

# Connection to robair

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# Outline

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1. Connecting to the RobAIR: wireless connection;
2. ROS on robair: how it works;
3. Tests of connection to robair.

# Robot handling rules

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1. When picking up the robot, always place your hands under the **lower** chassis plate. The upper plate where the laser scanner and raspberry pi are located is fragile.
2. While using the robot, check the battery voltage display on top of the robot regularly. If the voltage gets close to 22 (e.g. 22.2), **switch the robot off** using the blue push-button on top of the robot.  
**PLEASE DO NOT LET IT GO BELOW 22V.**  
**Failing to do this will result in battery damage, making the robot inoperative.**
3. When using autonomous control (action node) you should always have one person on the laptop, and one person close to the robot. To stop robot movement:
  - Press **ctrl + c** in the terminal which is running the action node (robot will stop **after one second**);
  - If very urgent: push the **RED** safety switch on top of the robot. This will cut electrical power to the motors **immediately**. Once it is safe, power can be restored by twisting/rotating the switch.
4. At the end of each lab session, bring the robot back to the storage area, and switch the robot off. Please confirm it is off by checking that **all lights / LEDs are OFF**.

# Wireless hotspot connection

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1. Turn on the robot with the blue push-button (takes ~ 2 mins to boot).
2. On your laptop, click on the wifi / network icon in the top-right corner of the screen.
3. Select the RobAIR\_hotspot\_ that matches the MAC address of your robot (written on top of the robot with a label).

**Example ssid:** RobAIR\_hotspot\_0cb6d2f1ff17

**Password:** robairRobair42

4. Open a terminal (ctrl + alt + t) and check if you can ping the robot by typing the command:

ping 10.0.0.42

5. When you **finish** using the robot: **disconnect from the hotspot!**  
If you do not disconnect, you will have problems when other groups start using the robot, or when you try to play rosbags.

**Switch off the robot** (blue push-button) **if another group doesn't take it.**

# Outline

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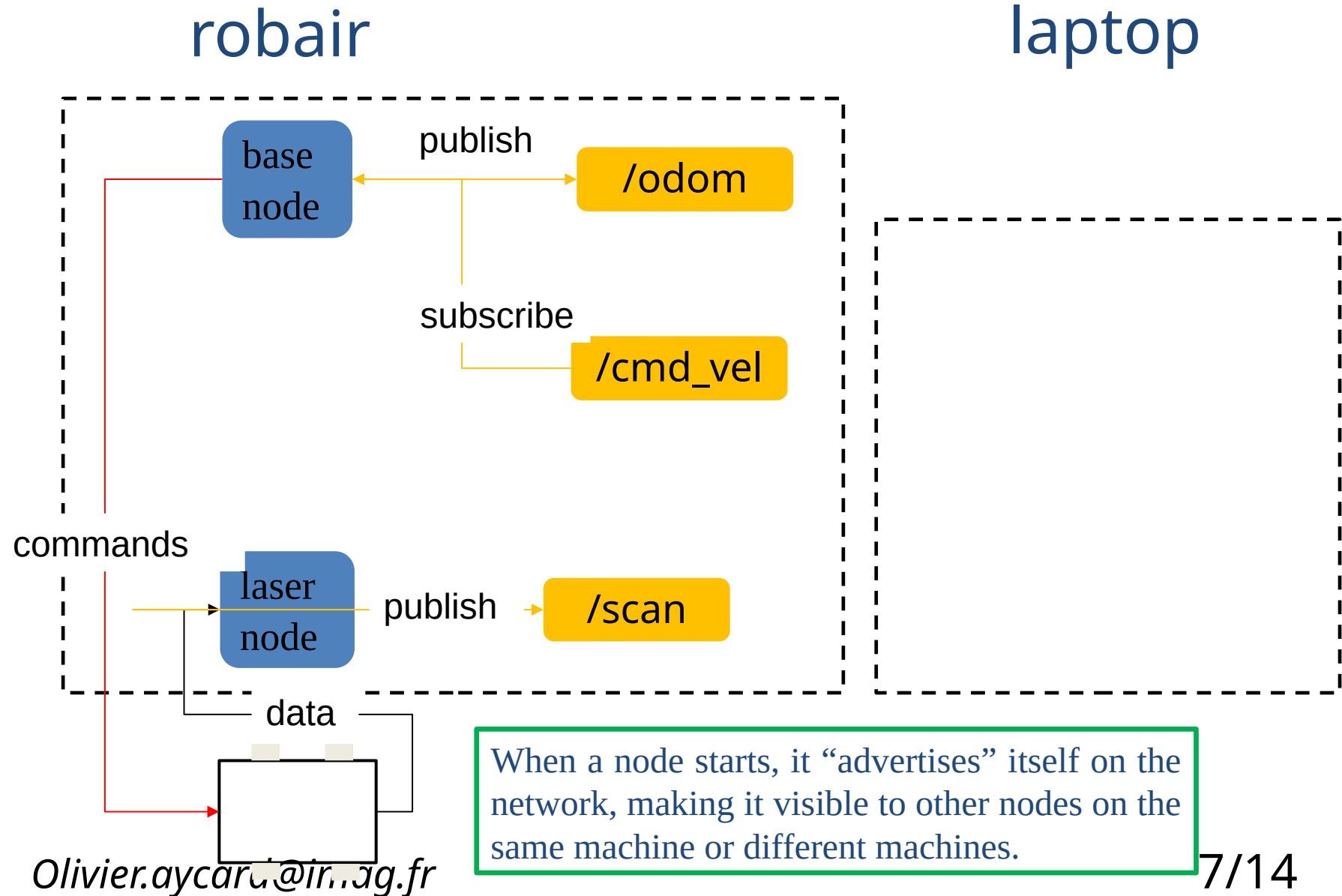
1. Connecting to the RobAIR: wireless connection;
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# ROS on robair (1/5)

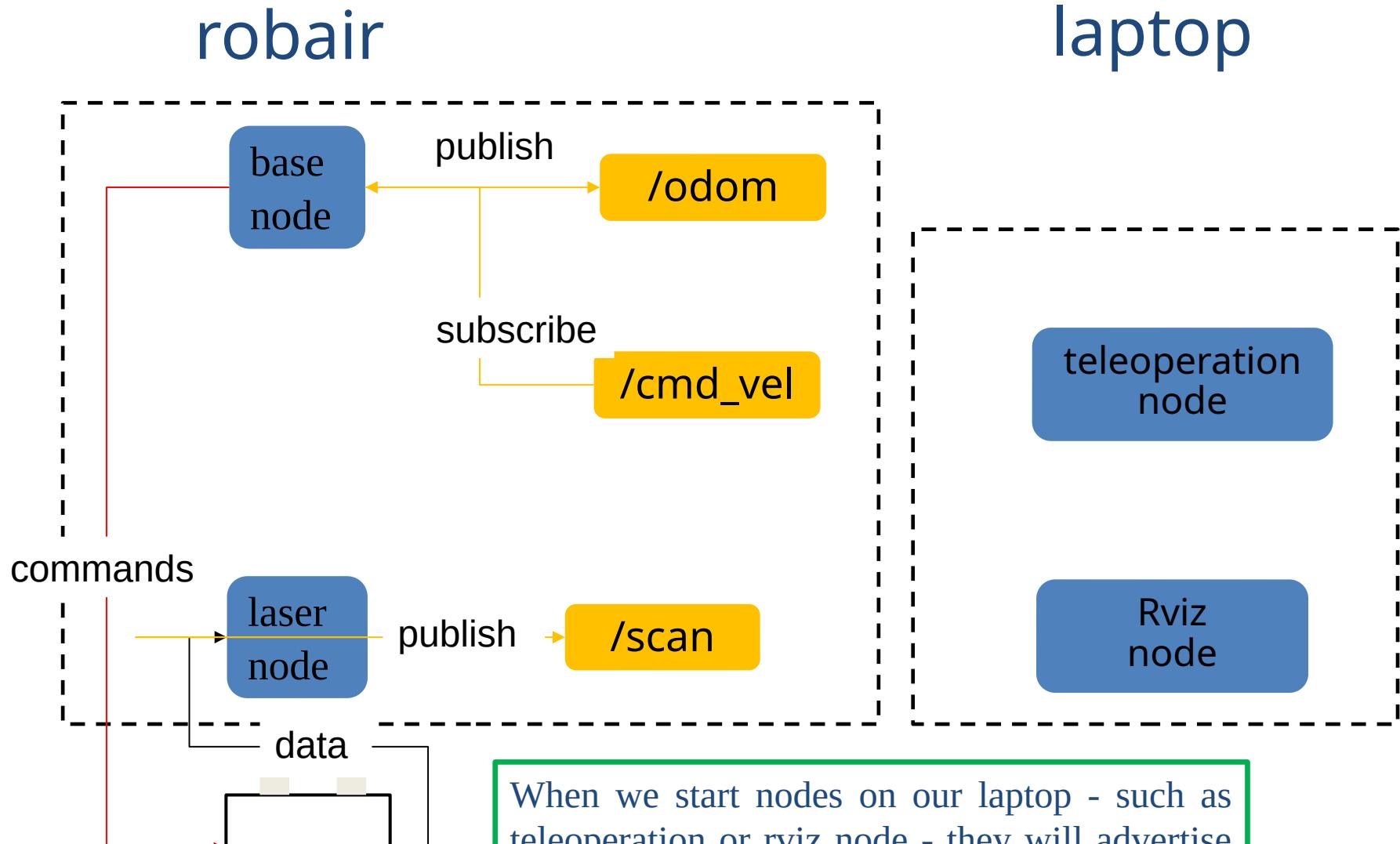
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- Each robair publishes:
  - /scan (laserscanner data);
  - /odom (odometry).
  
- Each robair subscribes to:
  - /cmd\_vel to command robair in translation and/or rotation.

# ROS on robair (2/5)



# ROS on robair (3/5)

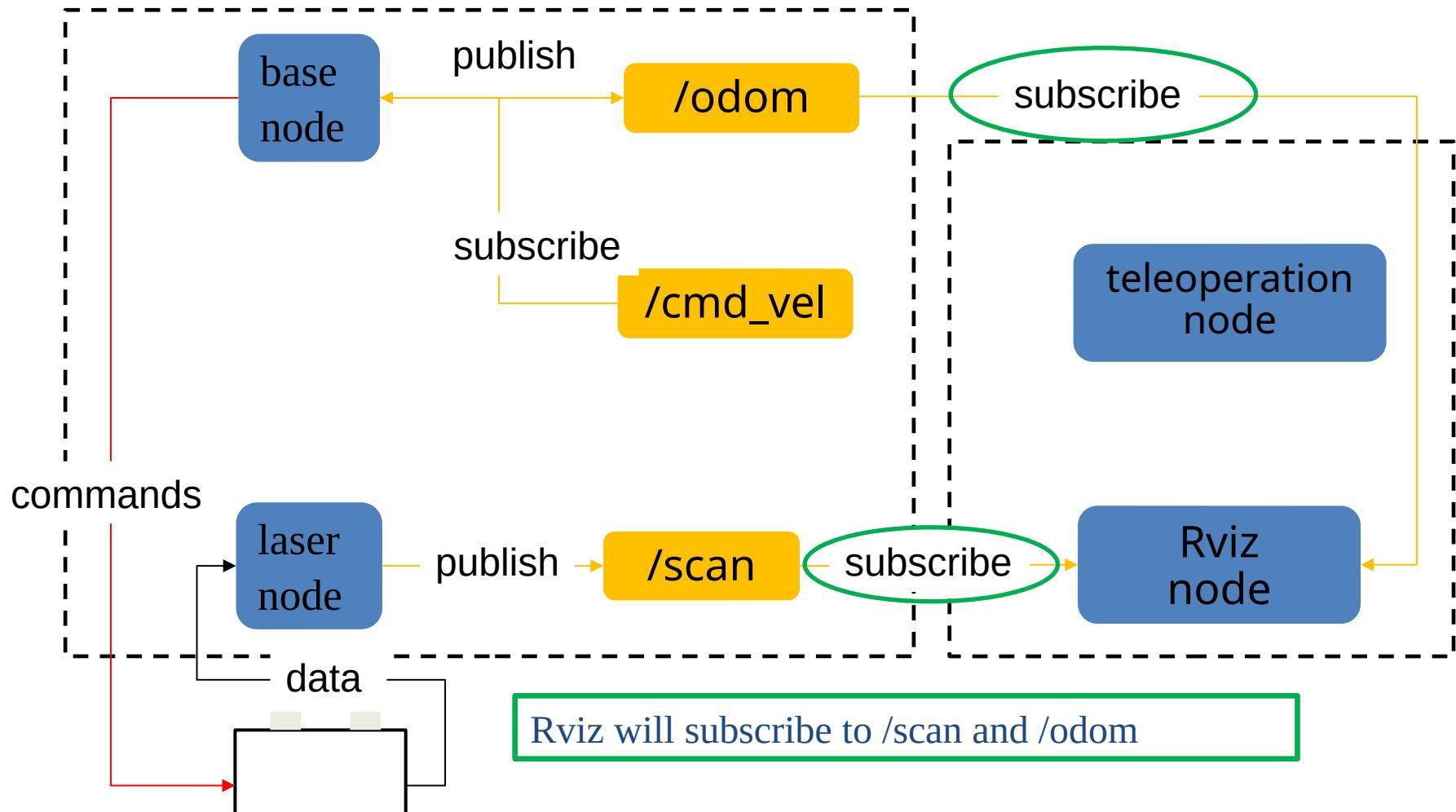


When we start nodes on our laptop - such as teleoperation or rviz node - they will advertise themselves, and see the nodes and topics running on RobAIR.

# ROS on robair (4/5)

# robot

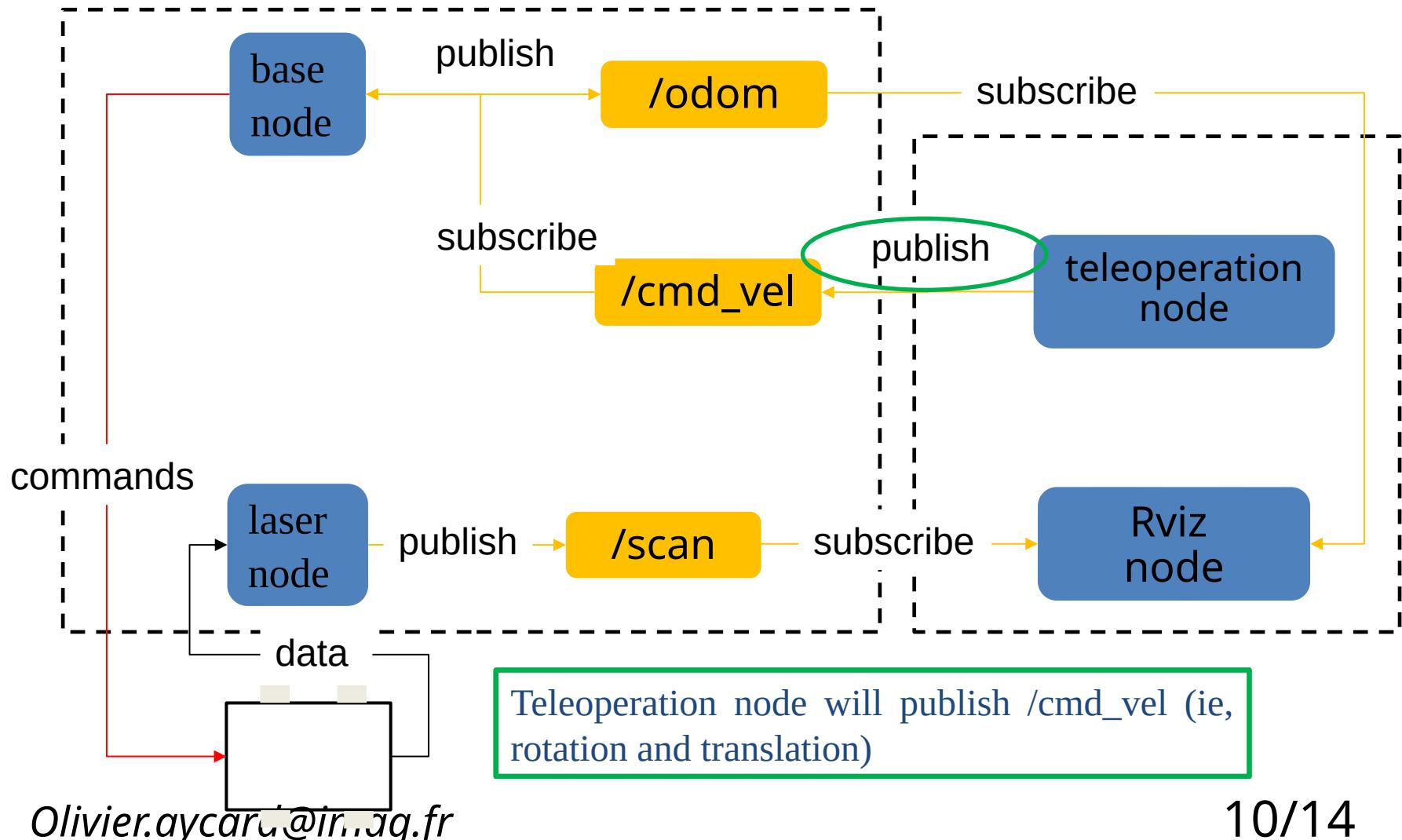
# laptop



# ROS on robair (5/5)

# robot

# laptop



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# Tests of connection on robair

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- We will check if you are able to receive the laser data (/scan topic) and send motion commands to robair (/cmd\_vel topic)
- In order to run a ros2 node, you must do the following:
  - Open a terminal (ctrl + alt + t), and run: `cd ~/ros2_ws`
  - Run: `source install/local_setup.bash`
  - Then, run the command for your node `ros2 run <package name> <node name>`

## 1. Laser data:

- Start rviz: `ros2 run rviz2 rviz2 -d src/follow_me/config/laser_only.rviz`
- You should see the data of the laser scanner

## 2. Motion commands:

- Start smooth\_teleop: `ros2 run smooth_teleop smooth_teleop_node`
- Use the keyboard to move robair. Press “**k**” to immediately **stop**.
- You should see robair moving