ADLINK Neuron: An industrial oriented ROS2-based platform

HaoChih Lin
Alan Chen
Bill Wang
Chester Tseng
Erik Boasson
Ryan Chen
Advanced Robotic Platform Group
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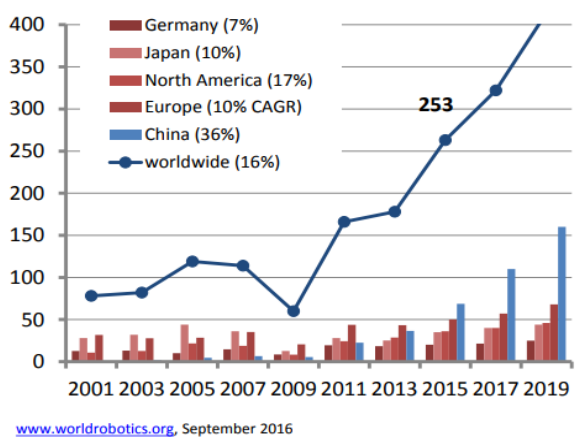
ADLINK

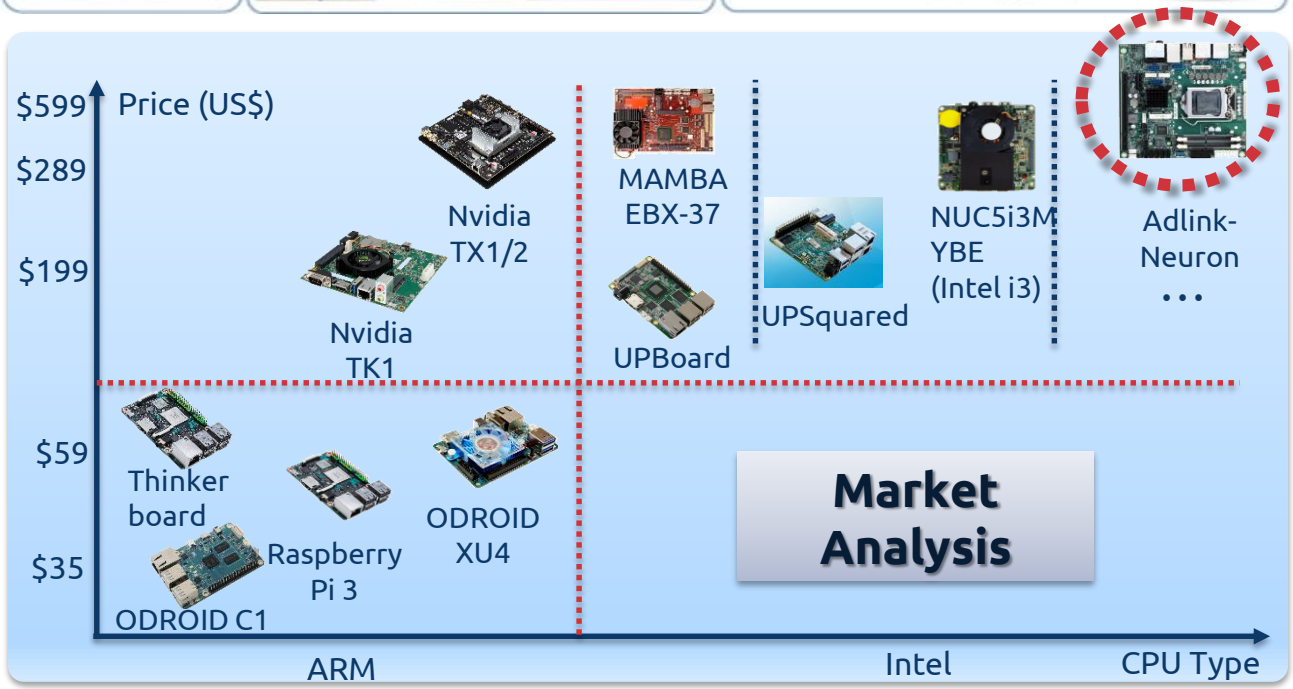
Building Forward Together

ADLINK Neuron

ADLINK Neuron

An industrial oriented ROS2-based platform





CPU: i7/5/3, Celeron
RAM: 4~32G (DDR4)
SSD: 32G ~ (mSATA)
PCIe x16 gen3 * 1
PCIe x1 gen2 * 1

RS232 * 3, RS485* 1, GPIO * 10, USB 3/2 * 4 (both)
GbE port * 2, miniPCIe * 2, Input: 12 or 5 Volt

- **OpenSplice DDS fine tuning (shared memory)**
- **Real-time kernel (Xenomai)**
- **ROS supported sensors integration/testing**
- **ROS 1(Kinetic) & ROS 2 (GPIO control node)**

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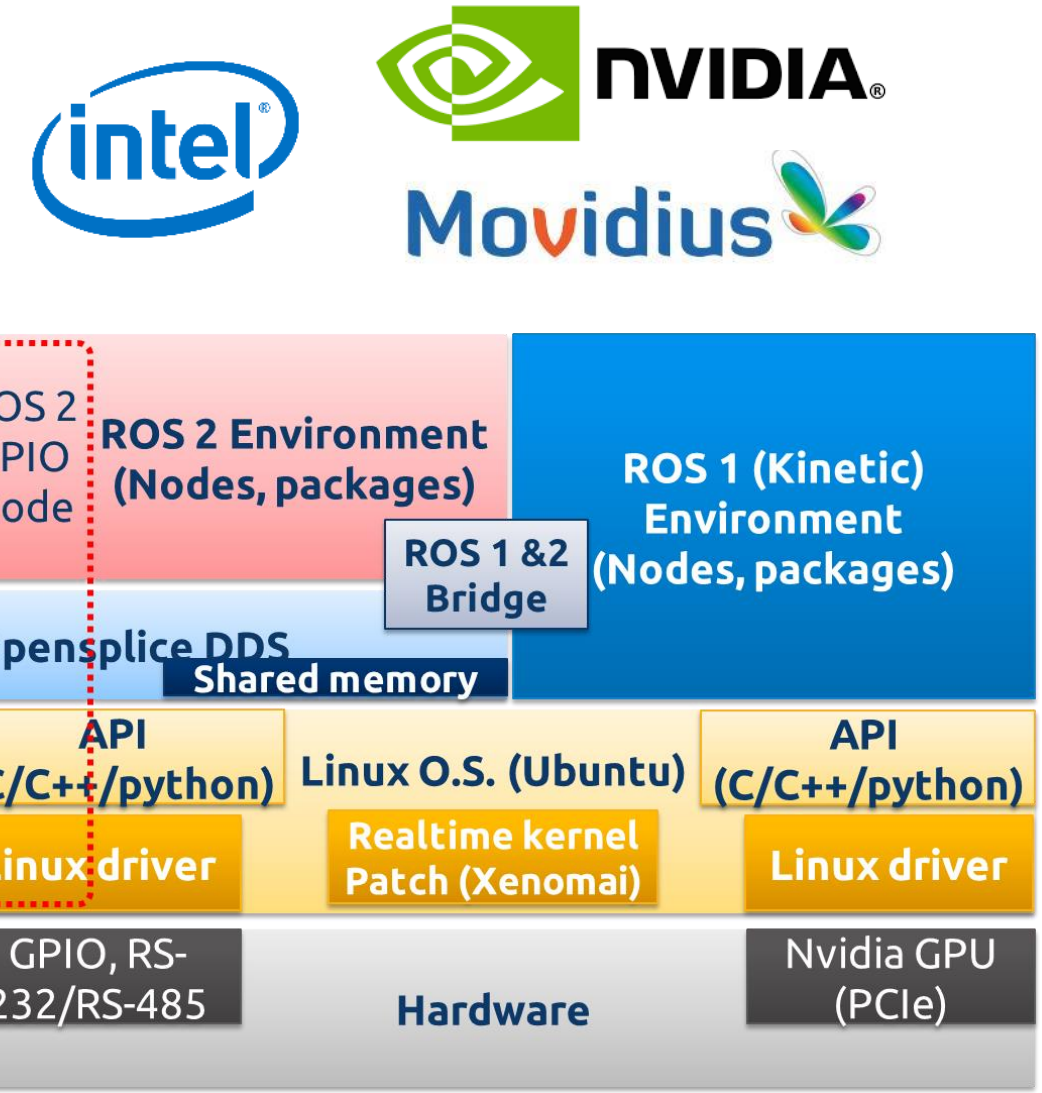
Hardware
- Replaceable CPU & Extensible RAM
- RS-232 x4 & RS-485 x2★
- PCIe x16 Gen3.0 (Nvidia GPU)★
- Two standalone USB 3.0 ports
- GPIO 10 pins & I2C, SPI★

Kernel & Middleware
- Realtime OS (Xenomai)★
- Linux drivers maintenance (Nvidia GPU)
- GPIO integration/testing (API for users)
- PrismTech DDS fine tuning (shared memory)★
- ROS supported sensors integration/testing

Software
- Pre-configured OS image (Ubuntu)
- ROS 1(Kinetic) & ROS 2 (released)
- ROS 2 nodes for I/O control★
- ROS demo scripts (VSLAM, Navigation…) ★



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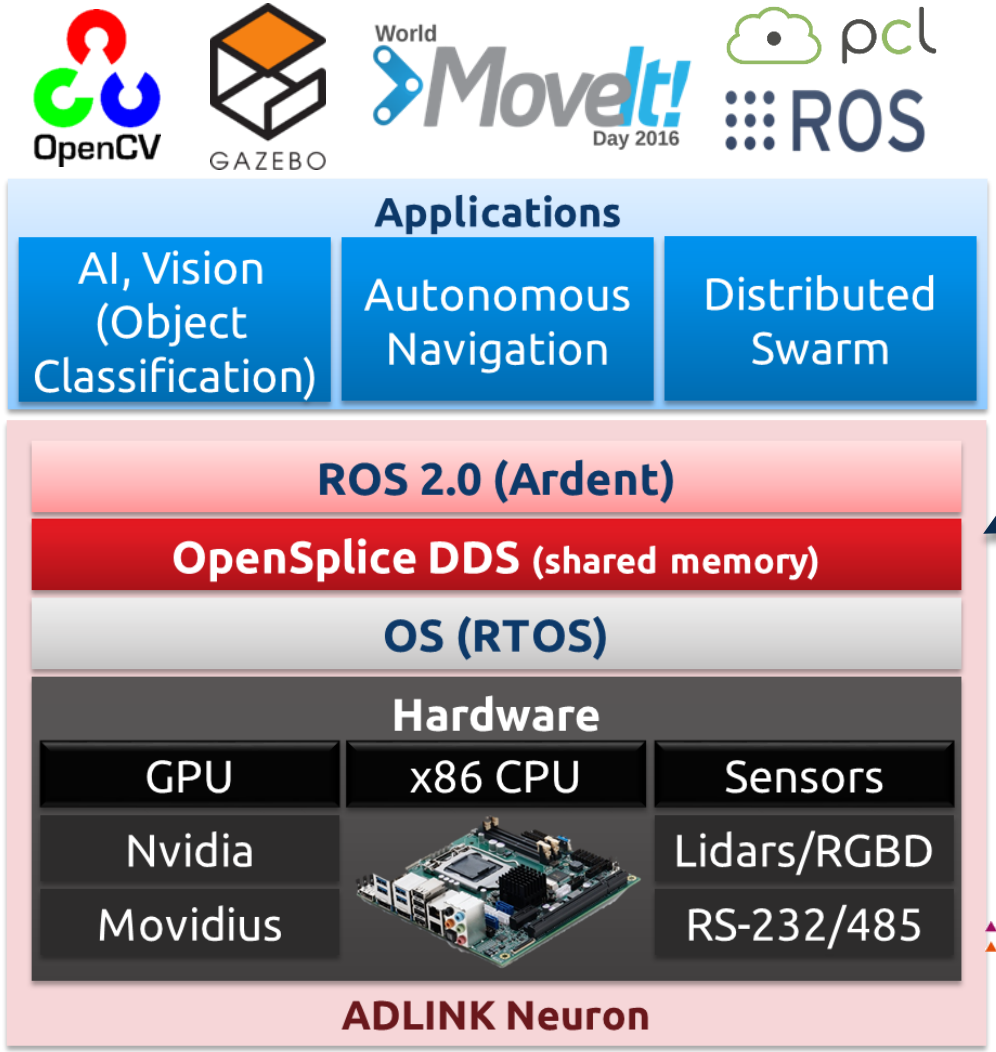
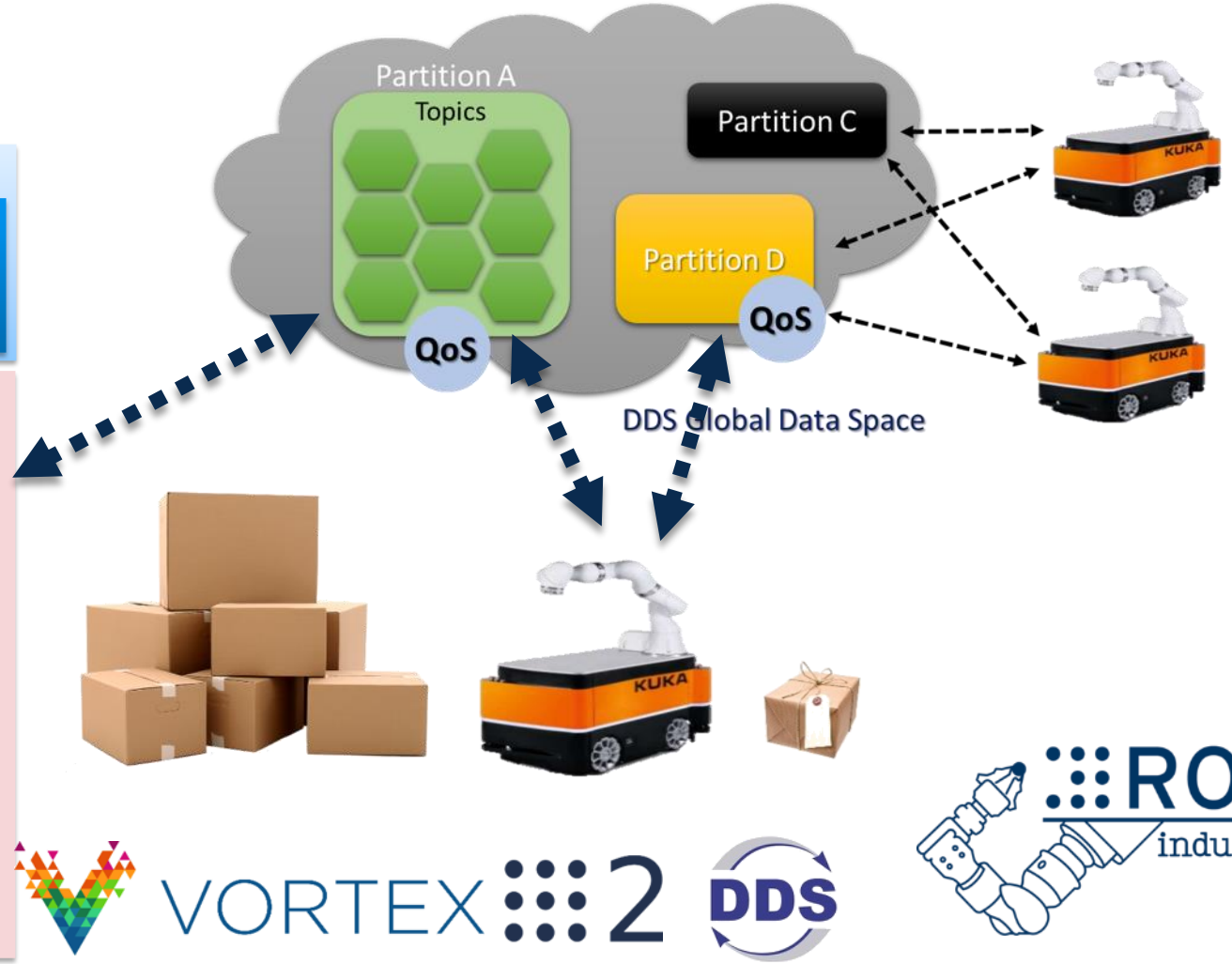
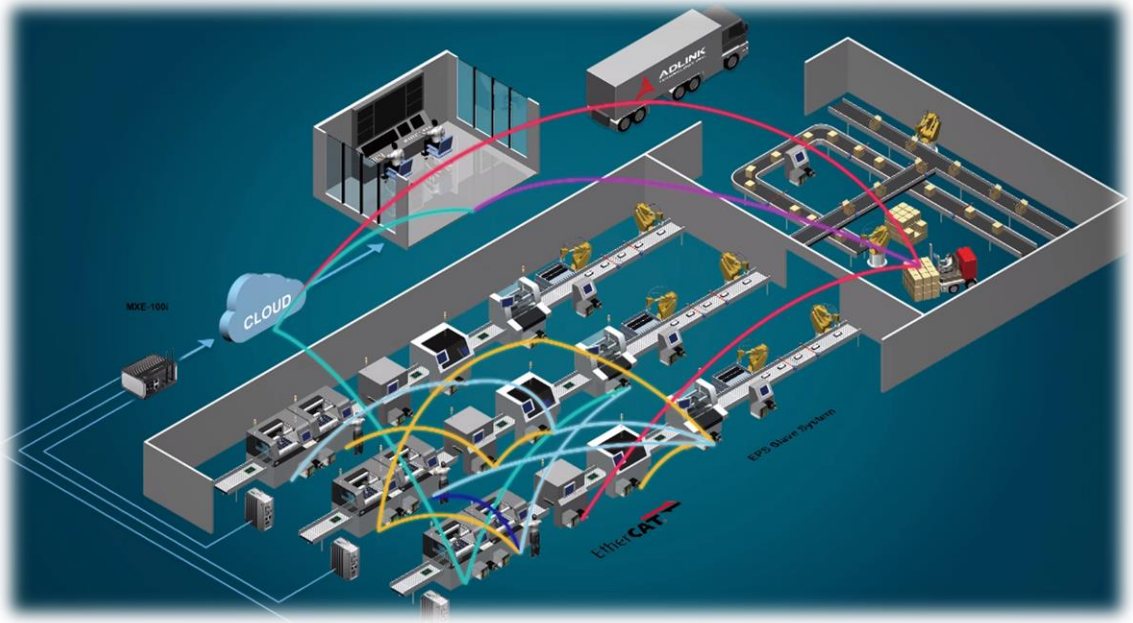
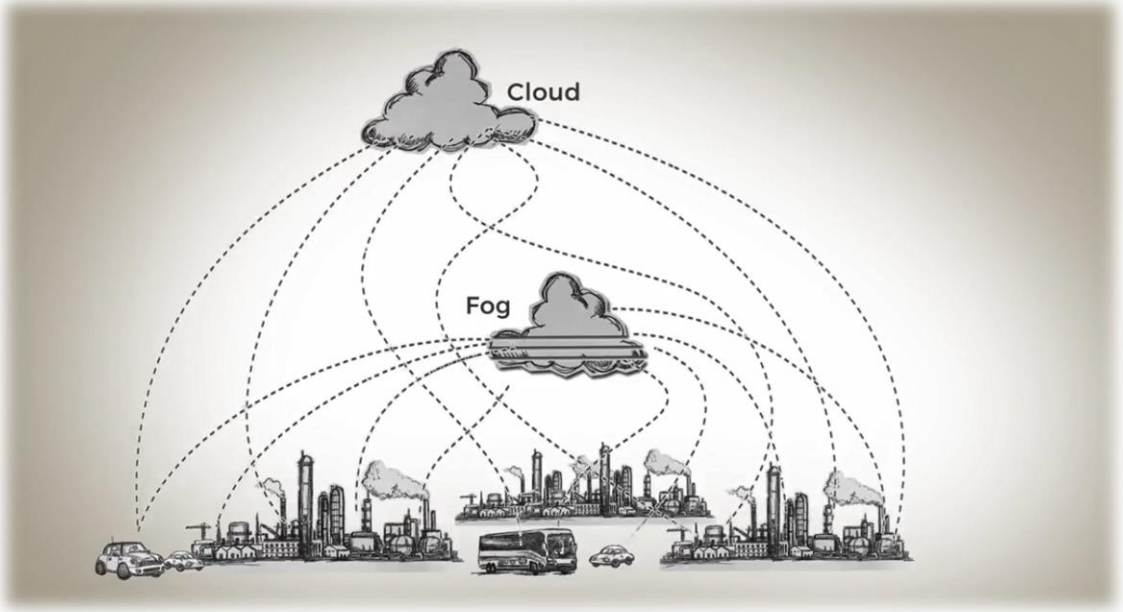




Demo: NeuronBot





ADLINK Neuron Use Cases

Real Implementation/Cases

- **Fog/Edge Computing Test-bed**
  (ROS2/DDS for cooperative SLAM)
- **AMR/AGV onboard computer**
  (ROS2/DDS for multi robots collaboration)
  (Realtime implementation & robotic arm manipulator)
- **Smart Grid**
  (DDS node for each Electric Tower)
- **Agriculture Factory**
  (ROS2/DDS node for each industrial machine)

ADLINK NeuronBot

ROS 1.0/2.0 based swarm robots architecture

Architecture Overview

Intel Object Analytics

OpenCV

intel REALSENSE TECHNOLOGY

pcl ROS

RGB-D Camera (Depth Sensor)

Neuron Board
- NVIDIA GPU
- INTEL Movidius

Movidius

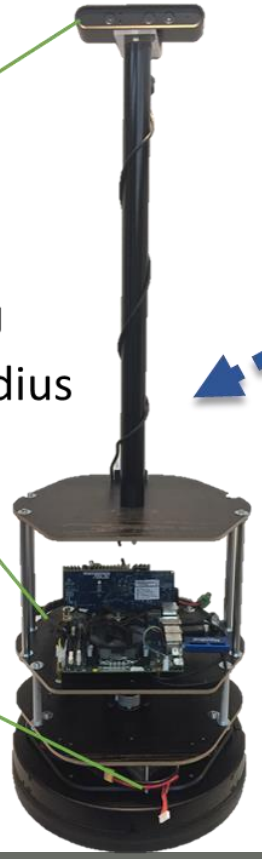
NVIDIA

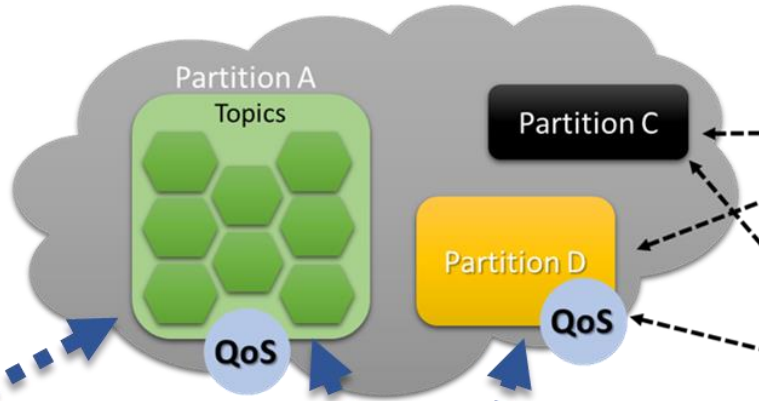
Lidar sensor

SPENCER Framework

spencer

European Research Project





Lenovo Yoga Book

Lenovo Yoga Book

Swarm poses sharing through ROS2/DDS

People Tracking Mobile Robot

VORTEX 2

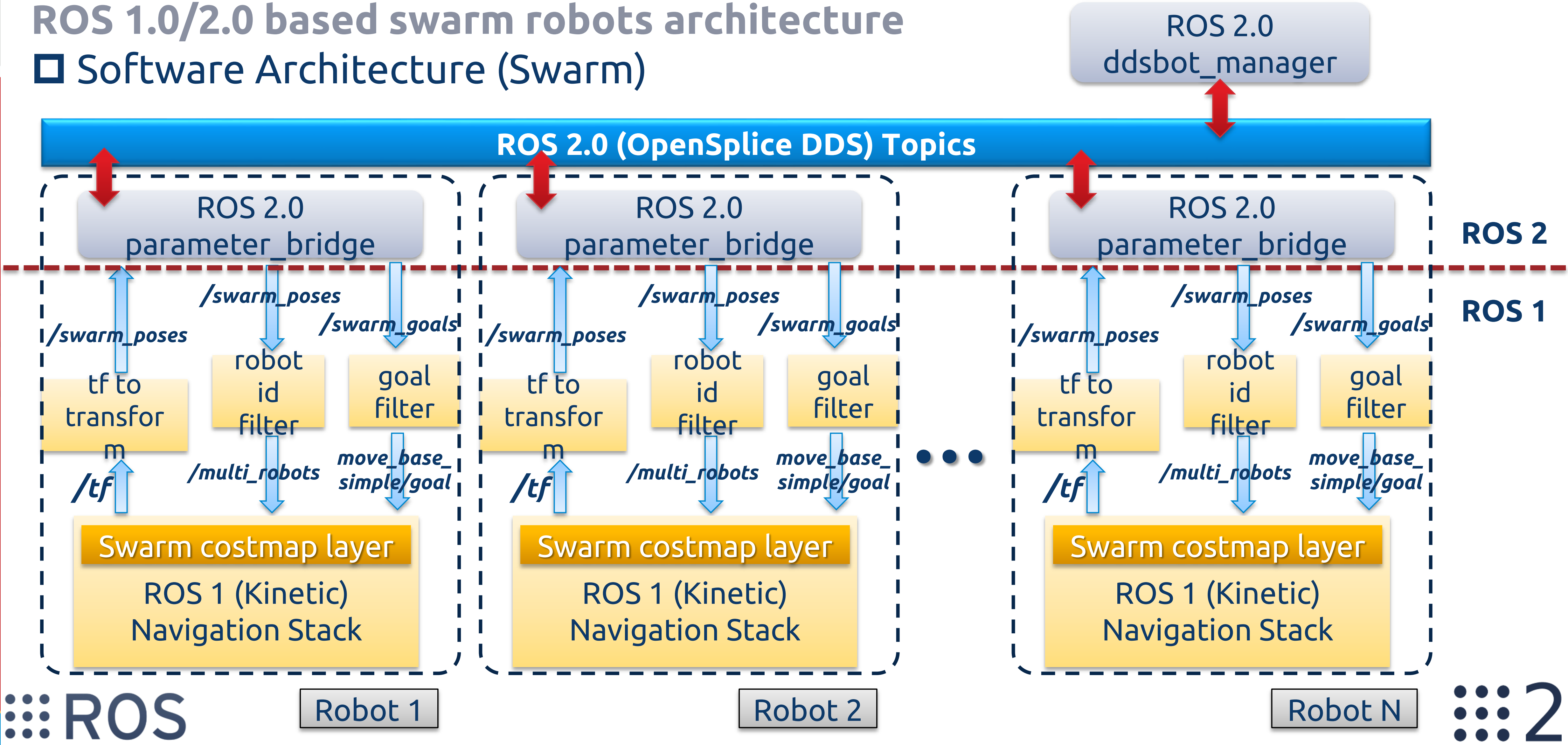
DDS

ROS industrial

ADLINK NeuronBot

ROS 1.0/2.0 based swarm robots architecture

- Software Architecture (Swarm)



ADLINK NeuronBot

Demo In Events

Embedded World Conference 2018

ROS-I America Annual Meeting 2018

Summary

- **The source codes of Vortex OpenSplice will be fully opened by March!**
- **Vortex OpenSplice has been successfully tested with ROS2 (shared mem)**
- **ADLINK Neuron will be officially released by Q2 2018**
  - Offer reliable/robust ADLINK ROS2/DDS Industrial Developer Kit
  - Easy, abstract, reliable, rea-time ROS platform (DDS-based)
  - Speed up developing cycle
  - Enable ROS2 ecosystem in Asia
  - Increase ROS2 adoption for AMR/Arm/Smart factory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