

# Open Framework for Embedded Robot Applications



<http://ofera.eu>



# Open Framework for Embedded Robot Applications (OFERA) Overview

OFERA puts ROS2 on  
microcontrollers:



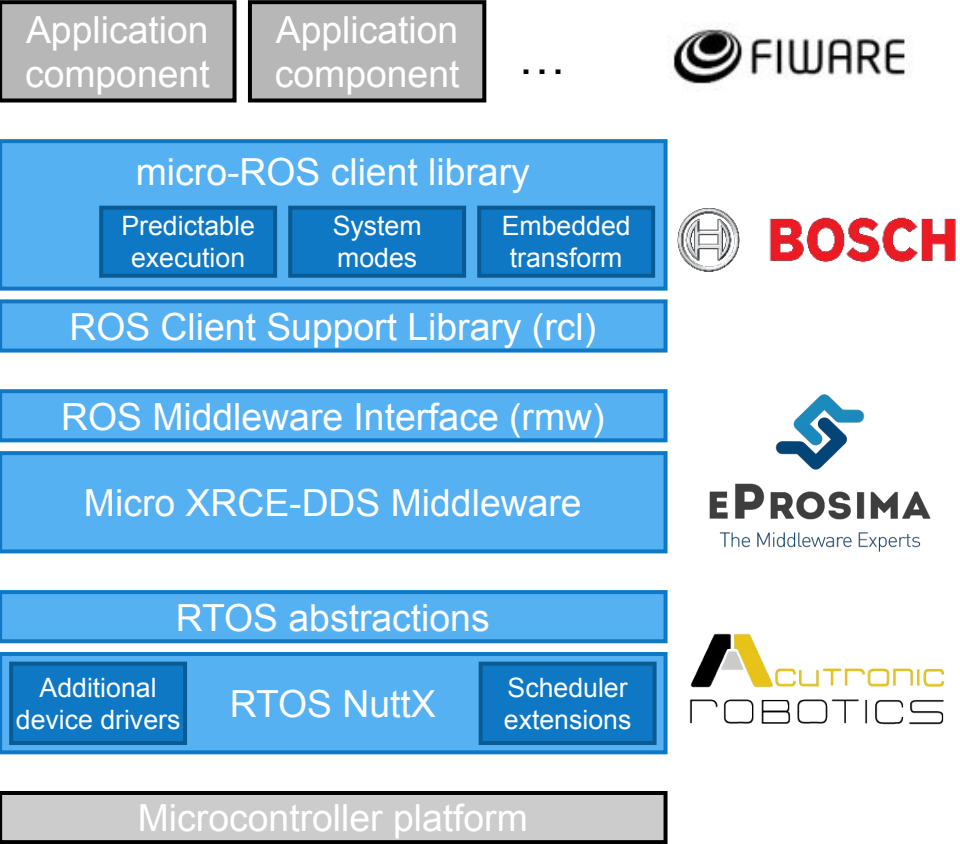
<https://micro-ros.github.io/>



Benchmarking

FIWARE Interop.

ROS Interop.

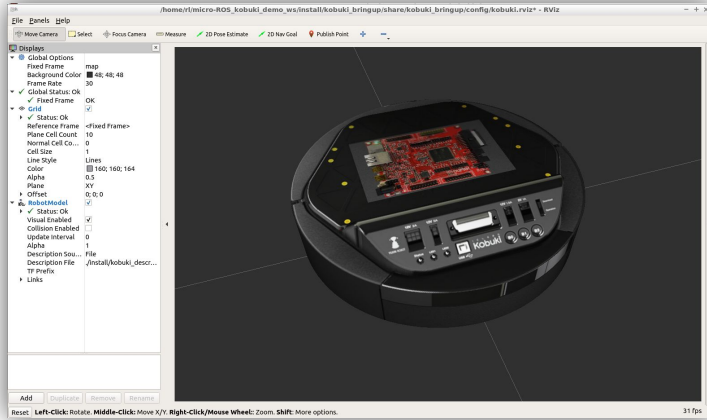


# Open Framework for Embedded Robot Applications (OFERA) Challenges

- Linux+ROS: Powerful, well accepted, but...
  - Issues: power usage, safety, predictability, complexity, security, hardware integration
- MCU+RTOS: low power, safety-rated HW, predictable scheduling, easy sensor integration, affordable, but...
  - completely different ecosystem right now
  - very diverse HW and environments
  - limited resources
  - development requires actual HW, simulators not powerful enough
  - tool and language support problematic



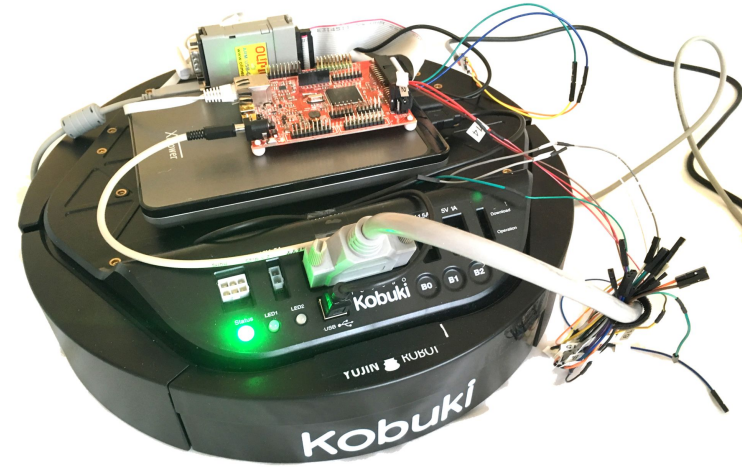
# Open Framework for Embedded Robot Applications (OFERA) Community Use-Case: Kobuki with Olimex STM32 E407



- ROS 2 (Crystal) running**
- Visualization
  - Keyboard control
  - odometry to TF
  - DDS <-> DDS-XRCE agent



**DDS-XRCE** over UDP



- micro-ROS running**
- thin\_kobuki\_driver
  - DDS-XRCE client
  - at less than 100KB RAM

Preliminary version at [github.com/micro-ROS/micro-ROS\\_kobuki\\_demo](https://github.com/micro-ROS/micro-ROS_kobuki_demo)



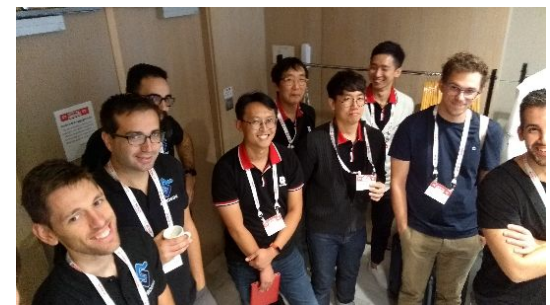
# Open Framework for Embedded Robot Applications (OFERA)

## Dissemination and Collaboration

- OFERA team proposed and organized formation of

## ROS 2 Embedded SIG (Special Interest Group)

- Initial meeting with 20+ participants from Amazon, Bosch, eProsima, Acutronic Robotics, ESOL, OSRF, ... at ROSCon 2018 in Madrid
- Join the discussion and meetings at [discourse.ros.org/c/embedded](https://discourse.ros.org/c/embedded)





<https://micro-ros.github.io/>

