Who we are

We create open software and hardware platforms for robotics. We use those platforms to solve important problems and we help others to do the same.
Where we are
What do we do

ROS 2

GAZEBO

IGNITION

Open-RMF
Ignition
Releases: past and upcoming

IGNITION ACROPOLIS: Feb 2019
IGNITION BLUEPRINT: May 2019
IGNITION CITADEL: Dec 2019
IGNITION DOME: Sep 2020
IGNITION EDIFICE: March 2021
IGNITION FORTRESS: Sep 2021
IGNITION G: Sep 2022
2021/22 Roadmap: Edifice

- Improved Mac and Windows support
- Mesh level of detail support
- Design for Enhanced distributed simulation
2021/22 Roadmap: Fortress

- GUI tools
- Sensors
- SDFormat
- Rendering
- Performance
GUI tools: Visualize

- Wireframes
- Transparent
- Inertia
- Center of mass
- Joints
GUI tools: Scene Plugins

● Currently:
  ○ 2 separate scene plugins:
    ■ Ign-gui
    ■ Ign-gazebo

● Goal:
  ○ Combine them into a single plugin
  ○ Consolidate all gazebo-independent features into ign-gui
  ○ Less duplication
GUI tools: perspective vs orthographic views

- Toggling perspective and orthographic views
GUI tools: Model Editor

- Cloning entities
- Scaling tool
- Pose components editable
- Insert system plugins form GUI
- Create sensors from GUI
- Create joints from GUI
- Import 3D meshes from GUI
- Semantic view
- Undo / redo
- Copy / paste entities from GUI
Sensors: Custom sensors

```xml
<sensor name="custom_sensor" type="custom" ignition:type="custom_sensor">
  <always_on>1</always_on>
  <update_rate>30</update_rate>
  <visualize>true</visualize>
  <topic>custom</topic>
  <ignition:custom_sensor>
    <noise type="gaussian">
      <mean>0.2</mean>
      <stddev>0.1</stddev>
    </noise>
  </ignition:custom_sensor>
</sensor>
```
Sensors: Bounding box sensor
Sensors: Segmentation sensor
SDFormat: Improve <pose> (Option A)

<pose>{xyz} {rpy_radians}</pose> <!-- Original format -->

<pose>
   <translation>{xyz}</translation>
   <rotation type="rpy_degrees">{rpy_degrees}</rotation>
</pose>

<pose>
   <translation>{xyz}</translation>
   <rotation type="q_wxyz">{wxyz}</rotation>
</pose>
SDFFormat: Improve <pose> (Option B)

<pose>{xyz}  {rpy_radians}</pose>
<pose rotation_type="rpy_radians">{xyz}  {rpy_radians}</pose>
<pose rotation_type="rpy_degrees">{xyz}  {rpy_degrees}</pose>

<!-- Not yet confirmed -->
<pose rotation_type="q_wxyz">{xyz}  {q_wxyz}</pose>
Rendering: OGRE 2.2

- Ignition-rendering updated to use OGRE 2.2
  - Updated APIs for OGRE 2.2
  - EGL Support
    - EGL Headless Support
    - Run Ogre in cloud and VMs
    - No need for X11
Performance:

- Run server and client in the same process:
  - Avoids cost of GUI sync with server

  ```
  $ ign gazebo -r --same-process shapes.sdf
  ```

- Refactor ECM: Each
  - Optimize ecm. Each so that performance is the same regardless of components used
Future releases & support

May 2019 (18.04) → 1.3 years → Dec 2019 (18.04) → 5 years (LTS) → Sep 2020 (18.04) → 1 year → Mar 2021 (20.04) → 1 year → Ignition Fortress → 5 years (LTS) → Sep 2021 (20.04) → 2 year → Ignition G → Sep 2022 (22.04)
ROS 2
Releases: past and upcoming

May 2020 - May 2025
Releases: past and upcoming

- **ARDENT APALONE**: Dec 2017
- **BOUNCY BOLSON**: Jul 2018
- **CRYSTAL CEMMYS**: Dec 2018
- **DASHING BLADEMATA**: May 2019
- **ELOQUENT ELUSOR**: Nov 2019
- **GALACTIC GEOCHELONE**: June 2020
- **HUMBLE HAWKS BILL**: May 2021
- **ROLLING RIDLEY**: May 2022
2021/22 Roadmap: Galactic

- Middleware
- Tooling
- Quality
- Performance
- Documentation

May 2021
Galactic: Middleware

- Improve DDS Service Reliability
- Default Middleware Selection
  - Switch to CycloneDDS as default RMW vendor
- Improve DDS fully connected overhead
Galactic: Tooling

- Rosbag2
  - Improve sqlite3 backend performance
  - Separate threads for queueing messages and writing to disk
  - Record /clock topic
Galactic: Quality

- Add code cover checks for QL 1 CI packages
- Keep `ci.ros2.org` and `build.ros2.org` builds green
- Turn on more compiler warnings
- Increase testing coverage of C/C++ packages
Galactic: Quality

- QL1 declaration up to rclcpp
- Enable scan-build for core package PR builds
- Create and maintain in ci.ros2.org for the ROS 2 core packages:
  - Address Sanitizer (ASan) job
  - Thread Sanitizer (TSan) job
Galactic: Performance & Tech debt

- Reduce the performance overhead of executors

```c++
#include <executor.hpp>
```

Inheritance diagram for rclcpp::executor::Executor:

- `rclcpp::executor::Executor`
  - `rclcpp::executor::multi_threaded_executor::MultiThreadedExecutor`
  - `rclcpp::executor::single_threaded_executor::SingleThreadedExecutor`

- Rewrite rclpy to use pybind11
Galactic: Documentation

- Consolidate ROS 2 documentation
  - Easy to find/search place
- Auto generation and host per-package doc
- Specific demo to show public adoption of ROS 2
  - PickNik Robotics (with Hello Robot ‘Stretch’)

open robotics
2021/22 Roadmap: Humble

- Middleware
  - Content Filtering interfaces
  - RMW listener APIs
- Design
  - Extend ROS resource addressing
- Rclpy: Signal handling
- CLI test on Windows

May 2021
Community

ROS Contributions

September 2019

3,340 authors
295,046 commits
1,171 GitHub repositories

https://github.com/Open Robotics/roswiki/2019_ros_contributions
(some) Community events:

- ROSCon FR
- ROS-I EU Spring Workshop
- ROS Summer School China
- ROS Summer School Aachen
- ROS Summer School Pretoria
- ROS 2 Summit @ IEEE ICPS
- ROS-I Asia Pacific Workshop
- ROSCon ‘21 New Orleans
- Autoware Workshop @ IV2019
- ROS-I Americas @ Automate
Thanks!

- ros.org
- index.ros.org
- answers.ros.org
- discourse.ros.org

Open-RMF

- osrf.github.io/ros2multirobotbook
- github.com/open-rmf/rmf
- github.com/open-rmf/rmf_demos

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