

Ekumen & ROS

A Decade of Shared Innovation

ROS



...

Open-source projects, ROSCon talks, and core ROS 2 contributions from the Ekumen team

Community Leadership



Ekumen is an inaugural **Silver member of the Open Source Robotics Alliance (OSRA)**, the governance body overseeing ROS, Gazebo, Open-RMF and their supporting infrastructure, alongside NVIDIA, Qualcomm and Intrinsic.

Two Ekumen engineers currently sit on the **OSRA Technical Governance Committee (TGC)**:

- **Gonzalo De Pedro** (Silver Representative) and
- **Clara Berendsen** (Infrastructure Project Representative).

[TGC member announcement, ROS Discourse](#)

Open-Source Projects

Beluga / A Modern Localization Toolkit for ROS 2

An open-source, highly performant C++17 library designed for robotic Monte Carlo Localization (MCL). A drop-in replacement for AMCL, fully compatible with Nav2 AMCL, with a more modular and testable architecture.

[GitHub](#)

[Whitepaper](#)

[Blog](#)

Lambkin / Benchmarking Platform for Robot Localization and Mapping (SLAM) systems

The project provides a unified architecture to test how robotic navigation and spatial awareness software perform under varying hardware and environmental conditions. Originally built to benchmark Beluga and applicable to any localization stack.

[GitHub](#)

Core ROS 2 Contributions

Node to Participant Mapping

ROS 2 Design Article
Authored by Iván Paunovic, Ekumen

A performance analysis of the one-to-one mapping between ROS Nodes and DDS Participants, with alternative implementation approaches proposed to reduce CPU and network overhead. Now part of the official ROS 2 design documentation.

[Read the article](#)

REP 0157: Minimal Overhead Messaging Using Runtime-Agnostic Memory Layouts

Robotics Enhancement Proposal
Authored by Michel Hidalgo, Ekumen · 2026
Presented at ROSCon 2026

A proposed redesign of the rcosidl messaging system to broaden zero-copy transport support across languages and memory models, enabling contiguous memory layouts that move across process boundaries with minimal overhead.

[Read the REP](#)

Whitepapers



ROS 2 Migration: Paths, Pitfalls, and Why It's Urgent

ROS Noetic's support ended in May 2025, making migration to ROS 2 urgent. A practical guide to migration strategies, common pitfalls, and how to plan a smooth transition.

[Download the whitepaper](#)

How to Choose Your Simulator: Expert Rankings and Criteria

A comparison of Gazebo, NVIDIA Isaac Sim, MuJoCo, O3DE and MVSIM across physics, rendering, hardware requirements and ROS 2 integration, to help pick the right simulator for a project.

[Download the whitepaper](#)

Blog



A selection of technical posts on ROS 2 and Gazebo, written by the engineers who wrote the code.

Bridging Medical Imaging and Robotics: Introducing dicom_to_ros

*ROS 2 · DICOM
Medical Robotics*

Read

Nav2 + Open-RMF: How We Built a Scalable Fleet Coordination System with Andino

ROS 2 · Nav2 · Open-RMF

Read

Taking the AR4 Further: From Gazebo to Isaac Sim

Gazebo · Isaac Sim · ROS 2

Read

Bringing the AR4 Robotic Arm to Life in Simulation Part 1

ROS 2 · Gazebo · MoveIt

Read

A Tale of Two Formulas: Benchmarking the Nav2 AMCL Likelihood Field Sensor Model

AMCL · Nav2 · Lambkin

Read

From Unit Tests to CI: A Practical Guide for Professional ROS 2 Projects

ROS 2 · Testing · CI

Read

Deep Dive into OpenRMF

*Open-RMF · Robotics
Automation*

Read

DIY Motion Capture: Bringing the Lighthouse Deck to ROS

*ROS · Lighthouse
Embedded Systems*

Read

Conference Talks & Community Presentations



A decade of talks at ROSCon, Gazebo Community Meetings, CppCon, GRASP SFI and FOSDEM. Four talks kick off the list, all accepted for ROSCon 2026 in Toronto this September.

Physical AI SIG: Enabling the ROS Ecosystem for the Physical AI Era

→ ROSCon 2026
Wed 1:30 PM
→ Talker:
Franco Cipollone

Watch

Cargo Dependencies in the Buildfarm

→ ROSCon 2026
Thu 9:30 AM
→ Talker:
Jorge Pérez

Watch

Breaking Through the Zero-Copy Bottleneck with REP-0157

→ ROSCon 2026
Thu 1:50 PM
→ Talker:
Michel Hidalgo

Watch

DICOM to ROS: Bridging the Clinic and the Robot

→ ROSCon 2026
Thu 2:50 PM
→ Talker: **Gonzalo "Gonzo" de Pedro, Susana Chávez**

Watch

Conference Talks & Community Presentations

Benchmarking
Platform for Robot
Localization Systems
(Lambkin)

→ FOSDEM 2026

→ Speaker:
Júlia Marsal

Watch

ROS 2 Testing:
A Practical Survival
Guide (Workshop)

→ ROSCon, Spain, 2025

→ Speakers: **Jesús Silva
Utrera, Xavier Ruiz**

Watch

Beluga AMCL: A
Modern Monte Carlo
Localization
Implementation for ROS

→ ROSCon Denmark 2024

→ Speaker:
Gerardo Puga

Watch

Doing Robotics in
Digital Labs: How
Simulations Fuel
Robotics Development

→ GRASP SFI 2024

→ Speaker:
Michel Hidalgo

Watch

Implementing
Particle Filters
with C++ Ranges

→ CppCon 2024

→ Speaker:
Nahuel Espinosa

Watch

Andino: Democratizing
Robotics with an
Affordable Educational
Robot and Open-Source
Technologies

→ Gazebo Community
Meeting 2024

→ Speaker:
Franco Cipollone

Watch

Integración punta a
punta de Open RMF
e InOrbit en un
depósito simulado

→ ROSCon Madrid 2023

→ Speaker:
Agustín Alba Chicar

Watch

Zenoh as an
Alternate Middleware
for ROS 2

→ Zenoh User Meeting 2023

→ Speaker:
Franco Cipollone

Watch

Maliput &
MaliputViz

→ Gazebo Community
Meeting 2023

→ Speakers: **Franco Cipollone,
Agustín Alba Chicar,
Eloy Briceño**

Watch

Multi-LRAUV
Simulation

→ Gazebo Community
Meeting 2022

→ Speaker:
Michel Hidalgo

Watch

New Features
in Ignition Fortress

→ Gazebo Community
Meeting 2021

→ Speakers: **Lola Segura,
Marcos Wagner**

Watch

Bullet Physics for
Gazebo Simulator

→ Gazebo Community
Meeting 2021

→ Speakers: **Tomás Lorente,
Jorge Pérez**

Watch

Lessons Learned:
A Brief History of
Autonomous
Robot Operations

→ ROSCon Macau 2019

→ Speakers: **Florencia Grosso
(Ekumen), Julián Cerruti
(InOrbit)**

Watch

Markup Extensions
for ROS 2 Launch

→ ROSCon Macau 2019

→ Speakers: **Iván Paunovic,
Michel Hidalgo**

Watch

Conference Talks & Community Presentations

**Launch Testing:
Launch Description
and Integration
Testing for ROS 2**

- ROSCon Macau 2019
→ Speakers: **Peter Baughman** (Apex.AI), **Michel Hidalgo** (Ekumen), **William Woodall** (Open Robotics)

Watch

**Composable
Nodes in ROS 2**

- ROSCon Macau 2019
→ Speakers: **Michael Carroll** (Open Robotics), **Michel Hidalgo** (Ekumen), **William Woodall** (Open Robotics)

Watch

**Developing
Android Robots**

- ROSCon Vancouver 2017
→ Speakers: **Juan Ignacio Ubeira** (Ekumen), **Julián Cerruti** (InOrbit)

Watch

**ROS android_ndk:
What? Why? How?**

- ROSCon Hamburg 2015
→ Speaker: **Gary Servin**

Watch

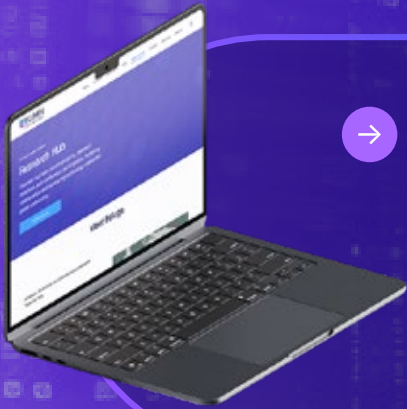
Published Research

Puga, G., Espinosa, N., Hidalgo, M., Garcia, O., Paunovic, I.
"Beluga: A Modern Monte Carlo Localization Package for ROS
and ROS 2." 2024.



Read on Springer

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beyond ROS and Gazebo, in Physical AI,
simulation, or XR?



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