

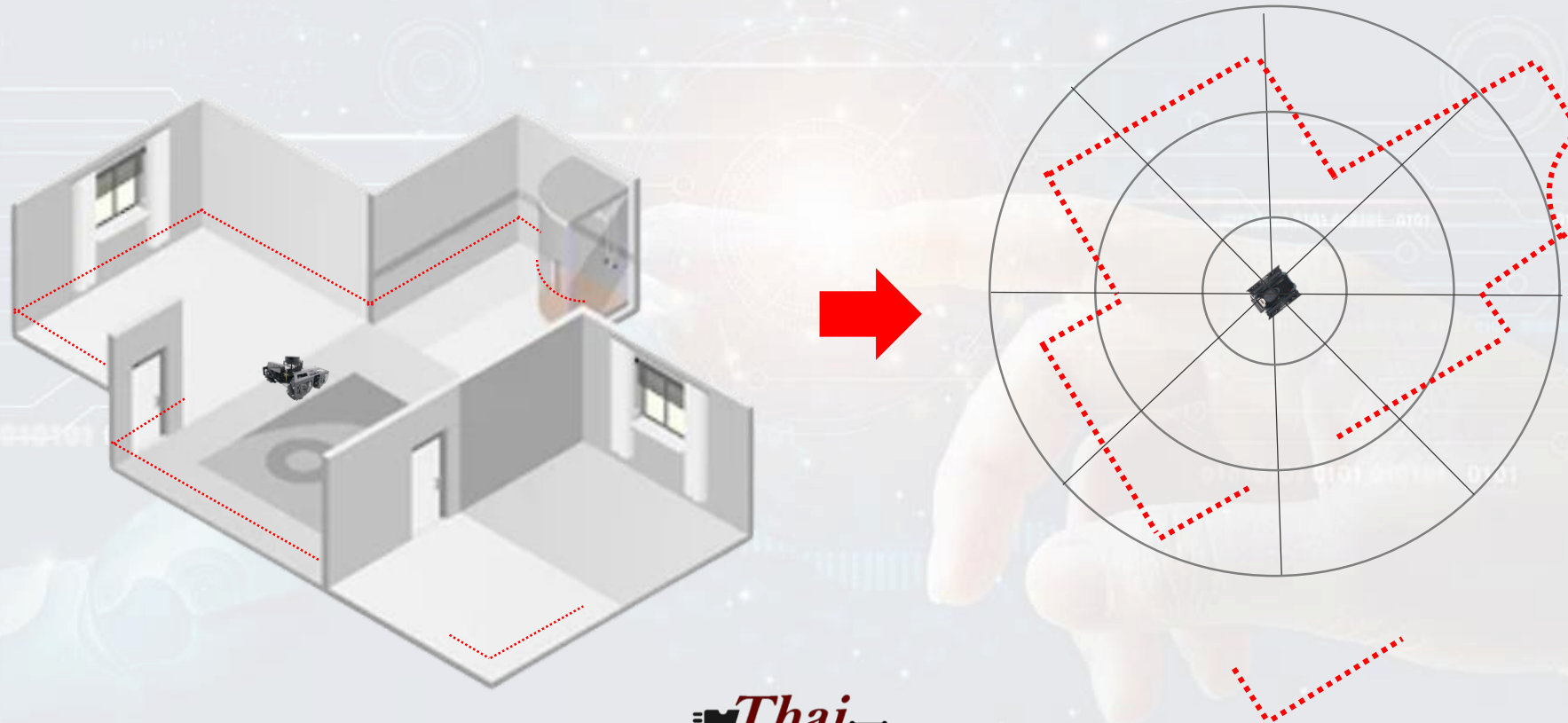


# **LaserScan in iron-X** **By TESR**

ROS2

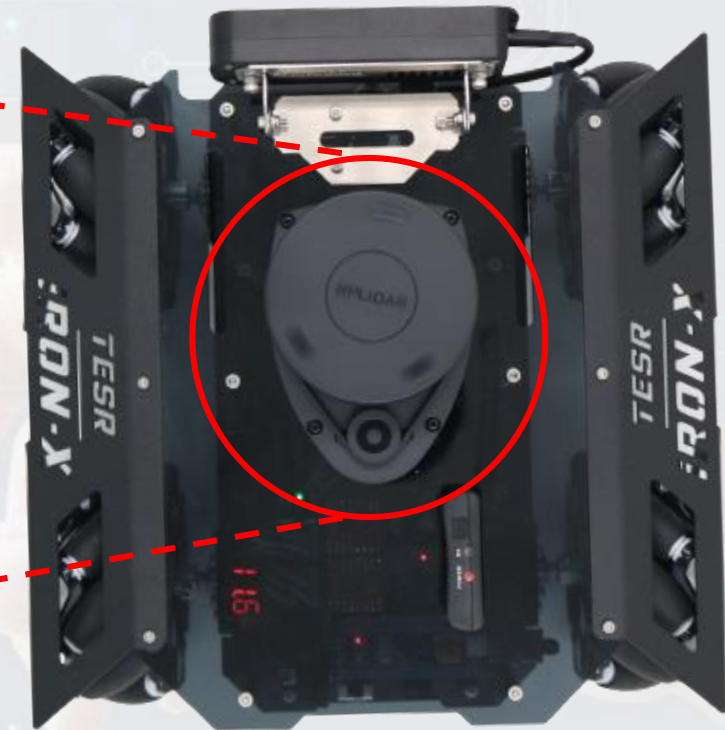
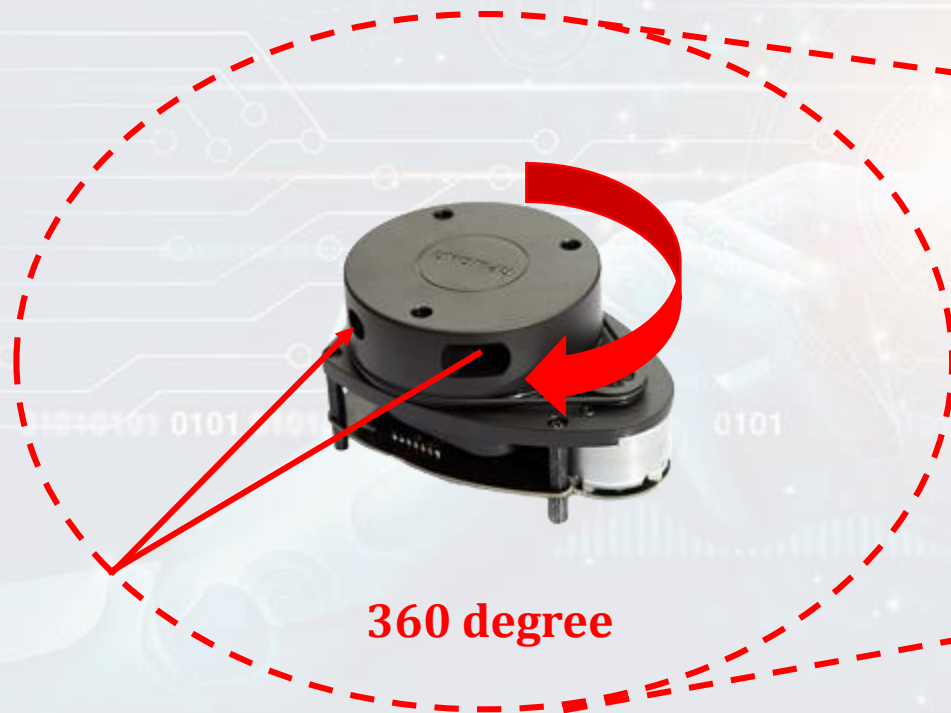
# LaserScan sensor using RPLIDAR A1

- **RPLIDAR A1** is based on laser triangulation ranging principle and uses high-speed vision acquisition and processing hardware developed by SLAMTECH.



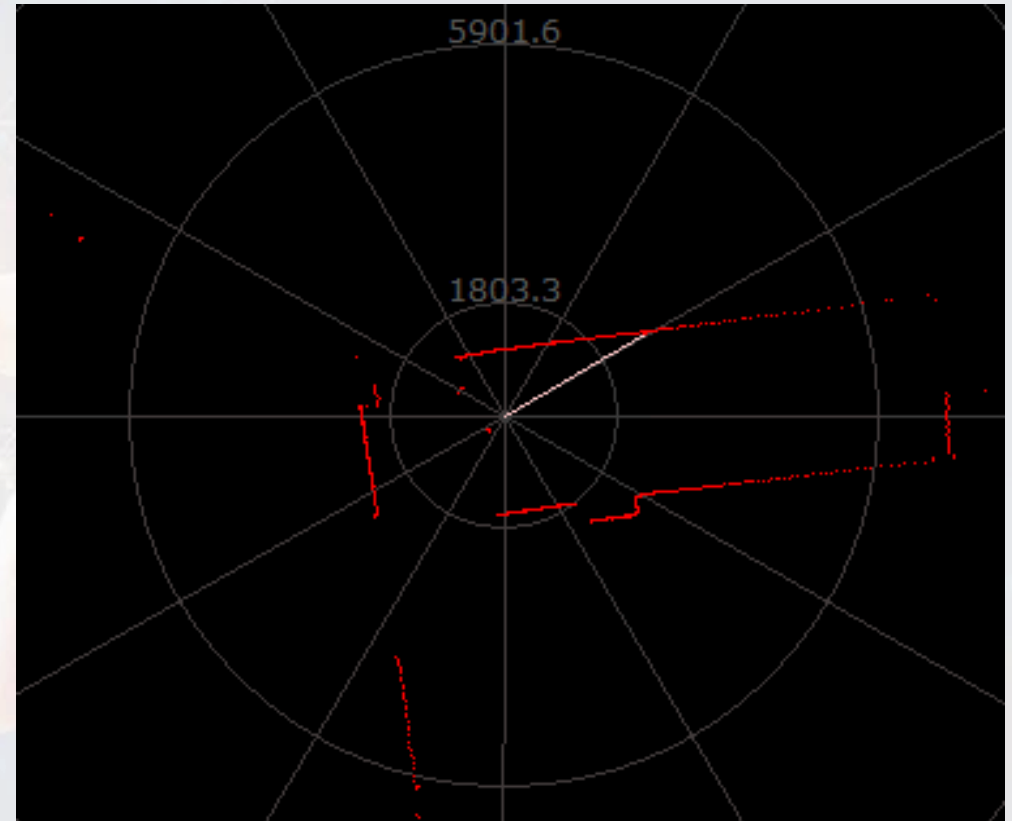
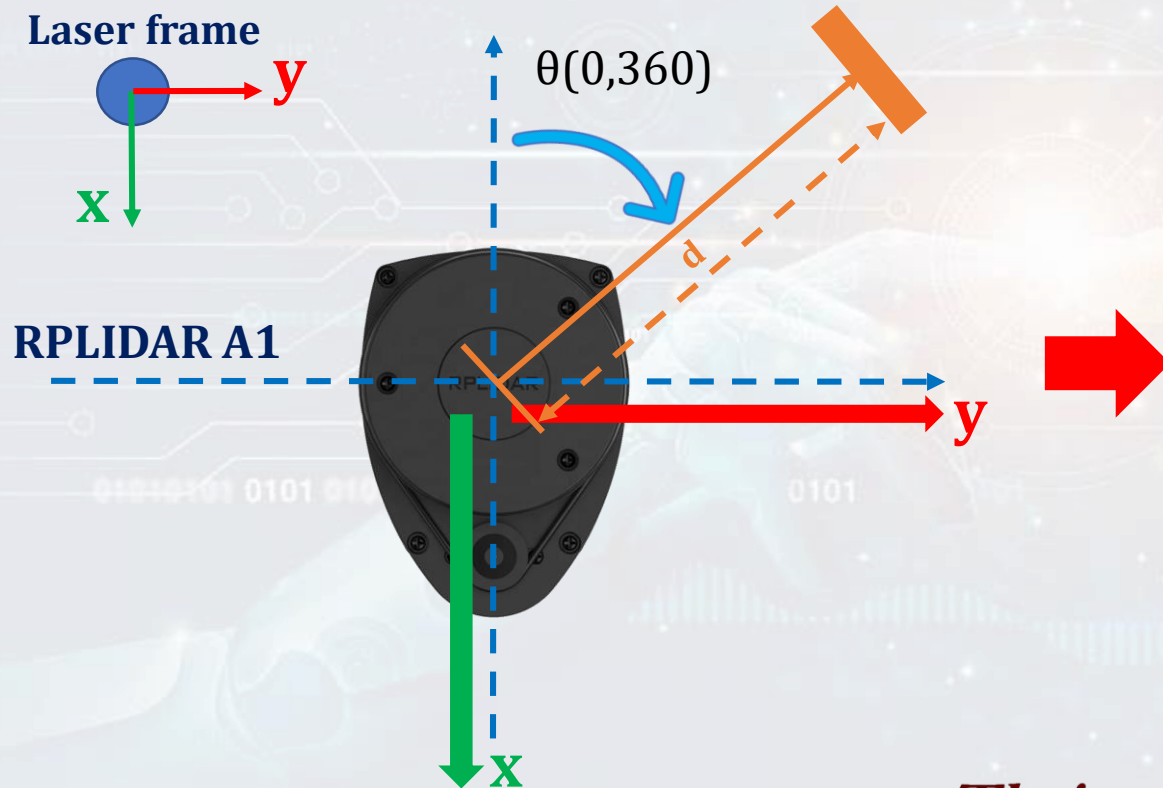
# LaserScan sensor using RPLIDAR A1

- The core of **RPLIDAR A1** runs **clockwise** to perform a **360 degree** omnidirectional laser range scanning for its surrounding environment and then generate an outline map for the environment.



# LaserScan sensor using RPLIDAR A1

- **RPLIDAR A1's** system measures distance data in more than 8000 times per second.



# Show LaserScan data in ROS2

- RPLIDAR A1 is connected to iron-X through Raspberry Pi So, secure shell to iron-X using:

```
ssh pi@<iron-X's IP-address>
```

- And then, we can read a LaserScan data and show it using:
  - On secure shell terminal, read a LaserScan data from sensor using:

```
ros2 run rplidar_ros rplidarNode
```

- Open a second secure shell terminal and publish tf data as a base\_scan for rplidarNode:

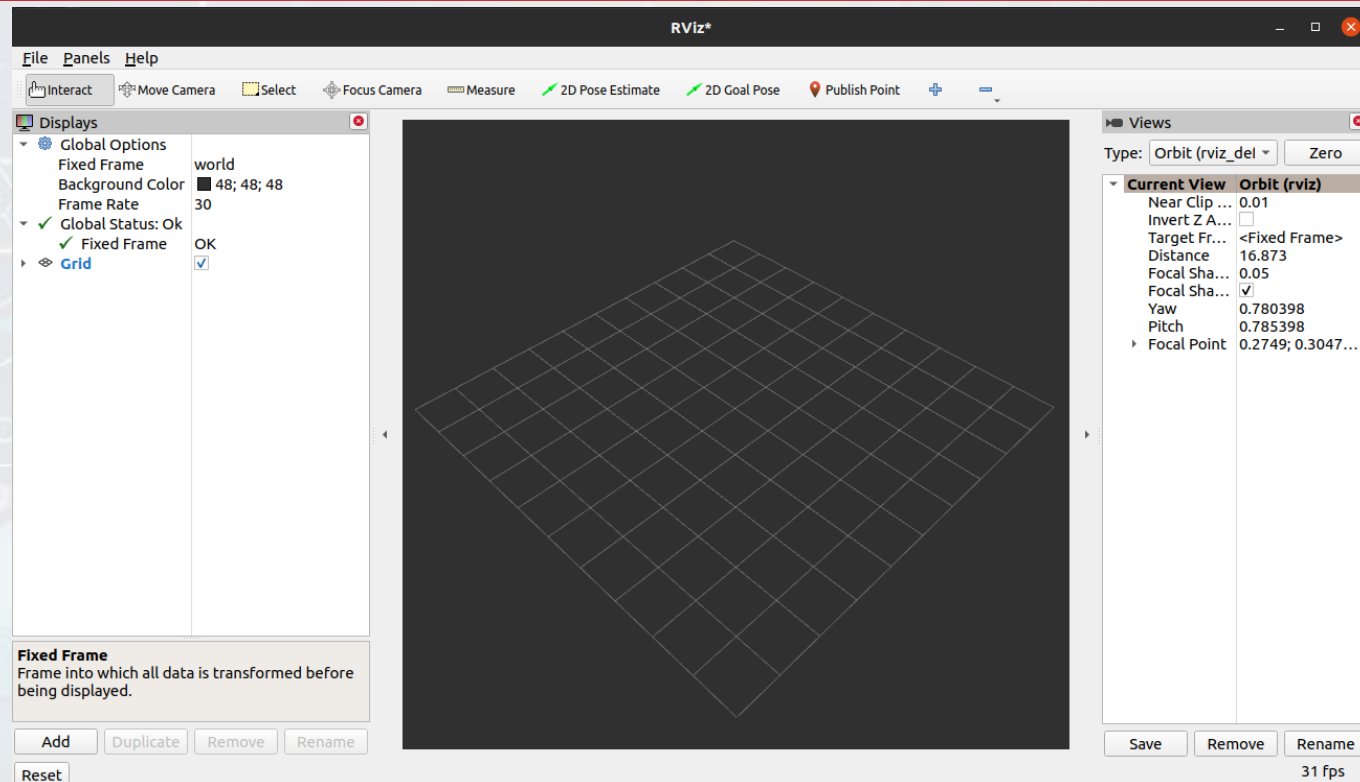
```
ros2 run tf2_ros static_transform_publisher 0 0 0 0 0 0 world base_scan
```

*\*base\_scan is a name of laser\_frame*

# Show LaserScan data in ROS2

- On PC/Laptop terminal, open the Rviz to show LaserScan data as a graph.

rviz2





# Show LaserScan data in ROS2

- Set rviz configuration to show LaserScan data. Click "Add" Select **By topic** > /scan > LaserScan

The image shows three sequential screenshots of the RViz2 interface, illustrating the steps to add LaserScan data.

**First Screenshot:** The "Displays" panel on the left is highlighted with a red box. It shows the "Global Options" section with "Fixed Frame" set to "base\_scan". The "Add" button at the bottom left is also highlighted with a red box.

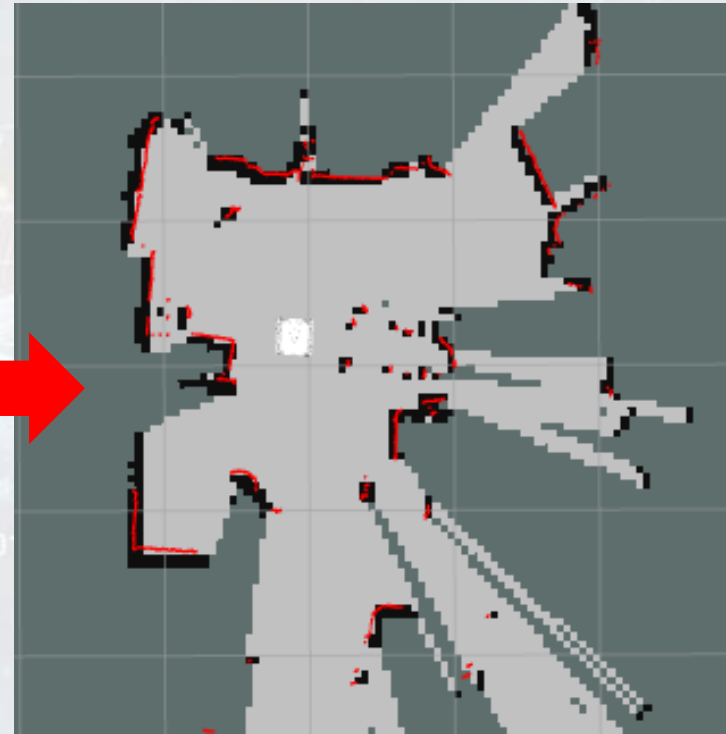
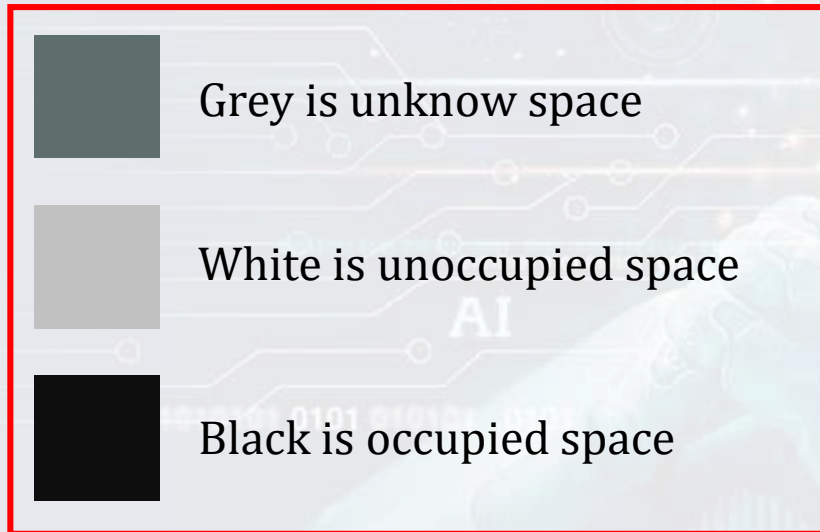
**Second Screenshot:** The "Create visualization" dialog box is shown. The "By topic" tab is selected. The "/scan" topic is highlighted with a red box, and the "LaserScan" display type is selected. The "Add" button at the bottom right is highlighted with a red box.

**Third Screenshot:** The RViz2 main window is shown. The "Displays" panel on the left is highlighted with a red box. It shows the "Global Options" section with "Fixed Frame" set to "base\_scan". A red arrow points from the "Fixed Frame" label to a red box containing the text "\*Fixed Frame: base\_scan".

A large red arrow points from the second screenshot to the third screenshot, indicating the progression of the setup.

# LaserScan usage in **iron-X**

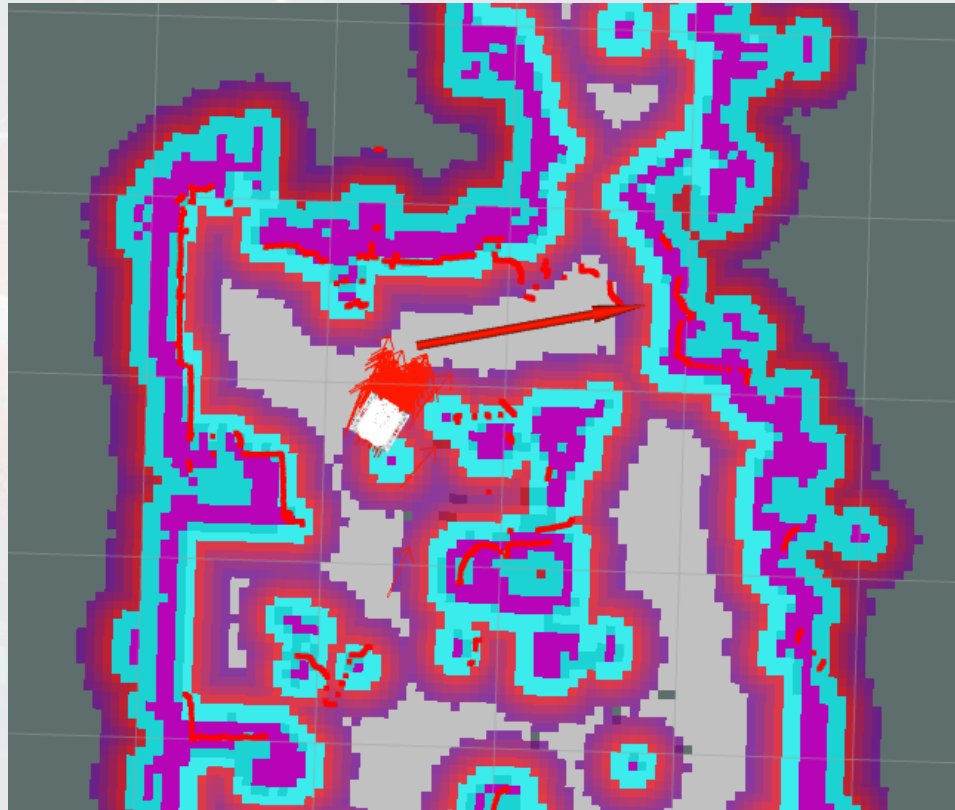
- **SLAM:** LaserScan data is use to draw a map by detect obstacle around it environment.





# LaserScan usage in **iron-X**

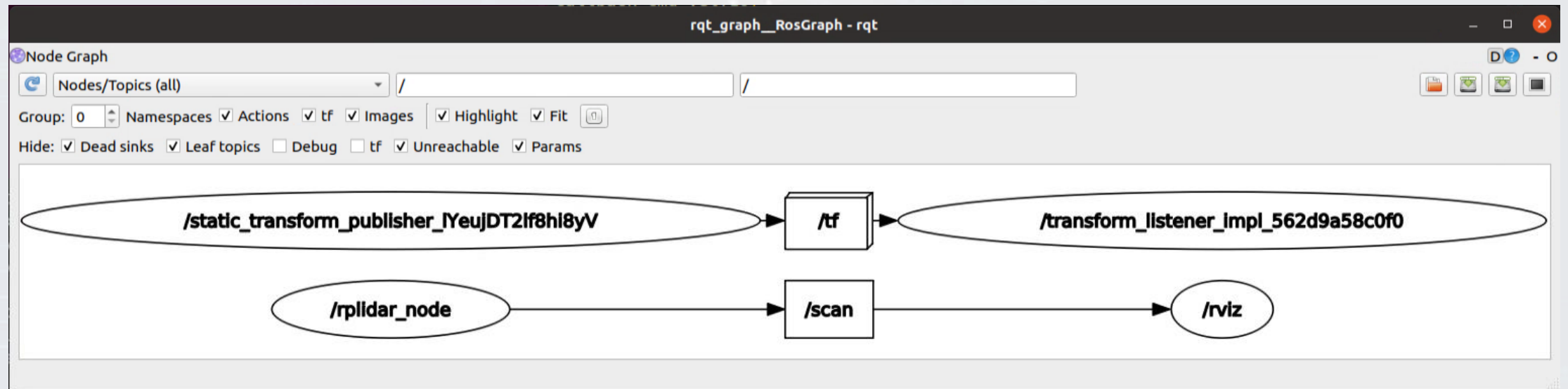
- **Navigation:** LaserScan data is use as a data to provide information to Navigation stack.



# RosGraph of rplidarNode ROS2

- You can see the RosGraph of rplidarNode using:

rqt\_graph



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Scan here



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