

ROS Publisher/Subscriber Model

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Outline

The Publisher/Subscriber Model

Cons of the Publisher/Subscriber Model

Important commands

Task

References

The Publisher/Subscriber Model

- ▶ Transport system used to route messages
- ▶ A node sends a message by publishing it to a topic
- ▶ A node that is interested to access/use data certain data will subscribe to the most appropriate topic
- ▶ There can be many existing publishers and subscribers for a single topic
- ▶ A single node can publish/subscribe to multiple topics

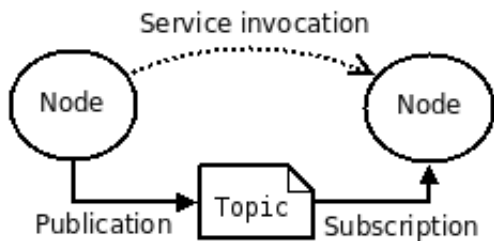


Figure: The publish/subscribe model [1]

Cons of the Publisher/Subscriber Model

- ▶ The model's many-to-many one-way transport of messages are not appropriate for interactions based on requests/replies.
- ▶ This con is overcome by using services (Will be introduced in the next session)

Important commands

► Python

► **Publisher**

```
pub = rospy.Publisher('chatter', String, queue_size=10)  
pub.publish(msg)
```

► **Subscriber**

```
rospy.Subscriber("chatter", String, callback)
```

► C++

► **Publisher**

```
ros::Publisher chatter_pub = n.advertise<std_msgs::String>  
>("chatter", 1000);  
chatter_pub.publish(msg);
```

► **Subscriber**

```
ros::Subscriber sub = n.subscribe("chatter", 1000, chatterCallback);
```

Task

- ▶ Create a new ROS package that has a minimum of two nodes:
A publisher and a subscriber
- ▶ Define a custom message that contains:
 - ▶ Header
 - ▶ LaserScan
 - ▶ Pose

Documentation to create a custom message is found here:

Creating messages

Use the documentation of ROS to define the message type.
For example, the documentation of the sensor_msgs can be found here: **Sensor messages**

- ▶ Play the given rosbag and subscribe to the required topics for your new message in the subscriber node
- ▶ Using this information from the bag file, create your new message and publish it
- ▶ Once the message is published, subscribe to this message, and display a confirmation message once it has been received

References

1. ROS Wiki