Sony R&D Center ROS Development / Activity

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Who am I?

Senior Staff Engineer

Sony R&D Center, US Laboratory

Former ROS TSC (Technical Steering Committee)

OSRA ROS Project Management Committee

Global R&D Locations

R&D Center Europe
Lund Laboratory

R&D Center Europe
Brussels Laboratory

R&D Center US
San Jose Laboratory

R&D Center US
Culver City Laboratory

R&D Center
Tokyo Laboratory

R&D Center Europe
Stuttgart Laboratory 1

R&D Center Europe
Stuttgart Laboratory 2

R&D Center China
Beijing Laboratory

R&D Center China
Shenzhen Laboratory

R&D Center India
Bengaluru Laboratory

R&D Center India
Mumbai Laboratory

Technology Portfolio

Image & Video

Computer Vision & CG

Audio & Acoustics

AI & Machine Learning

Human Interaction

Communi-cation

System Arch. & Processer

Robotics

Display & Expression

Material & Analysis

Sensing Device

Life Science

System Architecture & Processer

AI x Robotics Platform

In 2001, we were the first in the world to develop and install embedded Linux as a common OS for various AV products. We also made our software development more efficient and achieved high functionality for these products. Currently, we are expanding our focus area to system software and development environments for our AI x Robotics products. Since the AI x Robotics system software requires more advanced intelligent processing, we are developing a robotics framework that supports recognition processing and action planning.
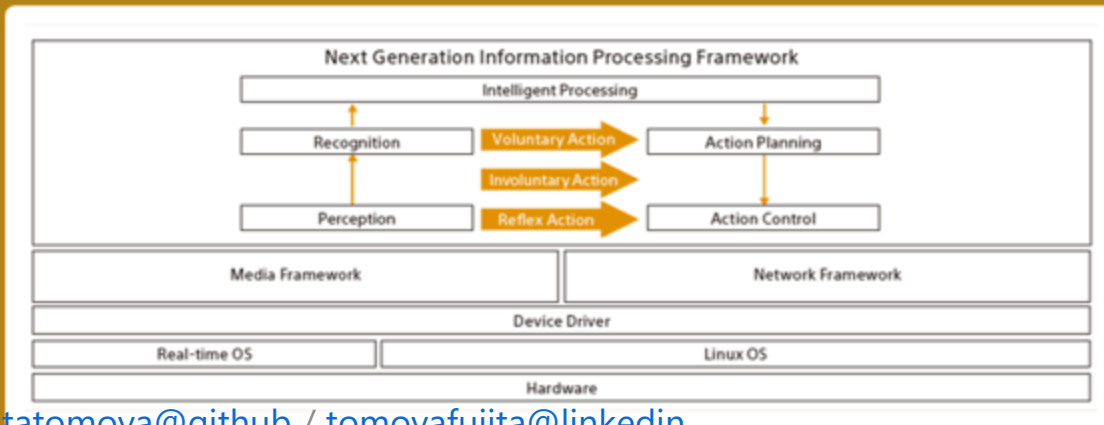
Low Power Consumption Vision / Behavior Sensing System

Sony will contribute to the wearable/ IoT society of the future through development that is consistent from processor architecture to system software and cloud applications. While developing proprietary processor cores that maximize energy efficiency, we will also develop various technologies that help make them unique. We will deliver robust environmental image recognition while covering a wide range of other functionalities and areas as well.

Next Generation Information Processing Framework

Intelligent Processing		
Recognition	Voluntary Action	Action Planning
	Involuntary Action	
Perception	Reflex Action	Action Control
Media Framework		Network Framework
Device Driver		
Real-time OS		Linux OS
Hardware		

Agricultural ICT — Home Security — Home Energy Management System — IoT — Wearable

Automobile/Robotics — Game Console — Healthcare

Sensing Processor with Ultra-low Power Consumption

Real-time Image Recognition Processor with Low Power Consumption

Open Source Robotics Alliance

- The OSRA is the last step in a yearlong process to move ROS, Gazebo, Open-RMF, and Infra to an independent non-profit organization.
- OSRA is currently seeking members, both individuals and organizations to financially support the ROS infrastructure and its development.

Why Open Source matters?

- **Network Effects / Feedback Circles**

  - Value increases based on size of use cases

  - Bigger community, more ideas, variety of experience and skills

  - Standard API / Interface, Collaboration / Presence

- Open Source is the new "Standard": Linux is the `standard` Operating System

- **Cost Effective**

  - Only specific part of product is `differentiating` feature

ROS is the Eco-System for Robotics / Robots
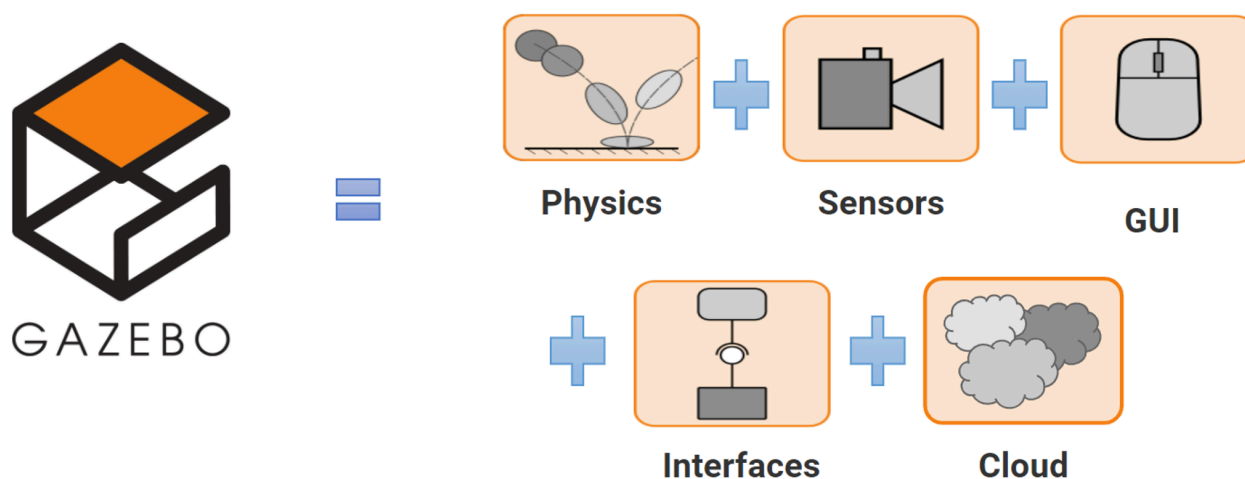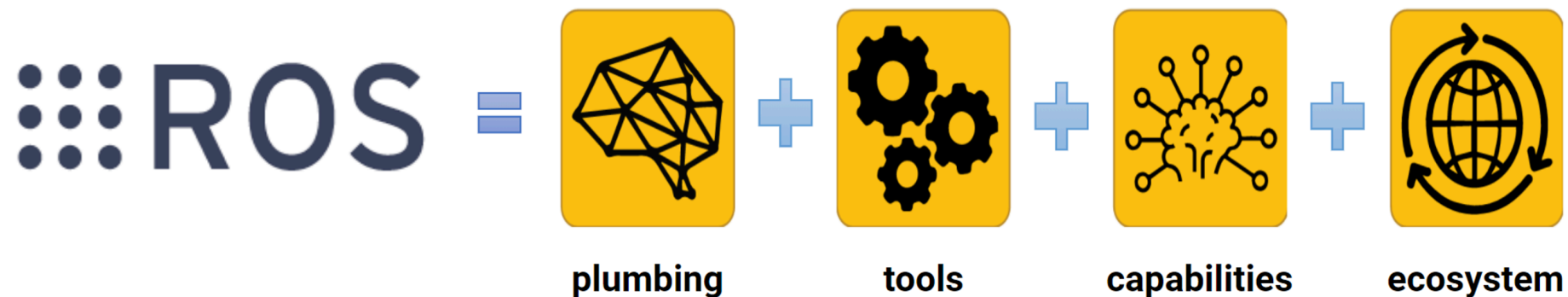
ROS Distros (REP-2000)
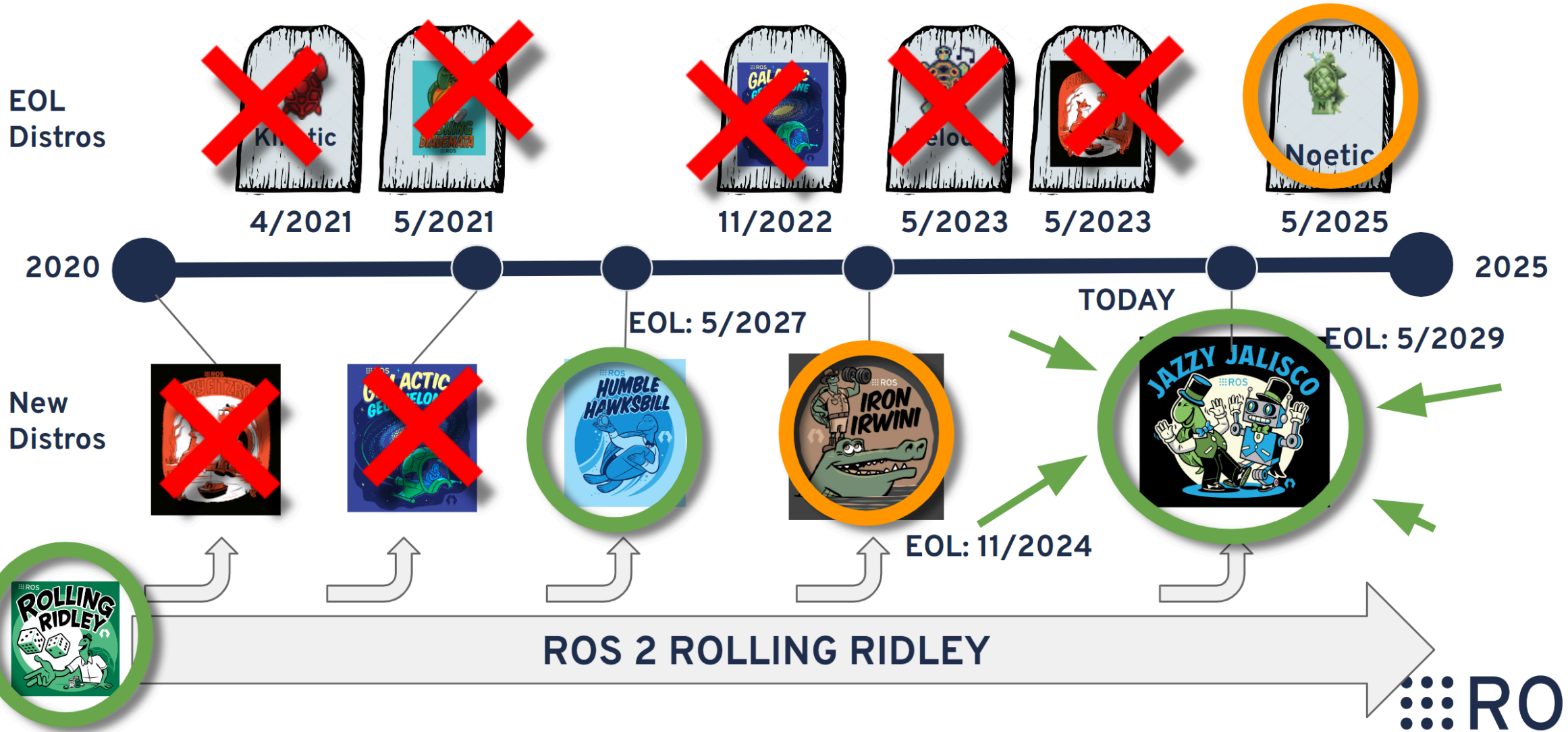
Distros by Year / Percentage

Distro	October 2023	October 2022	YoY Change
Kinetic	1.14%	2.12%	-0.98
Melodic	5.66%	17.19%	-11.53
Noetic	30.51%	34.8%	-4.29
Foxy	6.37%	13.59%	-7.22
Galactic	2.33%	8.12%	-5.79
Humble	32.79%	10.04%	+22.75
Iron	4.97%	0%	+4.97
Rolling	4.82%	3.38%	+1.44

Package downloads, by distro, as a percentage of all downloads from the ROS servers in October of 2022, and 2023.

ROS Community

- Open Source Robotics Alliance -> Project Management

- Working Groups -> Specific Interests, Usecases

- ROS Discourse -> Discussion

- Robotics Stack Exchange -> Questions

- ROS Github -> Development

- ROSCon -> Global Conference

Sony Robotics Products

- **aibo**, **poiq** and **Airpeak S1 Drone**

  - All there products are based on ROS 1 and empowered by Open Source.

- **Features Sony developed in the past**

  - True Zero Copy Data Sharing via Fast-DDS

  - Wait for Acknowledgements

  - Content Filtered Topic

  - minor enhancements, many bug fixes and so on.

Let's just jump in ROS Community

- 1st, let's do it! We can always ask for the help!

- Be constructive, productive and inclusive! Let's say "we"!

- Respect, nobody works for free. (Don't ignore feedback)

- But trust needs to be earned.

- Solve community problem, not only yours.

- Worldwide community / different culture.