Tello Driver II

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TODO

- Completar topics en tello-driver (pubs)
- Topics con imágenes: nuevos handlers
- Órdenes de velocidad (subs)

- Drone_wrapper (#56):
  - YAML / arg
  - Init as node
  - Battery? Takeoff vs arming?
- rqt
  - Pulir y eliminar dependencias

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- ~~Órdenes de velocidad (subs)~~

- Drone_wrapper (#56):
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  - ~~Battery?~~ Takeoff vs arming?
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  - ~~Pulir y eliminar dependencias~~

Topics

State

connected = True
is_armed = is_armed
guided = False
manual_input = False
mode = OFFBOARD
system_status[1] = 0

ExtendedState

vtol_state = 0
landed_state = landed_state

BatteryState

voltage = 0.0
…
pertentage = percentage
…
present = True
...

PoseStamped

position.x = ?
position.y = ?
position.z = h
orientation.x = ?
orientation.y = ?
orientation.z = ?
orientation.w = ?

TwistStamped

linear.x = vx
linear.y = vy
linear.z = vz
angular.x = ?
angular.y = ?
angular.z = ?

NavSatFix[2]

status = -1
service = 0
...

Drone Model & Nodo DroneWrapper

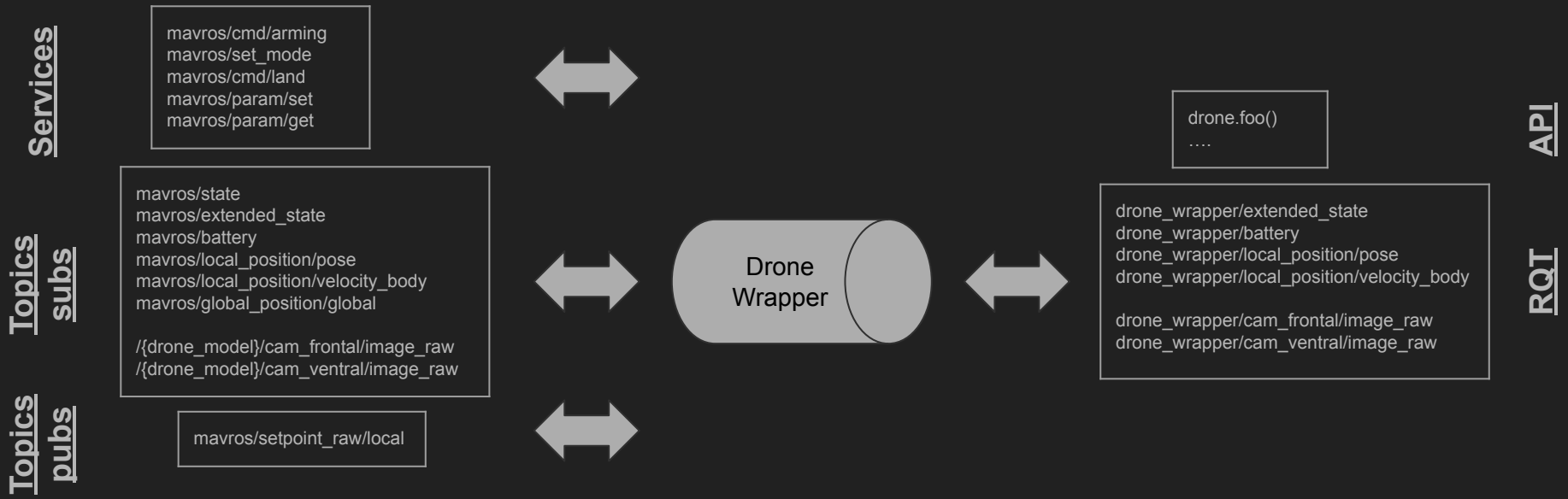
- ROS param
- Inicio como nodo

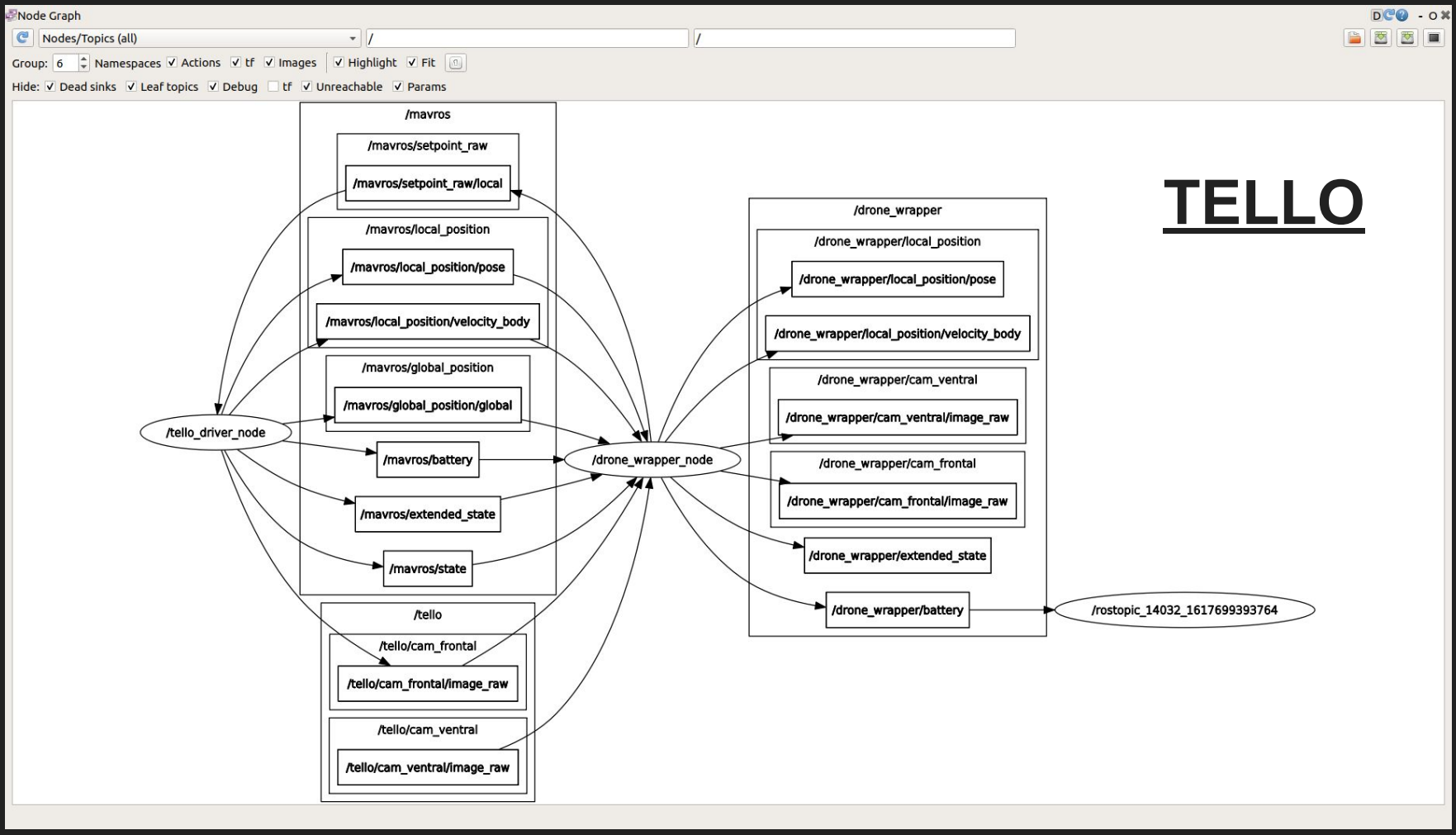
```xml
<?xml version="1.0"?>
<launch>
    <!--    Drone model param    -->
    <arg name="drone_model" default="tello"/>
    <param name="drone_model" type="str" value="$(arg drone_model)" />

    <node name="tello_driver_node" pkg="tello_driver" type="tello_driver_node.py" output="screen"/>
    <node pkg="drone_wrapper" type="drone_wrapper_class.py" name="drone_wrapper_node" output="screen"/>
</launch>
```

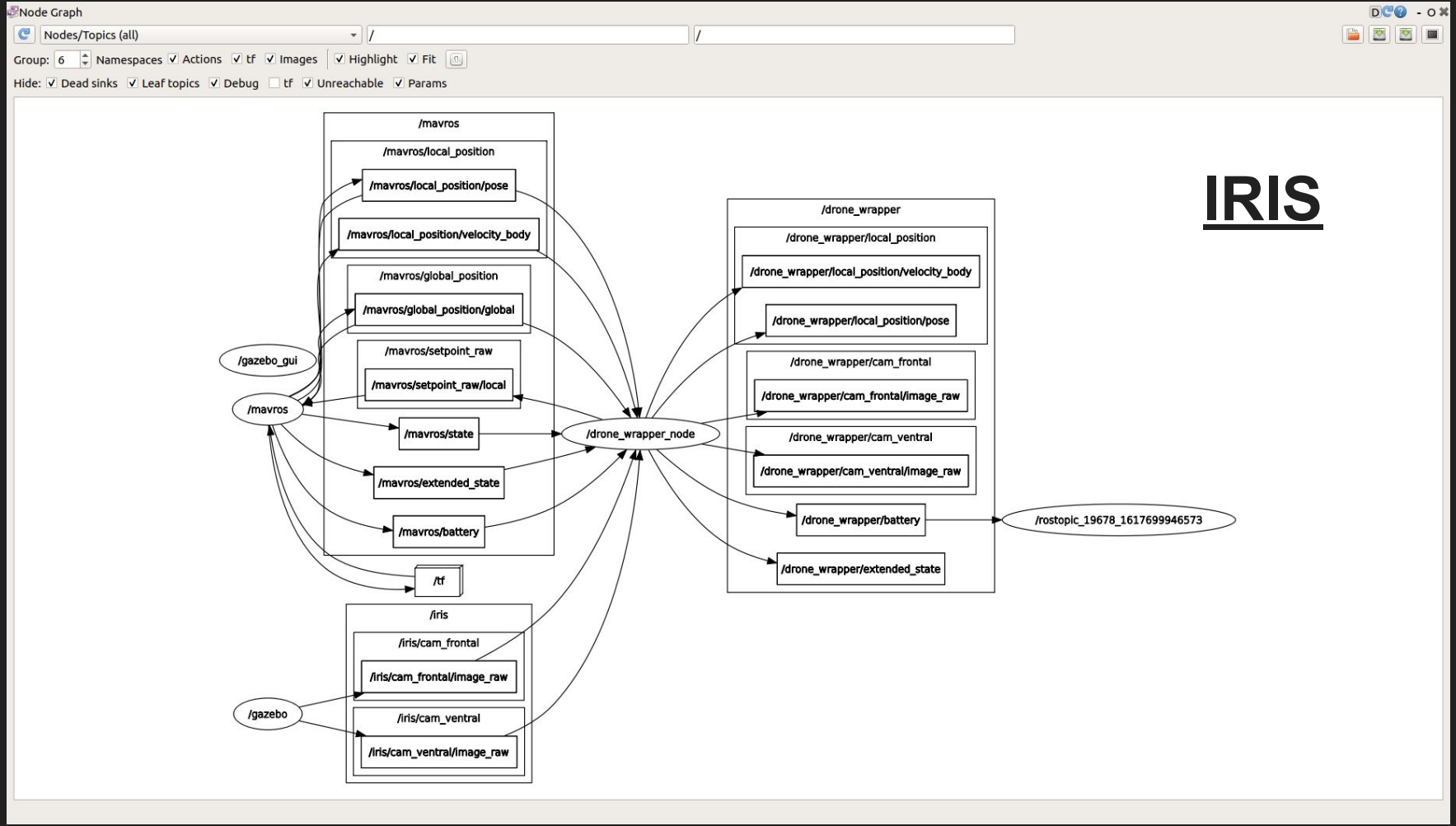
```python
drone_model = rospy.get_param('drone_model', 'iris')  # default --> iris

cam_frontal_topic = '/' + drone_model + '/cam_frontal/image_raw'
cam_ventral_topic = '/' + drone_model + '/cam_ventral/image_raw'
rospy.Subscriber(cam_frontal_topic, Image, self.cam_frontal_cb)
rospy.Subscriber(cam_ventral_topic, Image, self.cam_ventral_cb)
```

```python
class DroneWrapper:...


if __name__ == "__main__":
    drone = DroneWrapper()
    rospy.spin()
```

Drone Wrapper




Node Graph
Nodes/Topics (all)
/
/
Group: 6
Namespaces
Actions
tf
Images
Highlight
Fit
Hide:
Dead sinks
Leaf topics
Debug
tf
Unreachable
Params
/mavros
/mavros/setpoint_raw
/mavros/setpoint_raw/local
/mavros/local_position
/mavros/local_position/pose
/mavros/local_position/velocity_body
/mavros/global_position
/mavros/global_position/global
/tello_driver_node
/mavros/battery
/mavros/extended_state
/mavros/state
/tello
/tello/cam_frontal
/tello/cam_frontal/image_raw
/tello/cam_ventral
/tello/cam_ventral/image_raw
/drone_wrapper_node
/drone_wrapper
/drone_wrapper/local_position
/drone_wrapper/local_position/pose
/drone_wrapper/local_position/velocity_body
/drone_wrapper/cam_ventral
/drone_wrapper/cam_ventral/image_raw
/drone_wrapper/cam_frontal
/drone_wrapper/cam_frontal/image_raw
/drone_wrapper/extended_state
/drone_wrapper/battery
/rostopic_14032_1617699393764
TELLO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/mavros/global_position/global
/mavros/setpoint_raw
/mavros/setpoint_raw/local
/gazebo_gui
/mavros
/mavros/state
/mavros/extended_state
/mavros/battery
/tf
/iris
/iris/cam_frontal
/iris/cam_frontal/image_raw
/gazebo
/iris/cam_ventral
/iris/cam_ventral/image_raw
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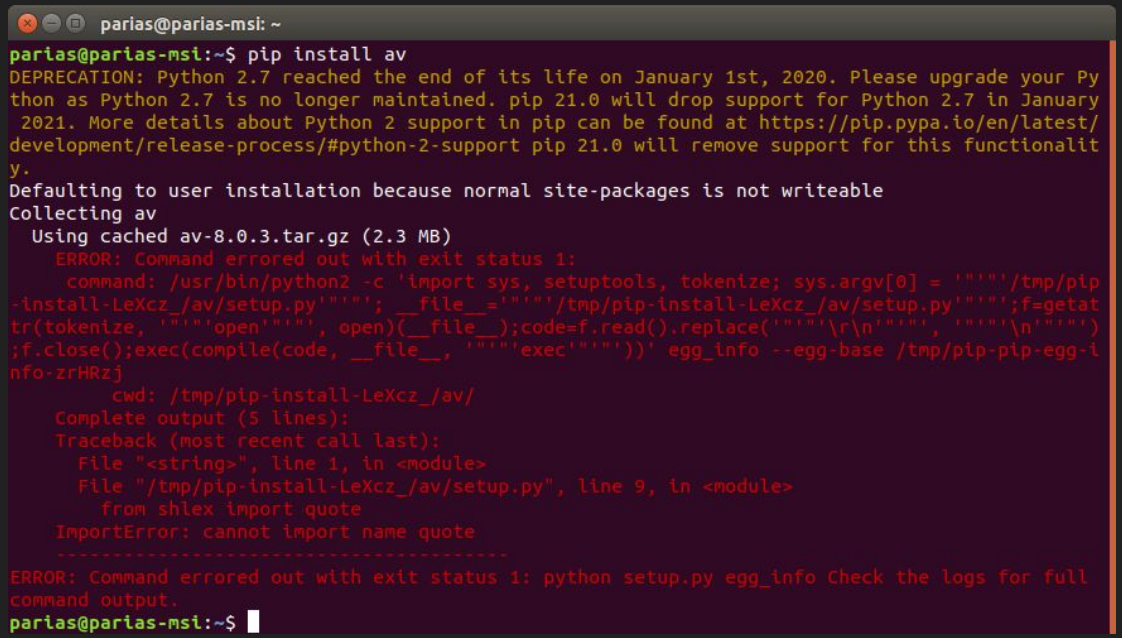
/drone_wrapper/local_position/pose
/drone_wrapper/cam_frontal
/drone_wrapper/cam_frontal/image_raw
/drone_wrapper/cam_ventral
/drone_wrapper/cam_ventral/image_raw
/drone_wrapper/battery
/drone_wrapper/extended_state
/rostopic_19678_1617699946573
IRIS

Problemas

- Imágenes: problemas con instalación de av
- h.264
- Takeoff
- Setpoint_raw



Takeoff

- DroneWrapper → arm() + OFFBOARD → go_to_alt
- TelloDriver → siempre offboard, arm() llama a takeoff()

```python
def takeoff(self, h=3):
    self.set_cmd_pos(0, 0, 0, 0)
    self.hold_setpoint_raw()
    self.arm(True)
    self.stay_armed_stay_offboard_timer = rospy.Timer(rospy.Duration(3), self.stay_armed_stay_offboard_cb)
    while True:
        while not (self.state.armed and self.state.mode == 'OFFBOARD'):
            self.rate.sleep()
        rospy.loginfo('Sleeping 1 secs to confirm change')
        rospy.sleep(1)
        if self.state.mode == 'OFFBOARD':
            break
    self.set_cmd_mix(z=h)
    rospy.loginfo('Taking off!!!')
    while True:
        if round(self.pose_stamped.pose.position.z, 1) == h:
            break
    self.set_cmd_vel()
```

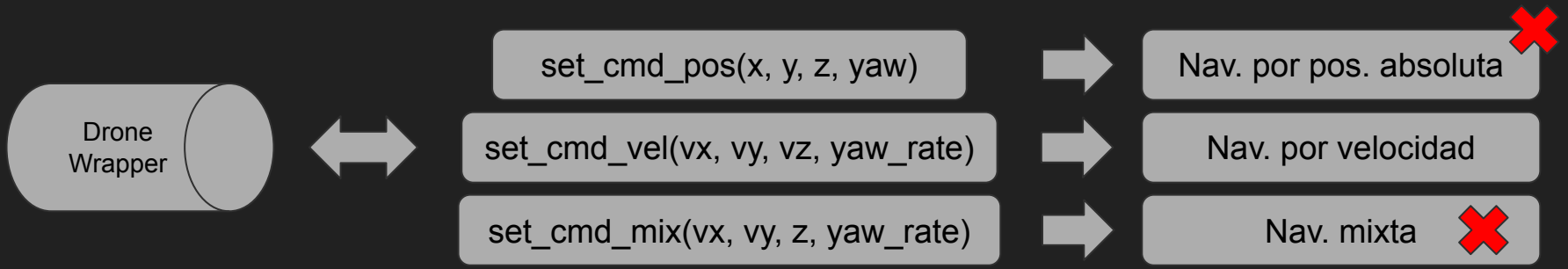
```python
def tello_takeoff(self, req):
    ...
    self.takeoff()
    rospy.loginfo("Taking off!")
    return True, 0

def tello_arm(self, req):
    ...
    rospy.loginfo("Tello Arming")
    if req.value:
        tk_req = CommandTOL()
        success, result = self.tello_takeoff(tk_req)
        return success, result
    else:
        return False, 0
```

Setpoint raw

- Tello no posee navegación por posición absoluta. No hay GPS, sólo odometría visual, que permite una navegación por posición relativa al punto actual.

- DroneWrapper:



TODO

- Imágenes: h.264
- Takeoff
- Completar pubs
- Setpoint_raw