ROS 2

it's coming

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WHAT IF I TOLD YOU
IT'S ALREADY THERE
ROS 2 - Why

ROS 1 is great!

But there are some things which are "improvable"...
What is the same, what is different

Same concepts
- Nodes, messages, publishers, subscribers, services, ...
- Command line as well as graphical tools

Different
- Middleware interface
  - Reusing existing standards rather than developing "our" own
  - DDS: distributed discovery, serialization, transport, rich QoS, security
  - Non-DDS implementation possible, e.g. using OPC UA
- Modern technologies: CMake, C++ 14, Python 3.5, etc.
- Address design flaws:
  - No crawling of the FS at runtime (ament resource index)
  - Choose process layout at deploy time (node vs. nodelet)
  - ...

See the slides / video from the ROSCon 2015 presentation for more information.
How to roll out "the new thing"

⚠️ Each ROS release: add new, deprecate old, remove ancient
- That requires every package to move forward

⚠️ Add new stuff in parallel in a ROS 1 distribution
- Fragmentation and not transparent:
  some packages use roscpp, others roscpp2

✅ Release a separate distribution
- Each package needs to opt-in when it wants to

See this design article for more information.
ROS 2 Ardent Apalone

released on Dec. 8th 2017

See release page for more information.
Pub / Sub, QoS, Cross Platform / Language

command data
reliable

video data
best effort
Usage Patterns of the "ros1_bridge"

Beta 2
- TurtleBot 2 demo
- Robot using ROS 2 onboard
- Computer uses ROS 1 tools, leverage existing ROS 1 packages

Beta 3
- HSR demo
- Robot using ROS 1 onboard
- Computer uses ROS 2 tools, leverage intrinsic advantages of the communication protocol
- Incrementally migrate a ROS system

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Security

command data

Authentication

Encrypt sensitive data

video data

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rviz
Outlook

- New releases every ~6 months

- Support two releases at a time (same as in ROS 1 without LTS)
  - Major bug fixes
  - Keep platforms working which have rolling dependencies (Mac OS, Windows)

- Items for the next 6 months cycle will be selected soon (see roadmap)
  - Actions, preemptable services ?
  - rosbag ?
  - ...

roadmap
IT'S ALREADY THERE

BUT IF IT'S NOT: CONTRIBUTE!
Questions...

For more information go to: ros2.org