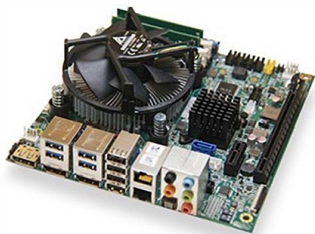# Accelerate AMR Development with ROS 2-based Solution

At a Glance

Company: **A well-known warehouse management service provider**

Location: **Taiwan**

Application: **Material handling and warehouse management**

Products used:

ROS Starter Kit

ROS 2 development board in compact Mini-ITX form factor

AMR Consultancy Service

From AMR vehicle system integration to mapping and navigation

Business Challenges- Moving from AGV to AMR

A well-known company in Taiwan offering warehouse management systems (WMS) and services for companies to increase operational efficiency from warehouse to factory floor was looking to use the latest robot technology, ROS (robot operating system), to integrate into their next generation Autonomous Mobile Robot (AMR) with advanced features that allow it to efficiently and accurately navigate through a variety of environments.

The company has been developing Automated Guided Vehicles (AGVs) for years. AGVs are suitable for repetitive tasks such as line follower robots, and they are commonly designed for pre-defined routes. With the increasing demand to automate the transport of materials from the supply warehouse to production lines in the factory, traditional AGVs are not able to fulfill the needs for operational flexibility in the complex environments of the modern factory and enhance productivity. The WMS service provider decided to develop their next generation AMR utilizing ROS 2 technology because of its open-source ROS libraries and advanced features. In addition, AMR enables customers to move from automation to autonomy and adds mobility to enable autonomous vehicles in support of human functions, creating the human-machine collaboration required to improve warehousing processes for both workers and their work environment. By leveraging ROS 2, the company hoped to able to meet customer's requirements and make sure that all systems operate efficiently together to optimize the operations of the entire warehouse. They were looking for a company has in-depth knowledge about ROS/ROS 2 programming and able to provide AMR design and consultancy service to assist them integrate ROS 2-based hardware into their next generation AMR.

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Solution – ADLINK Integrated ROS Solution

ADLINK is a company dedicated to developing ROS technology and providing ready to use ROS hardware enabling accelerated AMR development. The company chose to purchase ROS 2 ready to use hardware with integrated ROS 2 solution from ADLINK in order to save time and effort compared to developing ROS 2 by themselves. In addition, ADLINK provides AMR design and consultancy service for ROS 2 solutions. The company was able to design their next generation AMR based on ROS 2 even though they had no previous experience with the ROS programming environment and algorithms. ADLINK's AMR consultancy service was able to train the customer to implement a basic AMR vehicle programming architecture, simultaneous localization and mapping (SLAM), and navigation, thus shortening their AMR development time and effort.

Benefits

High Performance Computing

Based on Intel® Core™ i7 processor with high computing power to support complex robotic algorithms

AMR Design and Consultancy Service

Training courses and AMR design guide enable customers to easily learn and build AMR supporting ROS.

ROS 2 Integrated Hardware

Shorten customers' time and effort for configuring ROS

Result – Accelerated AMR Development Within Three Months

ADLINK ROS ready hardware enabled the WMS service provider to deploy AMR into their warehouse management systems and services within 3 months and reduce the overall time required to prototype and test new algorithms. With ADLINK's AMR design & consultancy service, AMR project development was simplified and accelerated through the entire process. The company was able to create a map of each environment using sensor data, localize the AMR itself within the map, accurately navigate to the designated location with close to 100% success rate, and avoid collisions within a pre-defined goal.

ROS Starter Kit

LIDAR

Camera

Motion Controller

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