Introduction to ROS

By TESR

What is ROS?

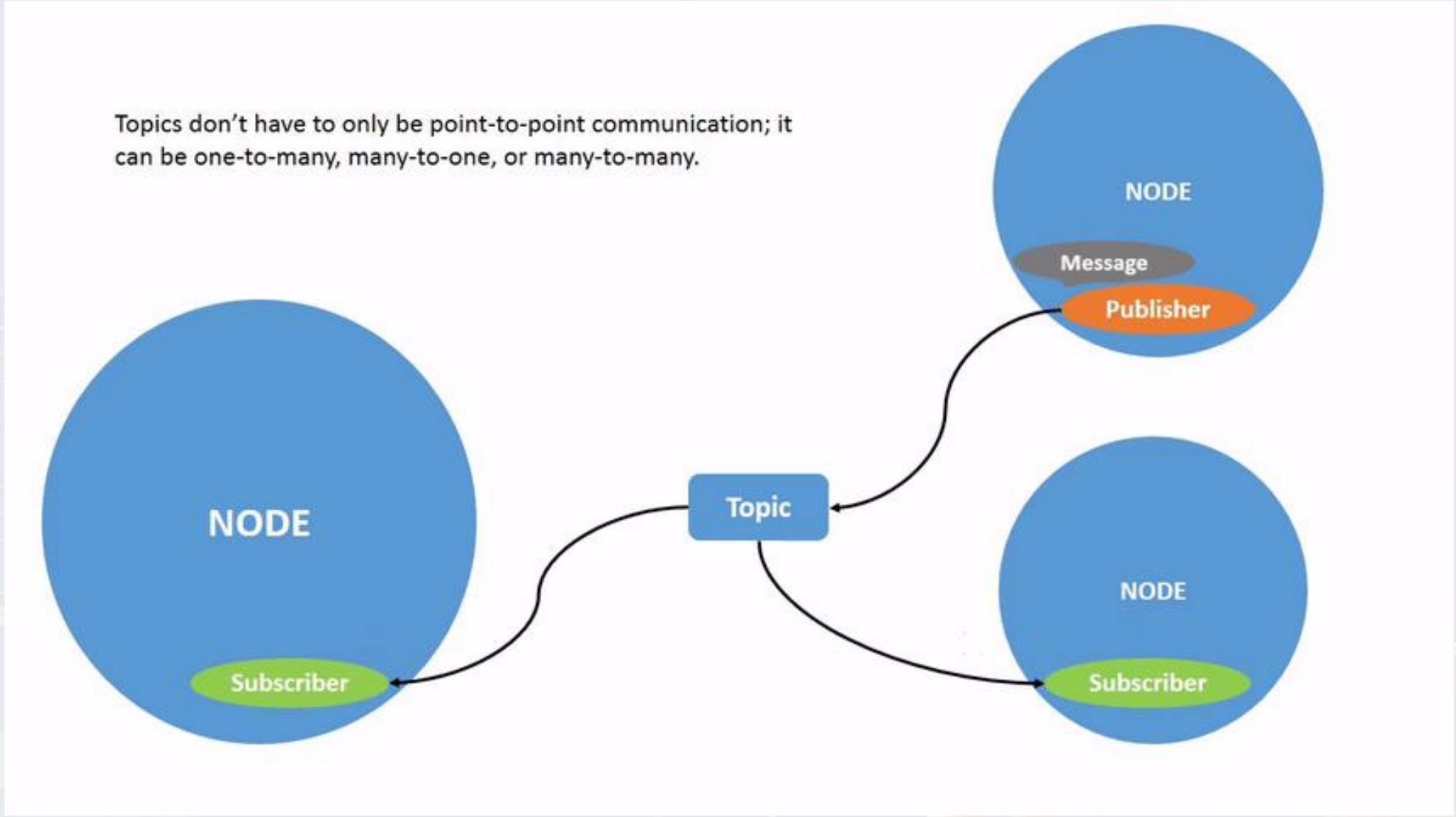
The Robot Operating System (ROS) is a set of software libraries and tools that help you build robot applications. From drivers to state-of-the-art algorithms, and with powerful developer tools. And it's all open source.

Ref. https://www.ros.org/

Why ROS?

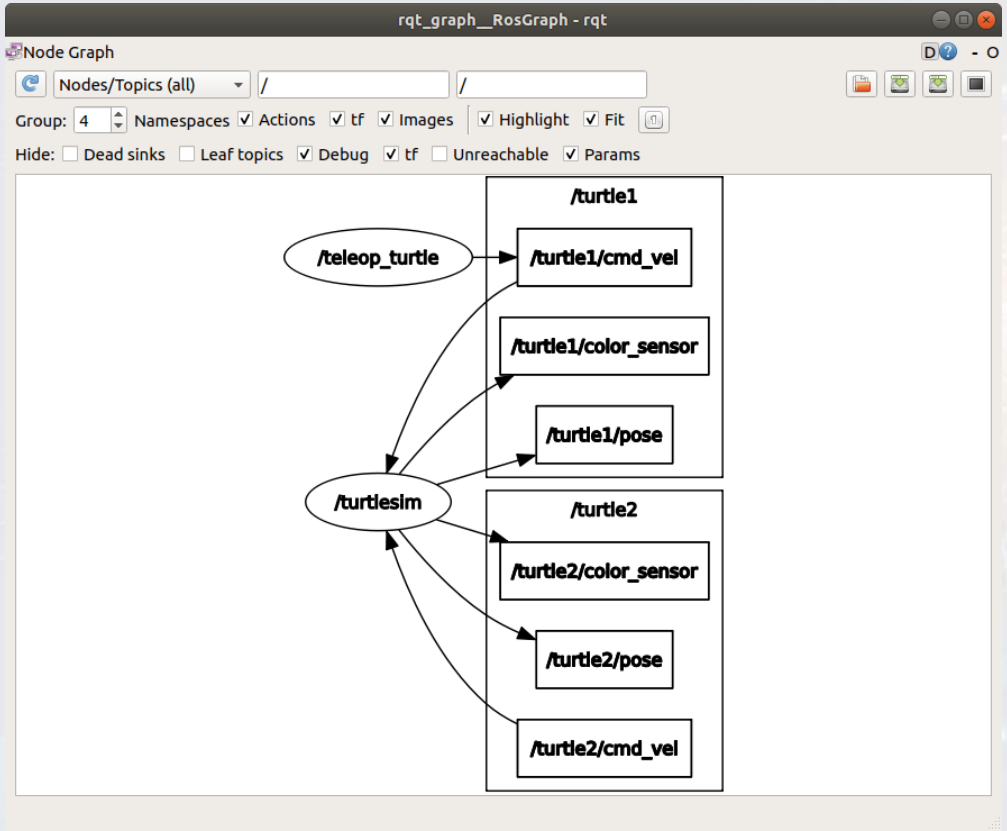
- The base code and knowledge can be applied across all robotics platforms.
- It can be built into your product.
- ROS robots can speak any language. You can communicate easily between Python and C++ nodes.
- ROS and the community around it have been growing since 2007.
- There is a package for everything.
- ROS allows developers to easily simulate their robot in any environment.
- It’s open-source.

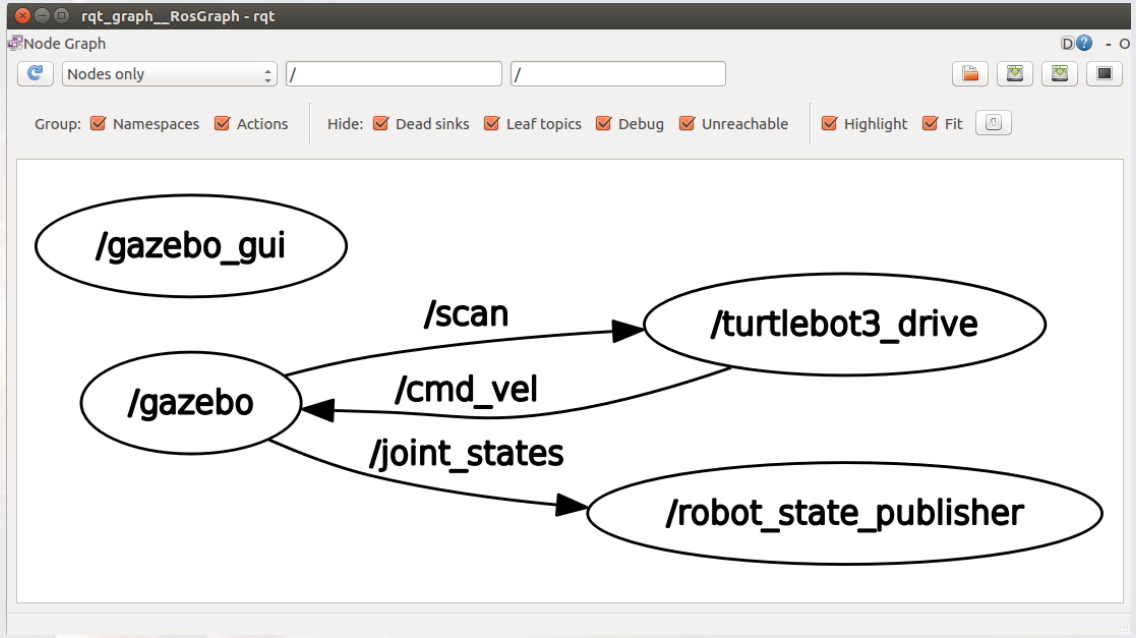
ROS communication



rqt graph

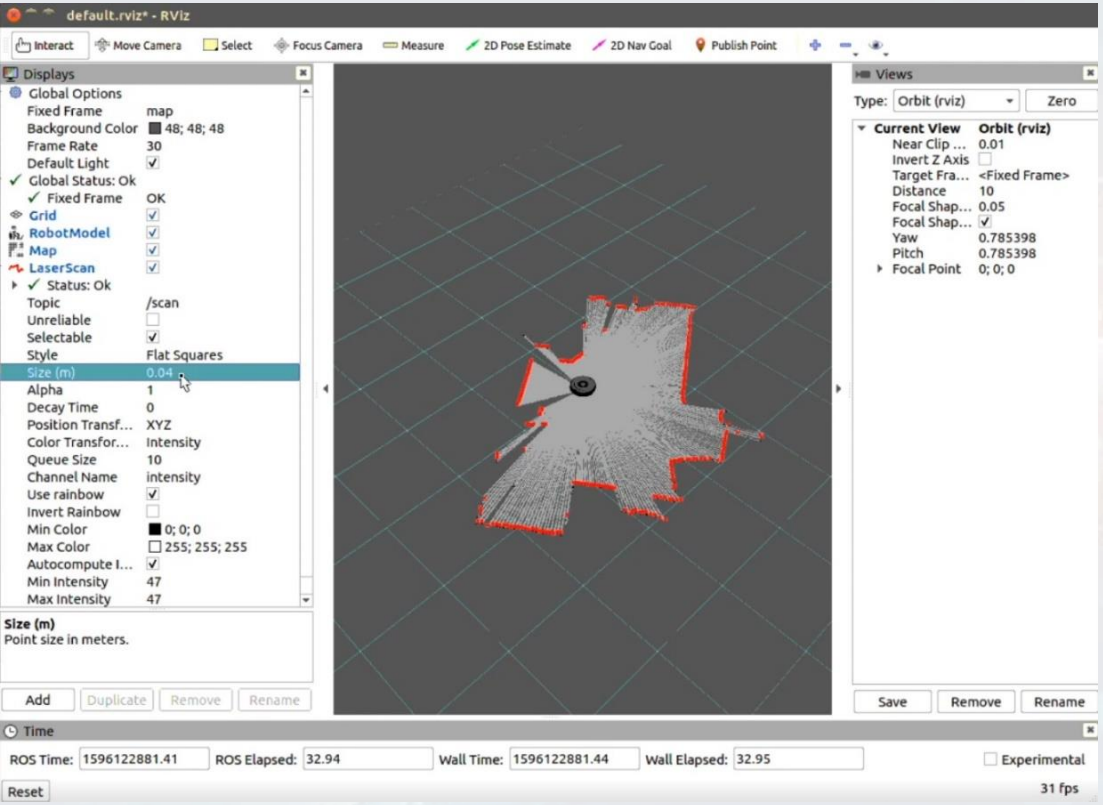
rqt graph is a GUI plugin from the rqt tool suite. With rqt graph you can visualize the ROS graph of your application.

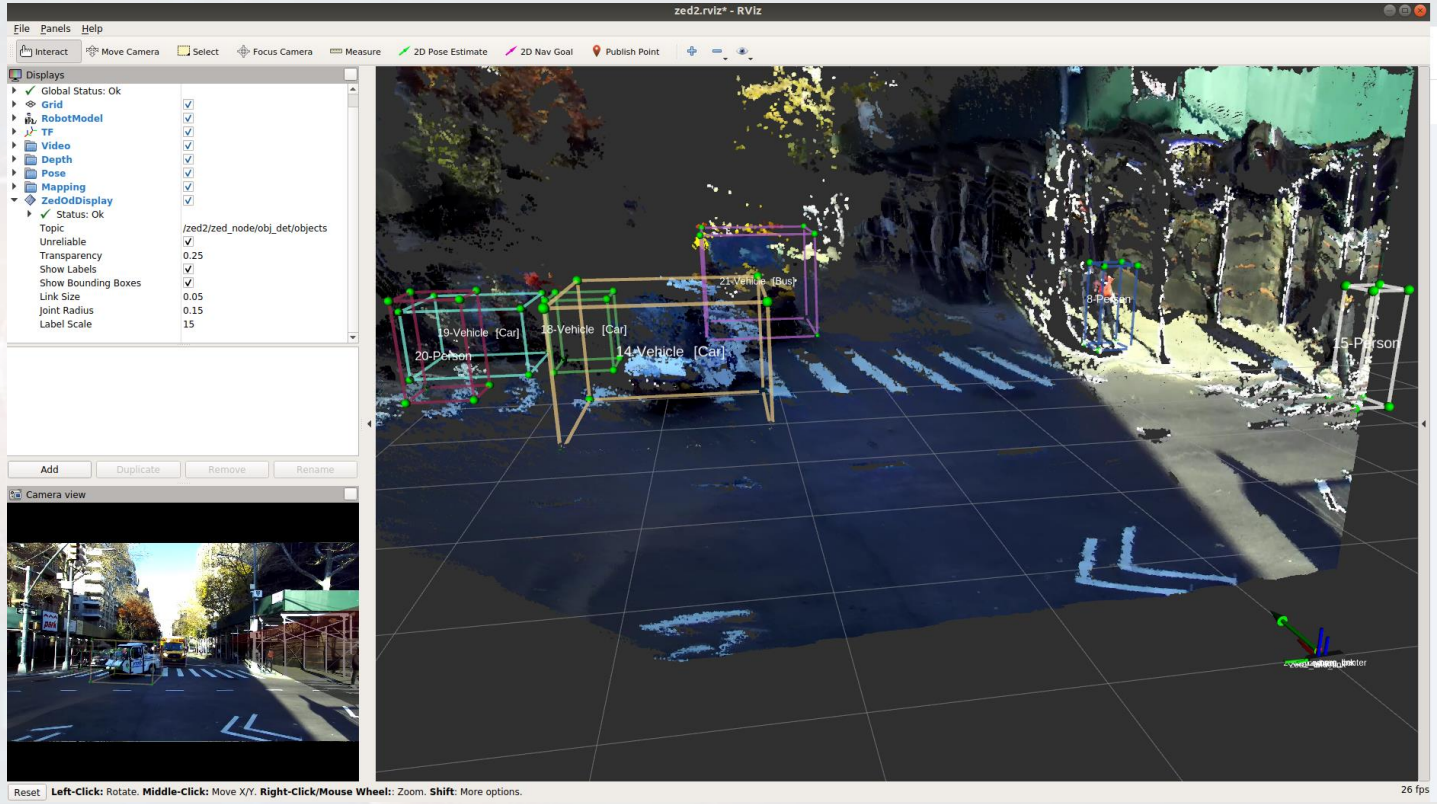




RVIZ tool

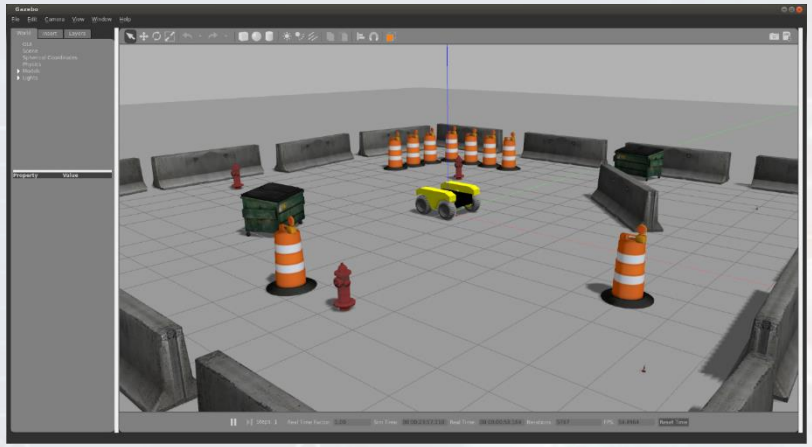
RVIZ is a ROS graphical interface that allows you to visualize a lot of information, using plugins for many kinds of available topics.

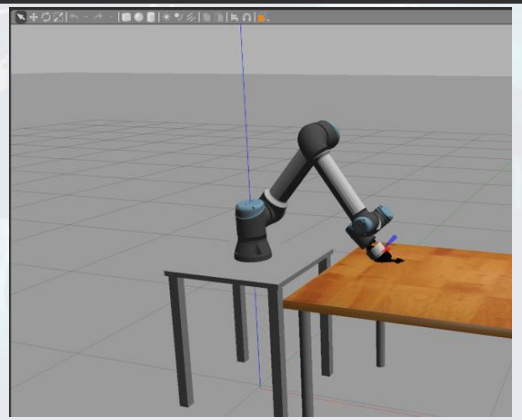


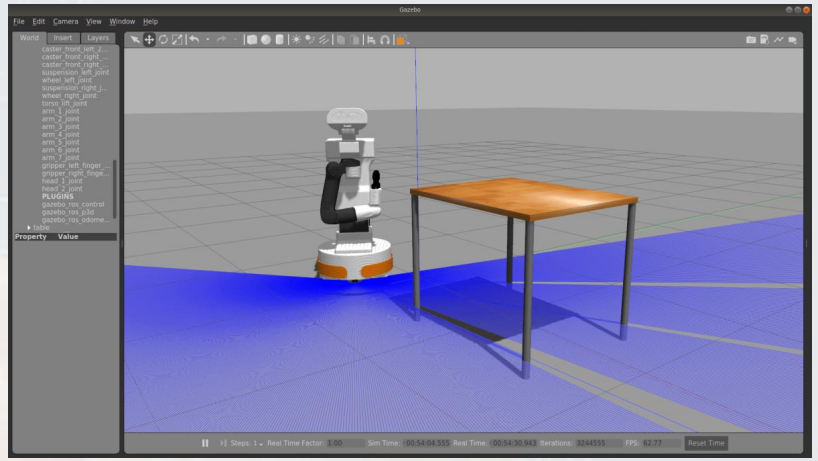


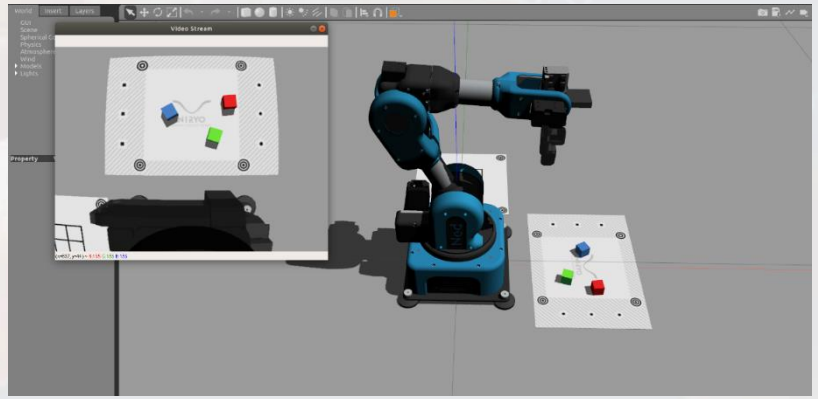
Gazebo

Gazebo is a 3D simulator, while ROS serves as the interface for the robot. Combining both results in a powerful robot simulator. With Gazebo you are able to create a 3D scenario on your computer with robots, obstacles and many other objects. Gazebo also uses a physical engine for illumination, gravity, inertia, etc.



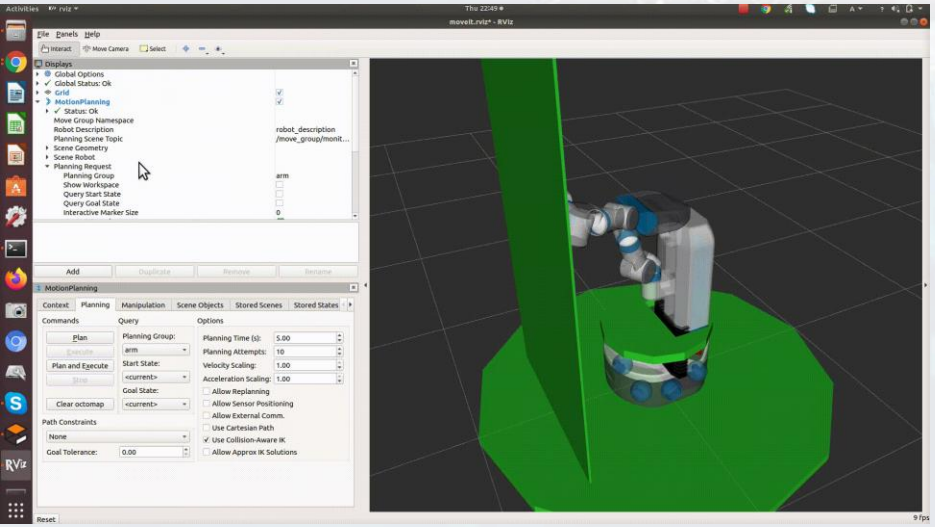


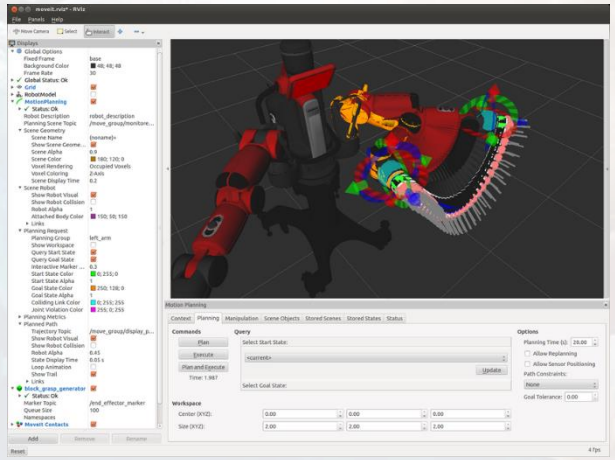


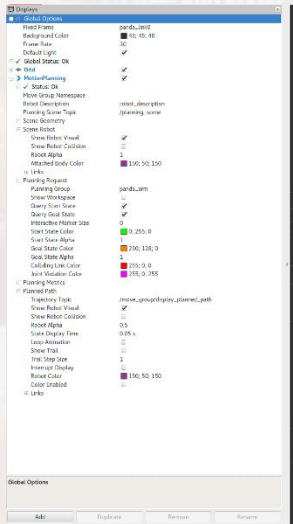


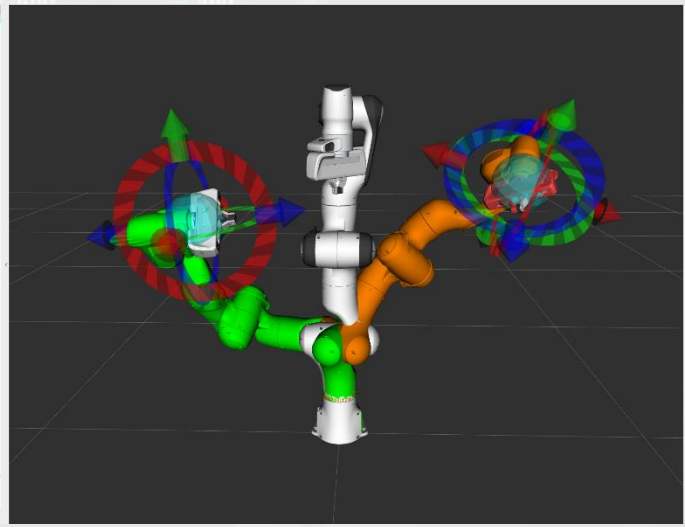
Moveit

MoveIt! is ROS's most advanced and flexible library for motion planning and manipulation tasks. It integrates state-of-the-art inverse kinematics solvers, path planning algorithms, and collision detection into a single, unified ROS interface.



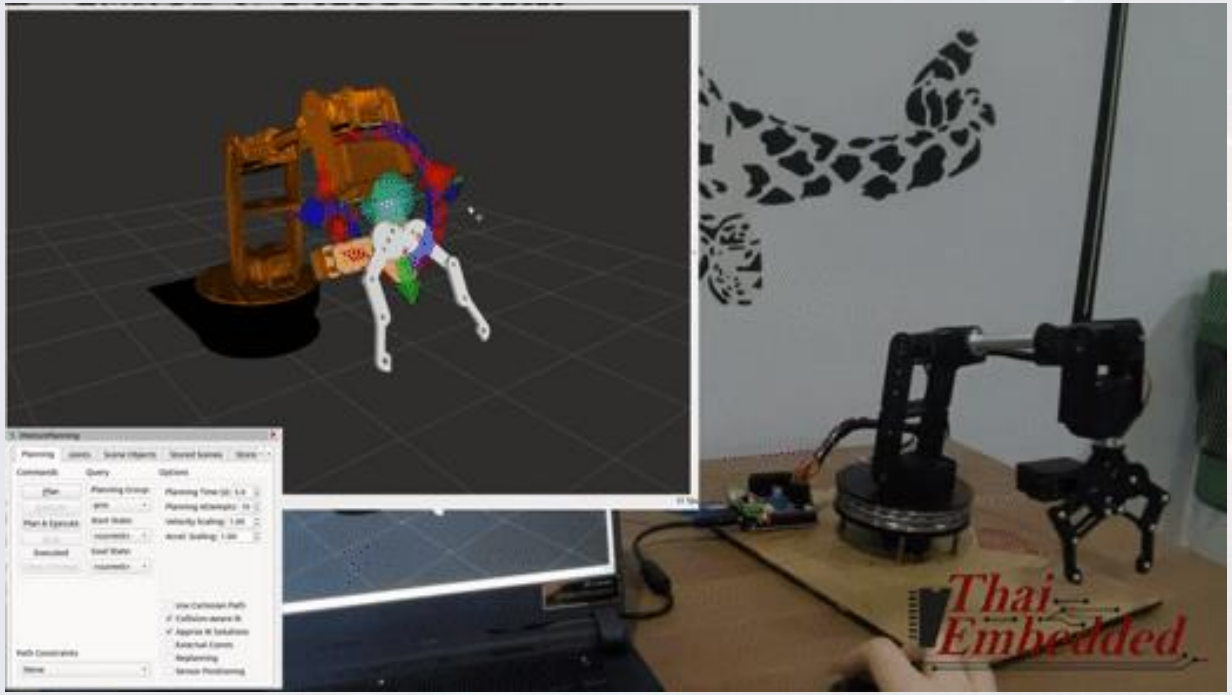






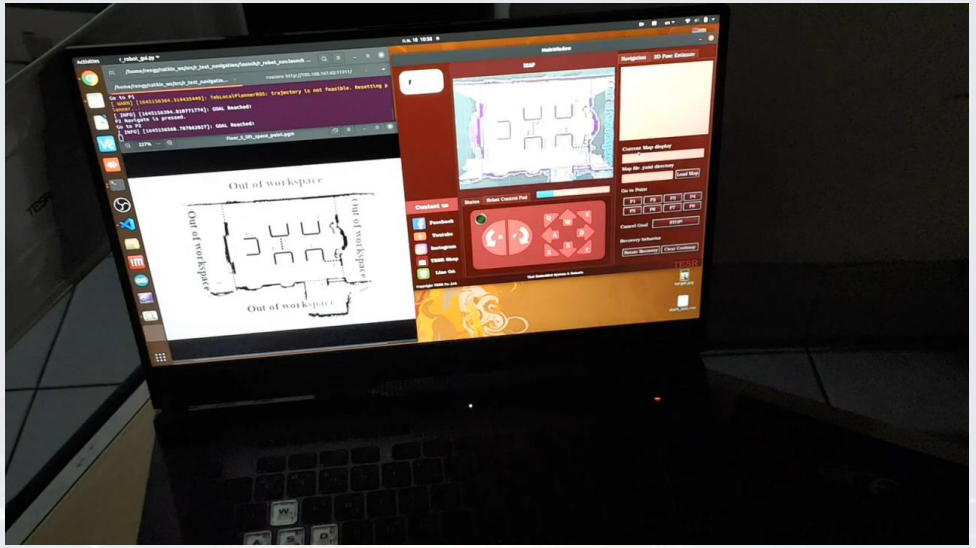
ROS with Arm robot

ROS with moveit

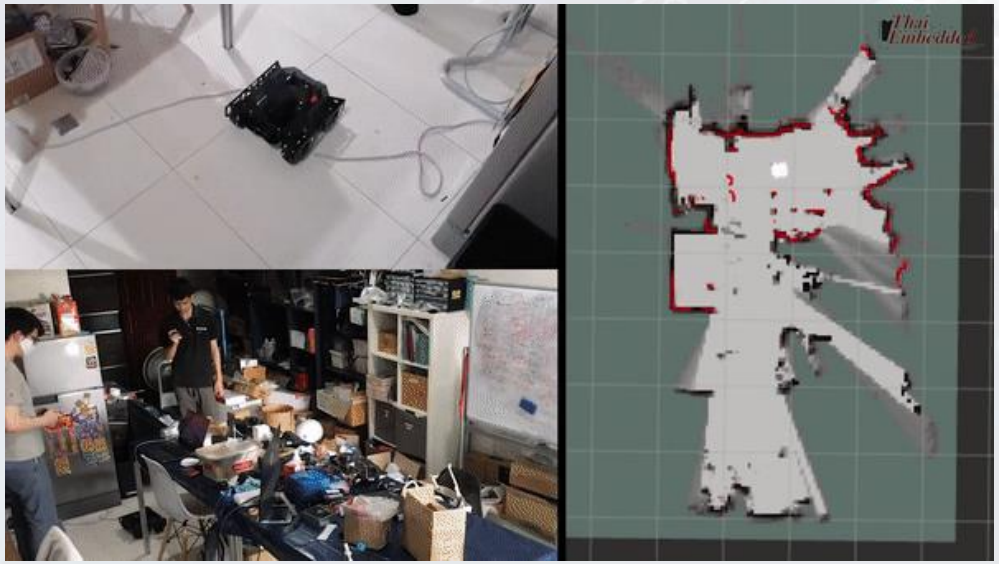


ROS with RVIS monitoring

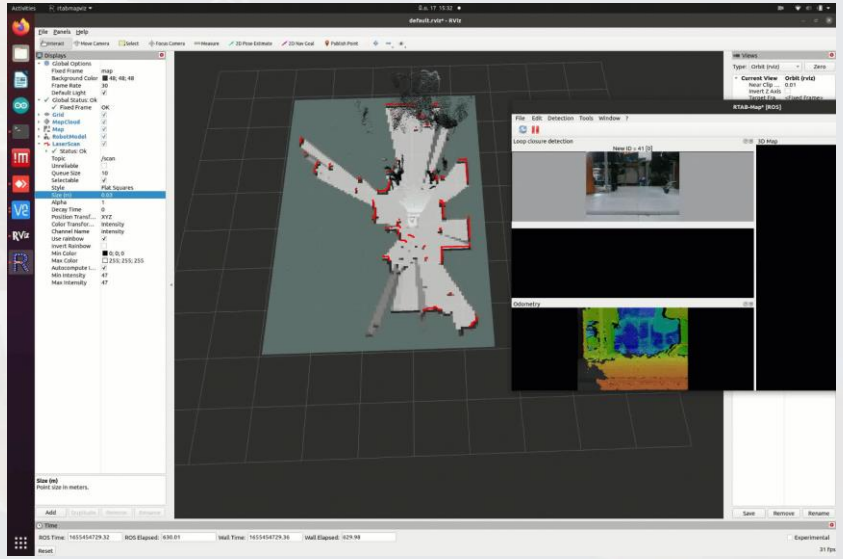
ROS with indoor mobile robot



iron-X 2D mapping



iron-X 2D & 3D mapping



ROS with outdoor mobile robot

Contact us

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