Migrating to ROS 2 Advice from Rover Robotics

in collaboration with ADLINK Technology, AWS RoboMaker, and Intel



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Size of our Robots



Applications - Data Collection



Scanning license plates in a



Detecting debris on a runway



Overview

- Our opinion of ROS 2 so far
- What its been like to work in ROS 2
- What we are working on next

ROS L_{Purpose}:

Share common robotics code, minimize rewrites ROS **Purpose:** Share **reliable** robotics code

What makes ROS 2 more reliable

On Paper

- •QOS (quality of service)
- Discoverability
- •No ROS Master
- •Out of the box zero copy

What's more import

Professional programmers and maintainers

ROS 2 technical steering committee members with market cap over **\$1B USD**



ROS 2 Programers and Maintainers



Overview

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 - We think it will become much better than ROS 1 very quickly because of the companies showing support for it
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Rover Robotics Re:Mars Demo (June 2019)

- Based on ROS 1 Kinetic
- Very simple example of using ROS navigation stack
- Used a single 2D lidar to navigate



Rover Robotics Pack Expo Demo (Sept 2019)

- 3.5 months after Re:Mars Demo
- Based on ROS 2
- Simple use case of ROS 2 Navigation



Mobile Robot Network Setup



Where have we spent time in ROS 2



DDS ROS 2 Navigation Bringup (over WiFi)



DDS ROS 2 Navigation Bringup (over WiFi)



Latency Comparison Cyclone DDS vs FastRTPS (Small Message Size)



Latency Comparison Cyclone DDS vs FastRTPS (Large Message Size)



Resource Usage Cyclone DDS vs. FastRTPS



Summary

- Our opinion of ROS 2 so far
 - We think it will become much better than ROS 1 very quickly because of the companies showing support for it
- What its been like to work in ROS 2
 - We have had to spend significant time on almost every level of the software stack
 - It's been slow progress, but we have come a long way since the Dashing release
- What we are working on next

Whats next



Our hope by the release of F turtle

