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rosin-project.eu

ROS-I Academy Training

ROS2 outlook

Source: `http://design.ros2.org`

MASCOR Institute
Mobile Autonomous Systems and Cognitive Robotics Institute (MASCOR)

2017ff

ROS development guidelines

- Development based on Willow Garage PR2 robot
  - Workstation-class computational resources
  - No real-time requirements
  - Virtually no lossy links
  - Applications in research, mostly academia

ROS Used on other systems

Different from PR2

- UAVs (MAVROS)
- Custom Service Robots (TUe)
- Industry (Universal Robots)
- Humanoid (Softbank NAO / Pepper)
- Differential driven (Turtlebot)
- Autonomous cars (Autoware)
- ...
- `http://robots.ros.org`

ROS New use cases

- Teams of multiple robots
- Small embedded platforms (bare metal)
- Real-time systems
- Non-ideal networks
- Production environments
- Prescribed patterns

ROS2 Features

- DDS-based communication
  - Target platform based on DDS (Windows, Linux, Mac)
  - Quality of Service
  - Abstract ROS2-classes for communication, implemented in the particular DDS driver
  - DDS proprietary / open source
  - Well established (resp. accepted) in industry
- RTPS (Real-Time Publish-Subscribe) Protocol
  - Implementation up to the DDS vendor
  - Cross-DDS communication possible via OMG (Object management group) RTPS Protocol Standard

ROS2 Summary

General benefits / improvements

- Platform independent
  - Windows (!)
  - Linux
  - Mac
  - ...
- Quality of Service
- Support for embedded devices
- Distributed networking (no single ROS Master required)
  - Automated Discovery
- Transparent shared memory
  - No nodelets required
- Development style very similar to ROS
  - e.g. creating subsciber / publisher in C++ / Python etc.

ROS2 Demo

Demo