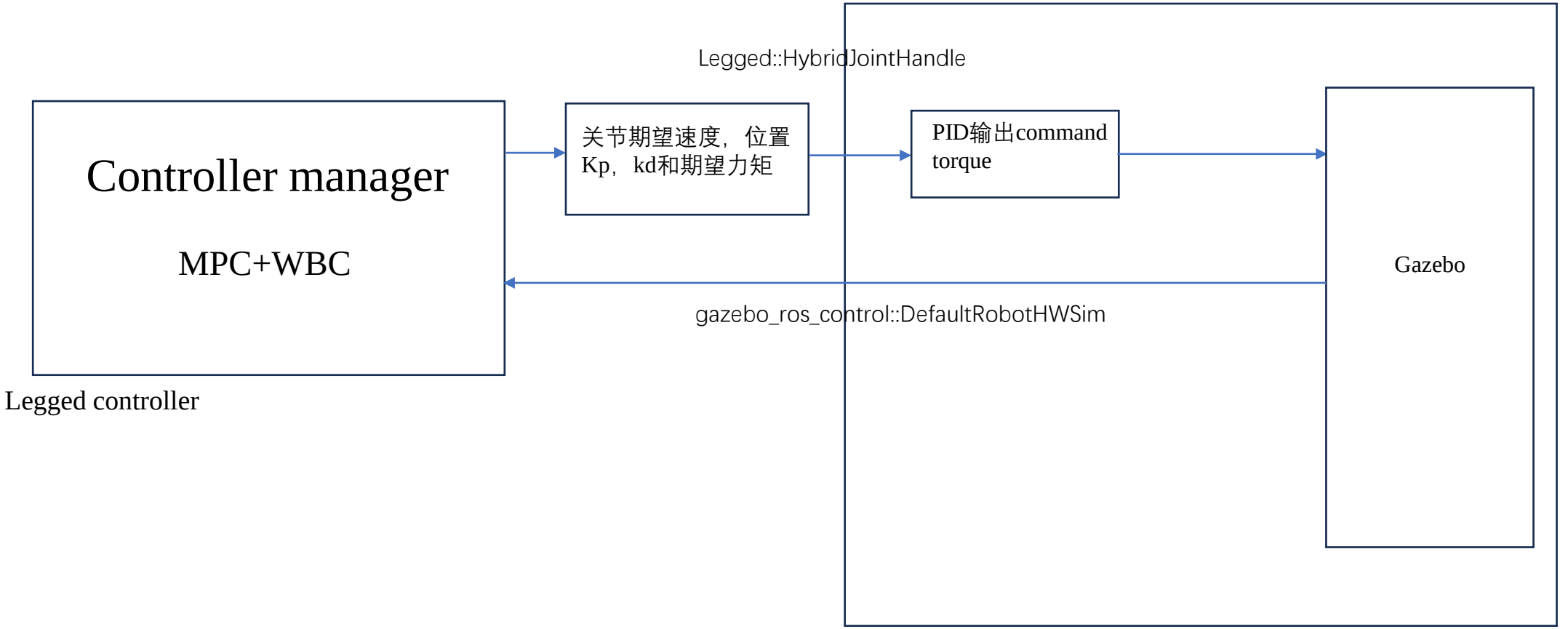
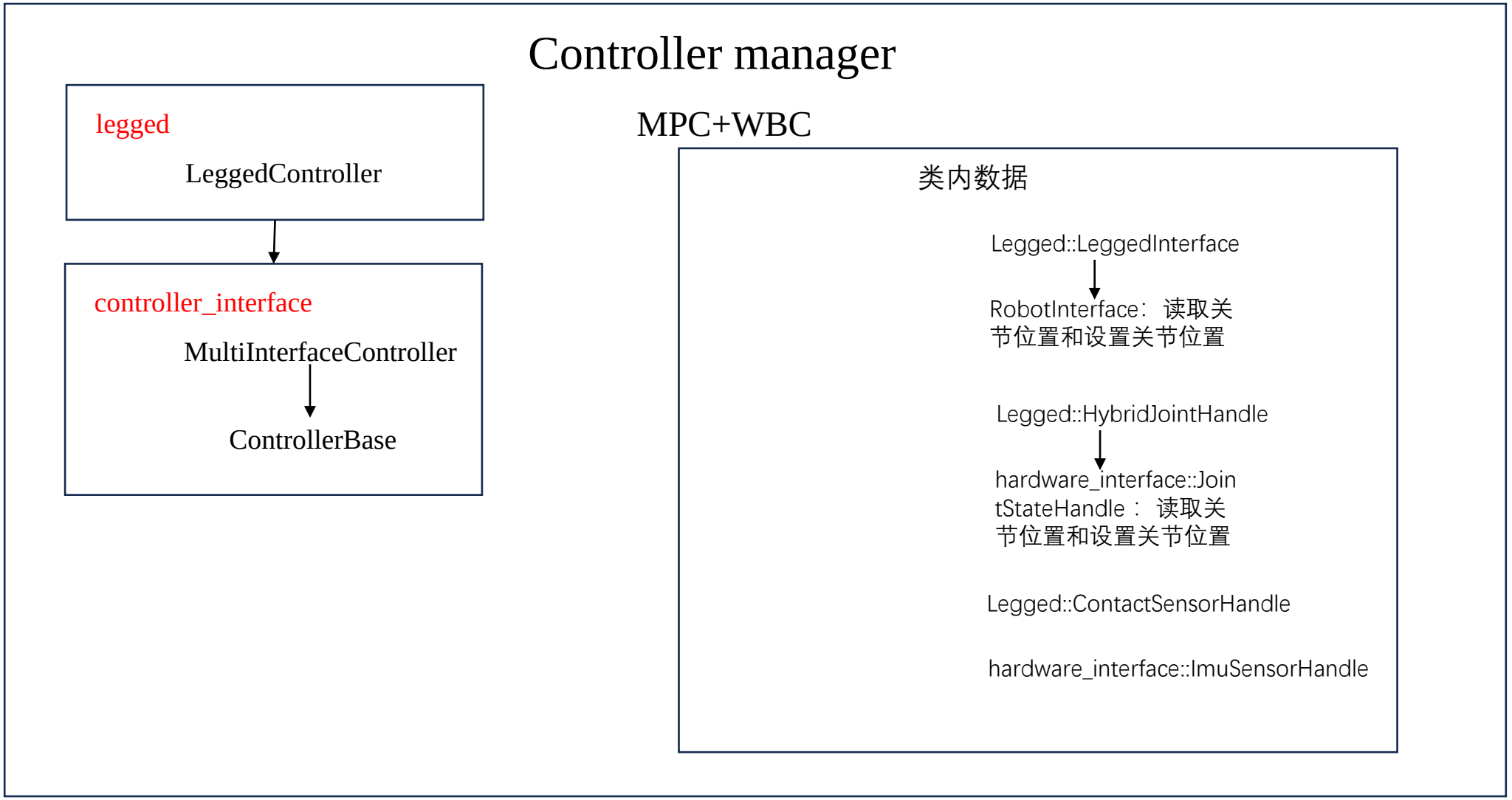

Legged::HybridJointHandle
Controller manager
MPC+WBC
关节期望速度，位置
Kp，kd和期望力矩
PID输出command
torque
Gazebo
gazebo_ros_control::DefaultRobotHWSim
Legged controller
gazebo_ros_control

Legged controller



Legged controller

Controller manager

MPC+WBC

初始化流程

1 setupLeggedInterface：设置最优控制问题

2 setupMpc：设置SQP求解器，订阅步态topic—legged_robot__mpc_mode_schedule，订阅目标Topic- legged_robot _mpc_target，发布legged_robot _mpc_observation

3 setupMrt： 设置rollout，设置mpc线程以求解mpc

4 Visualization： 设置rollout，求解mpc

5 Hardware interface： 处理来自hardware_interface::RobotHW的关节，接触和IMU的句柄

6 Whole Control：从takfile加载任务

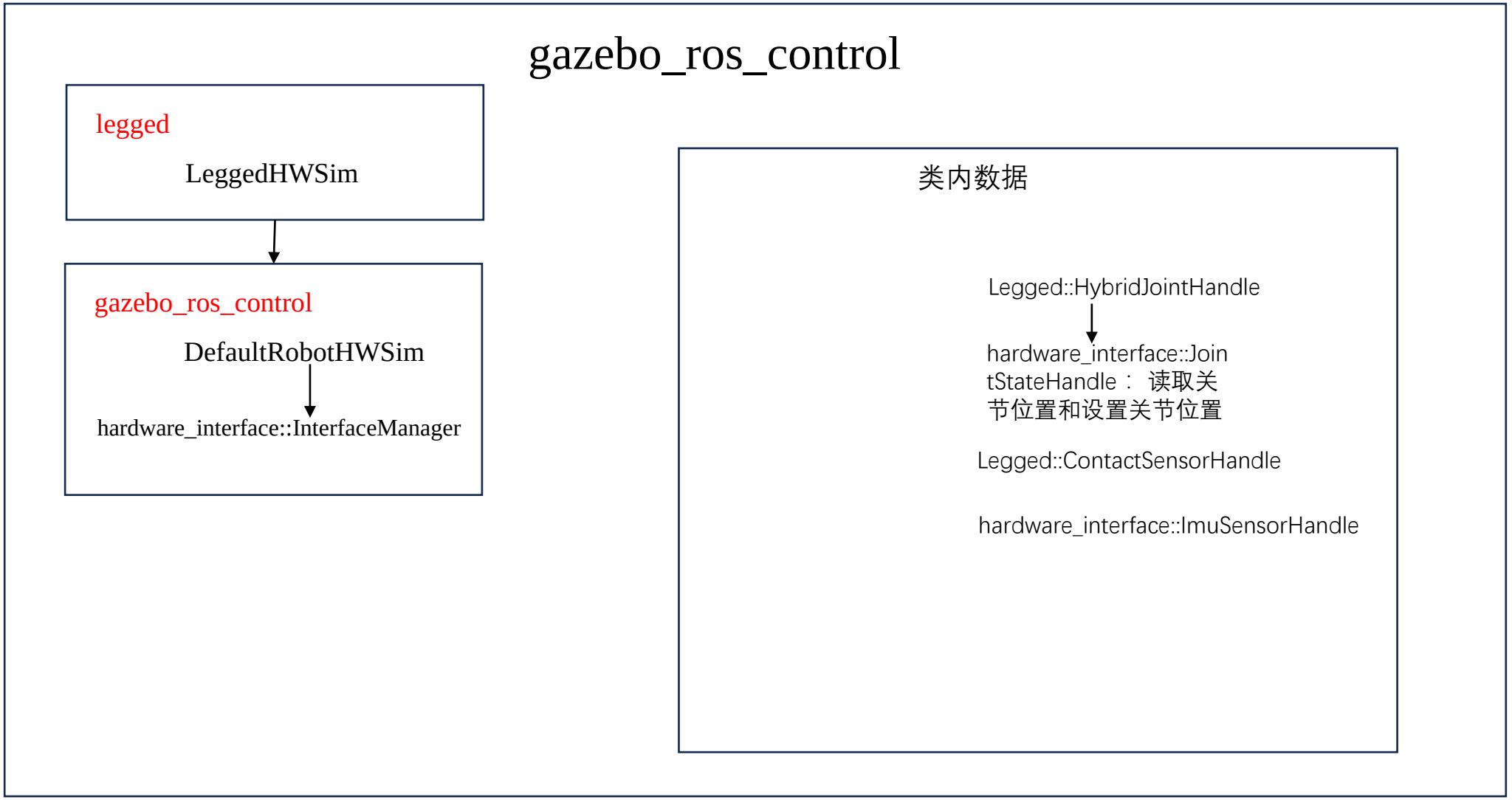
Legged controller

Controller manager

MPC+WBC

Update：更新
1. hybridJointHandles_[j].setCommand(posDes(j), velDes(j), 0, 3, torque(j));
更新第j个关节的命令，期望位置和速度来自MPC，期望的力矩来自WBC

LeggedHWSim



LeggedHWSim

gazebo_ros_control

1. readSim设置类LeggedHWSim中的资源
2. writeSim: 操作Legged::HybridJointHandle得到命令关节力矩