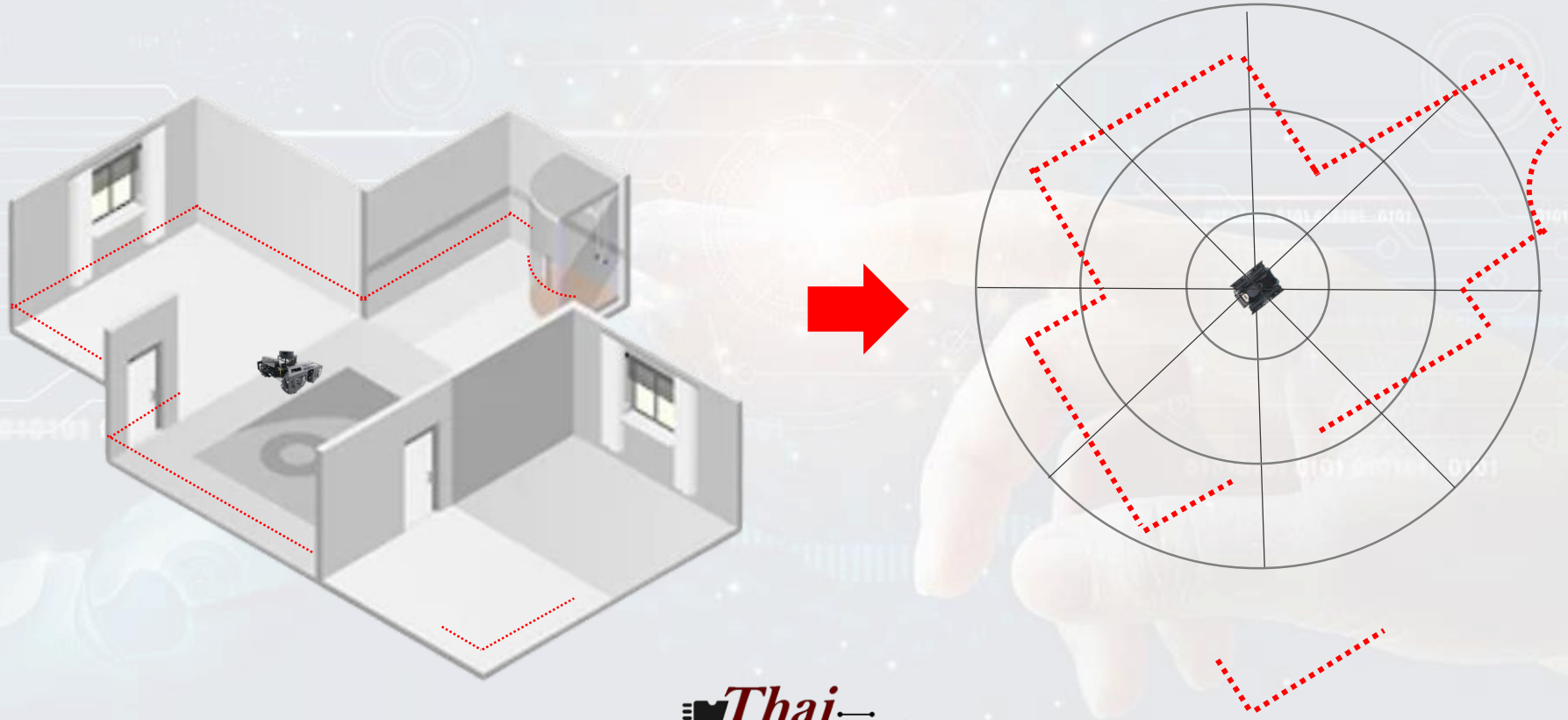
LaserScan in iron-X
By TESR

ROS2

Thai Embedded

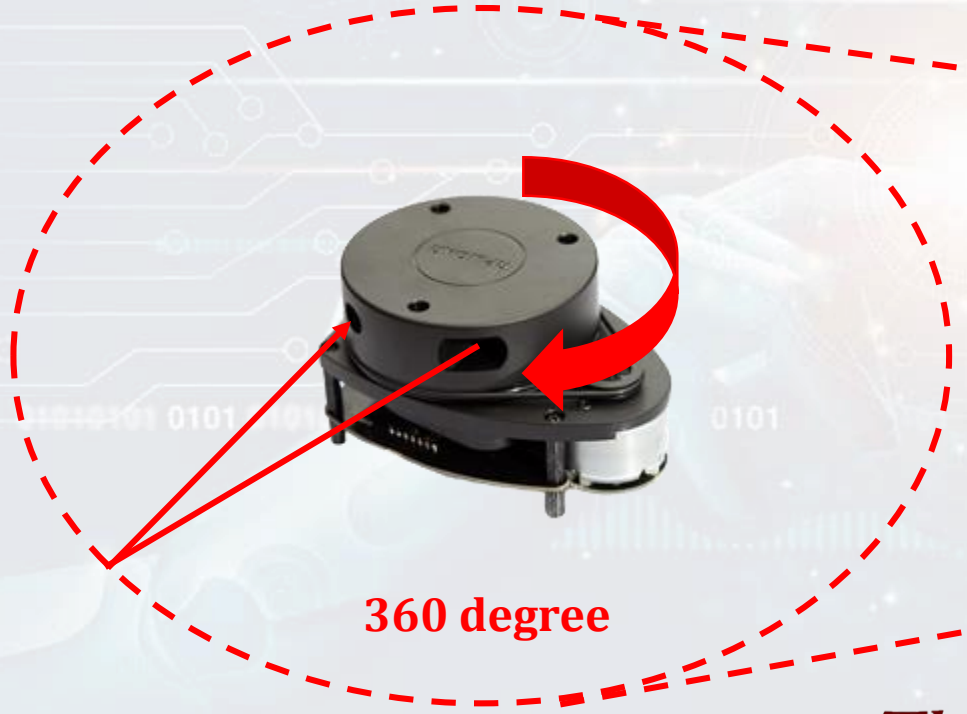
LaserScan sensor using RPLIDAR A1

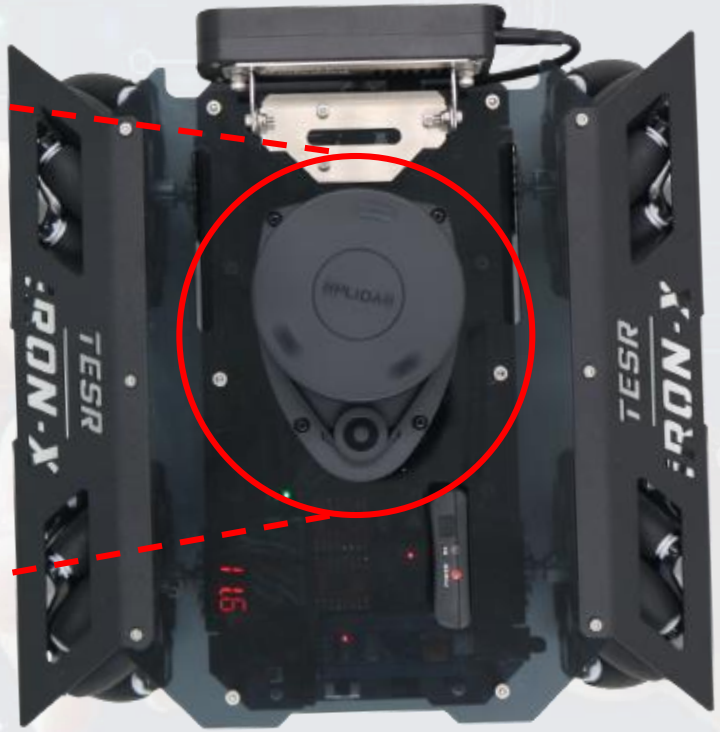
- **RPLIDAR A1** is based on laser triangulation ranging principle and uses high-speed vision acquisition and processing hardware developed by SLAMTECH.



LaserScan sensor using RPLIDAR A1

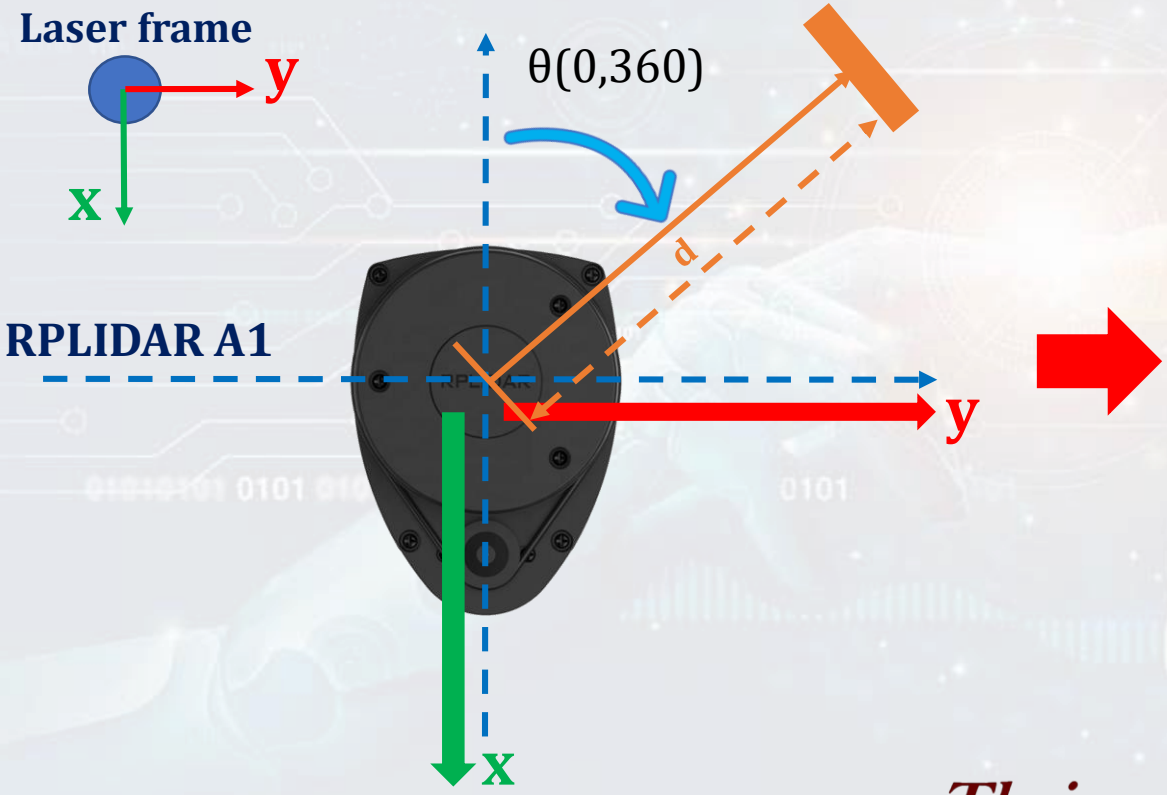
- The core of **RPLIDAR A1** runs **clockwise** to perform a **360 degree** omni-directional laser range scanning for its surrounding environment and then generate an outline map for the environment.

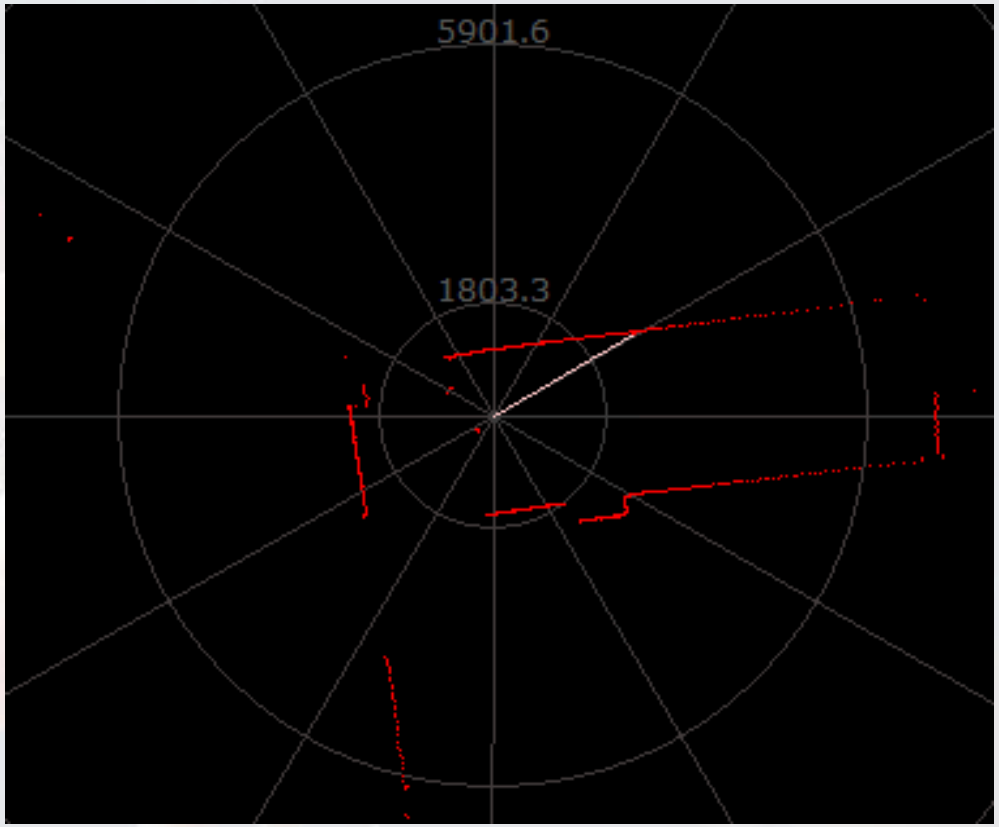




LaserScan sensor using RPLIDAR A1

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





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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:

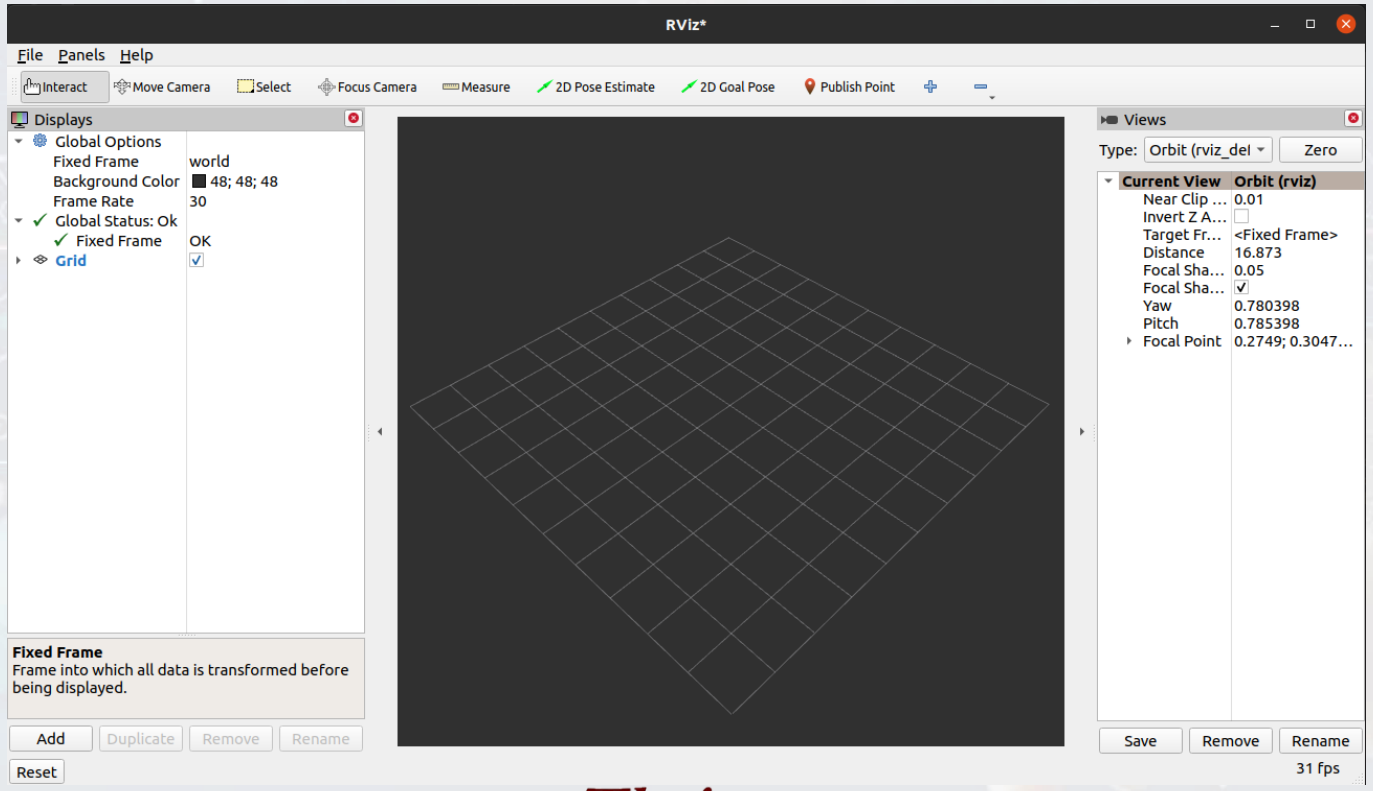
```
ros2 run tf2_ros static_transform_publisher 0 0 0 0 0 0  world base_scan
```

*base_scan is a name of laser_frame

Show LaserScan data in ROS2

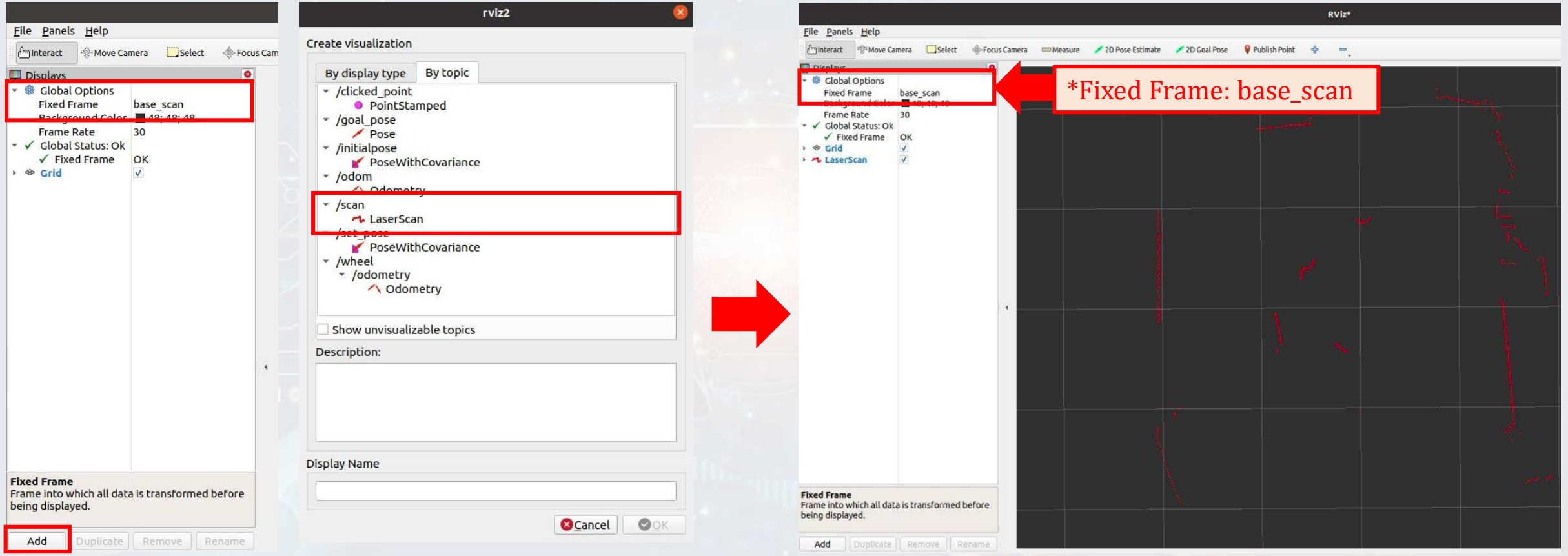
- On PC/Laptop terminal, open the Rviz to show LaserScan data as a graph.

```
rviz2
```



Show LaserScan data in ROS2

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



LaserScan usage in iron-X

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

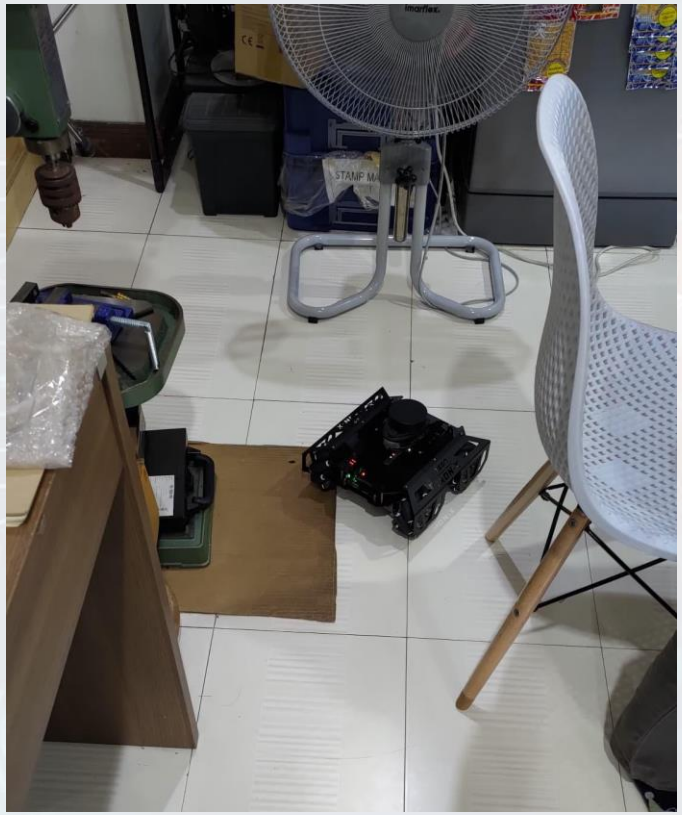
Grey is unknow space

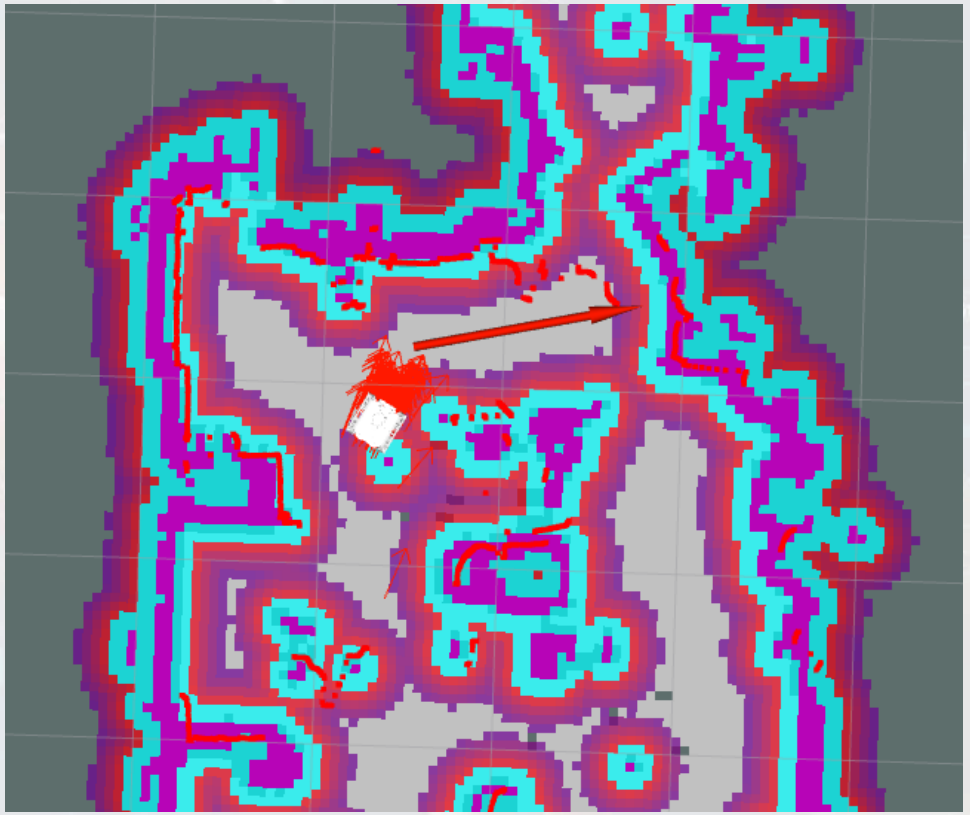
White is unoccupied space

Black is occupied space

LaserScan usage in iron-X

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

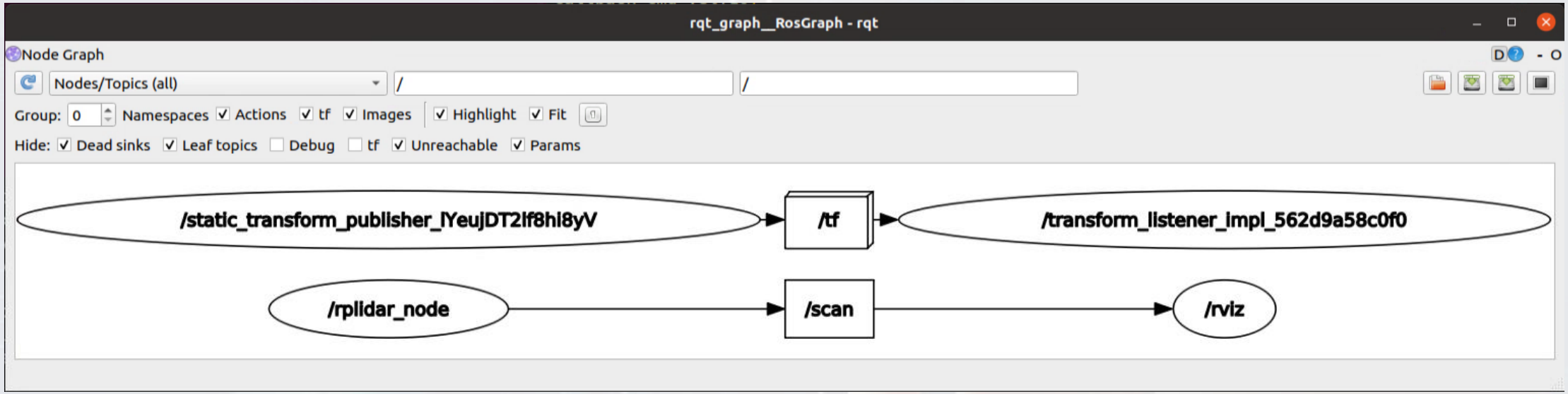




RosGraph of rplidarNode ROS2

- You can see the RosGraph of rplidarNode using:

```
rqt_graph
```



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