



Develop ROS™ applications with Visual Studio Code and Azure

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Agenda

Our ROS Journey

Visual Studio Code Extension for ROS

Getting Started

- Create a simple ROS application

- Debug ROS application with ROS Launch

- URDF Preview

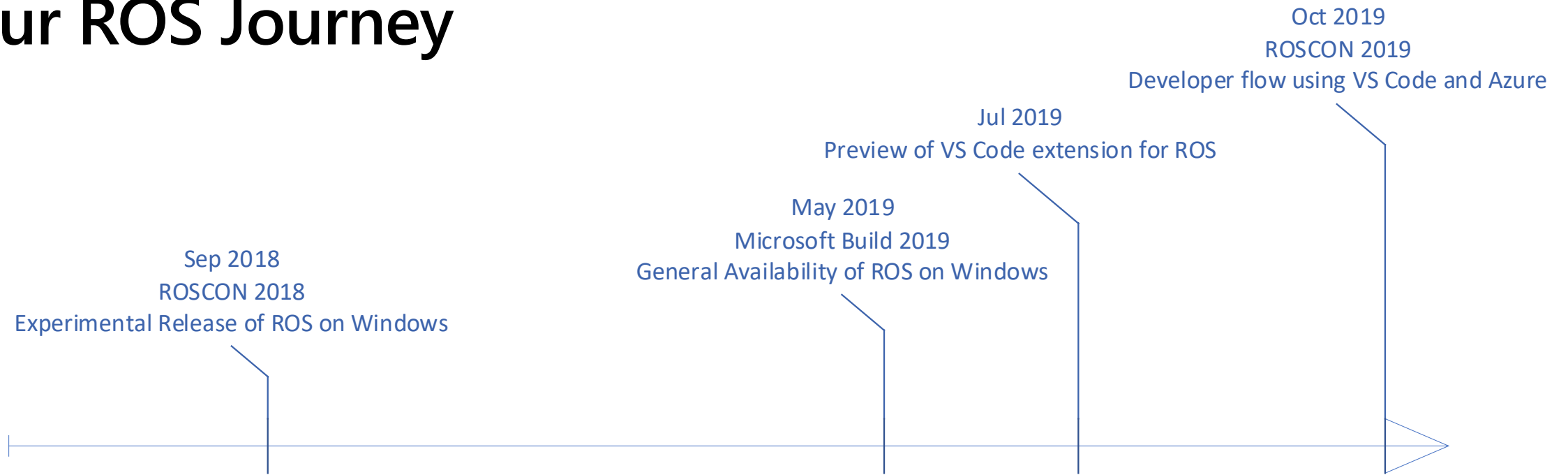
- ROS2 Support

- Deploy ROS application on Azure with Windows VM

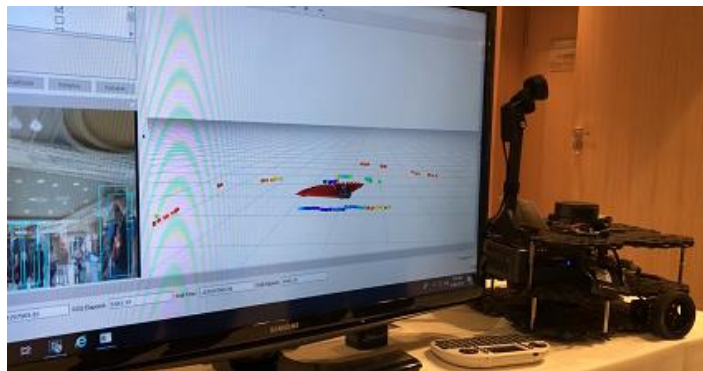
What's Next?

Our ROS Journey

Our ROS Journey



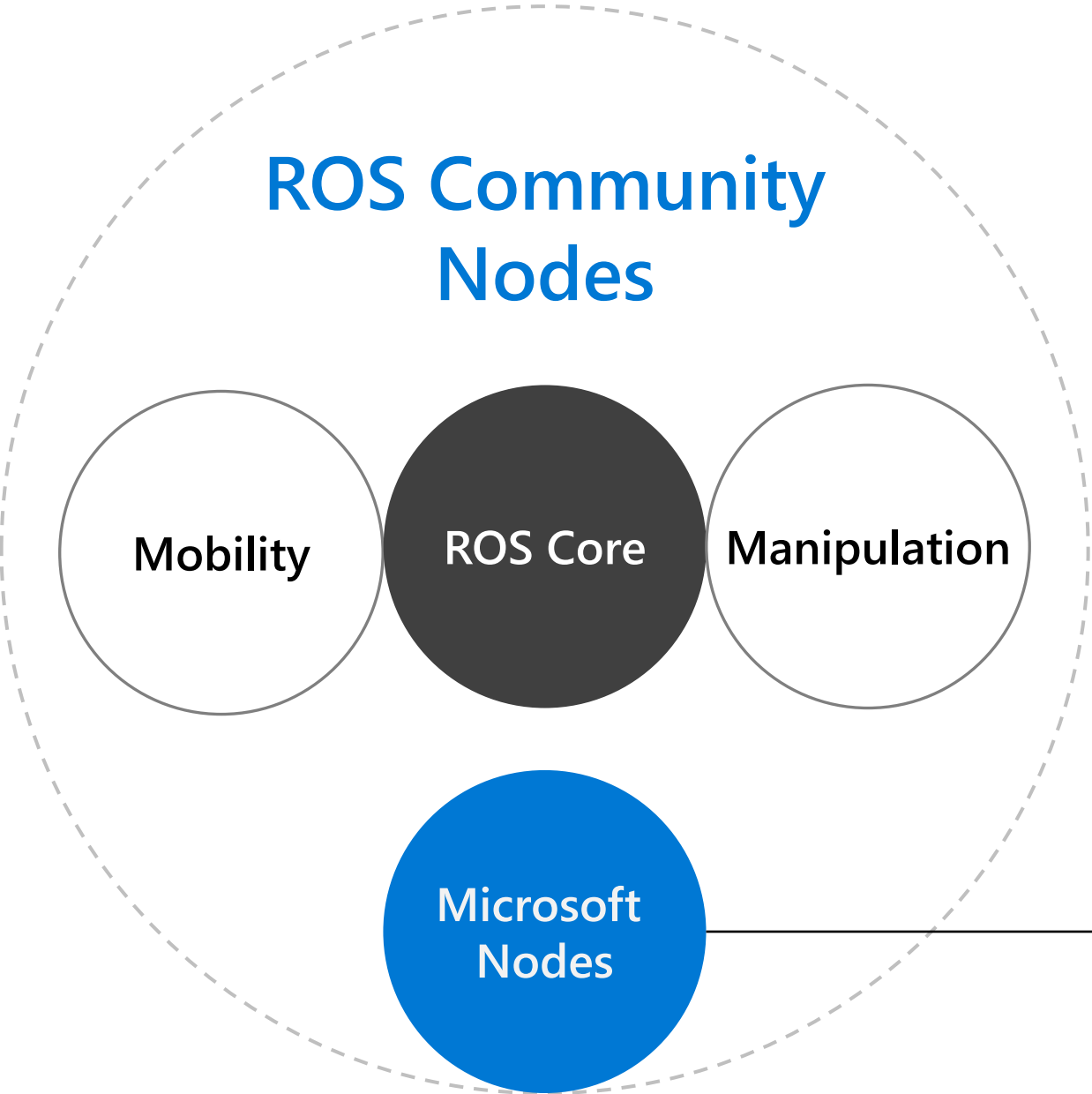
Jun 2018



Oct 2019



ROS Enablement



- [Azure IoT Hub Connector ROS node](#)
- [Azure Kinect ROS Driver](#)
- [Windows ML Tracker ROS node](#)



279 ROS
packages
enabled on
Windows



~1,800
downloads of
ROS Melodic
monthly



Over **14,000**
installs of ROS
extension since
July

Visual Studio Code extension for ROS

Visual Studio Code



Free, cross-platform, open source
Fast and lightweight
Rich extension ecosystem

"In the Stack Overflow 2019 Developer Survey, Visual Studio Code was ranked the most popular developer environment tool, with 50.7% of 87,317 respondents claiming to use it." - Wikipedia

ROS Extension

- Automatic ROS workspace activation.
- Allows starting, stopping and viewing the ROS system status.
- Automatically discover build tasks.
- 3D preview URDF and XACRO files.
- Debug ROS nodes (C++ or Python) by attaching to the process or from the ROS launch.
- And more

Getting Started

Pre-requisites

ROS/ROS2 (Melodic and Dashing)

Visual Studio Code & ROS Extension

C\C++ Toolchain (depending on your platform)

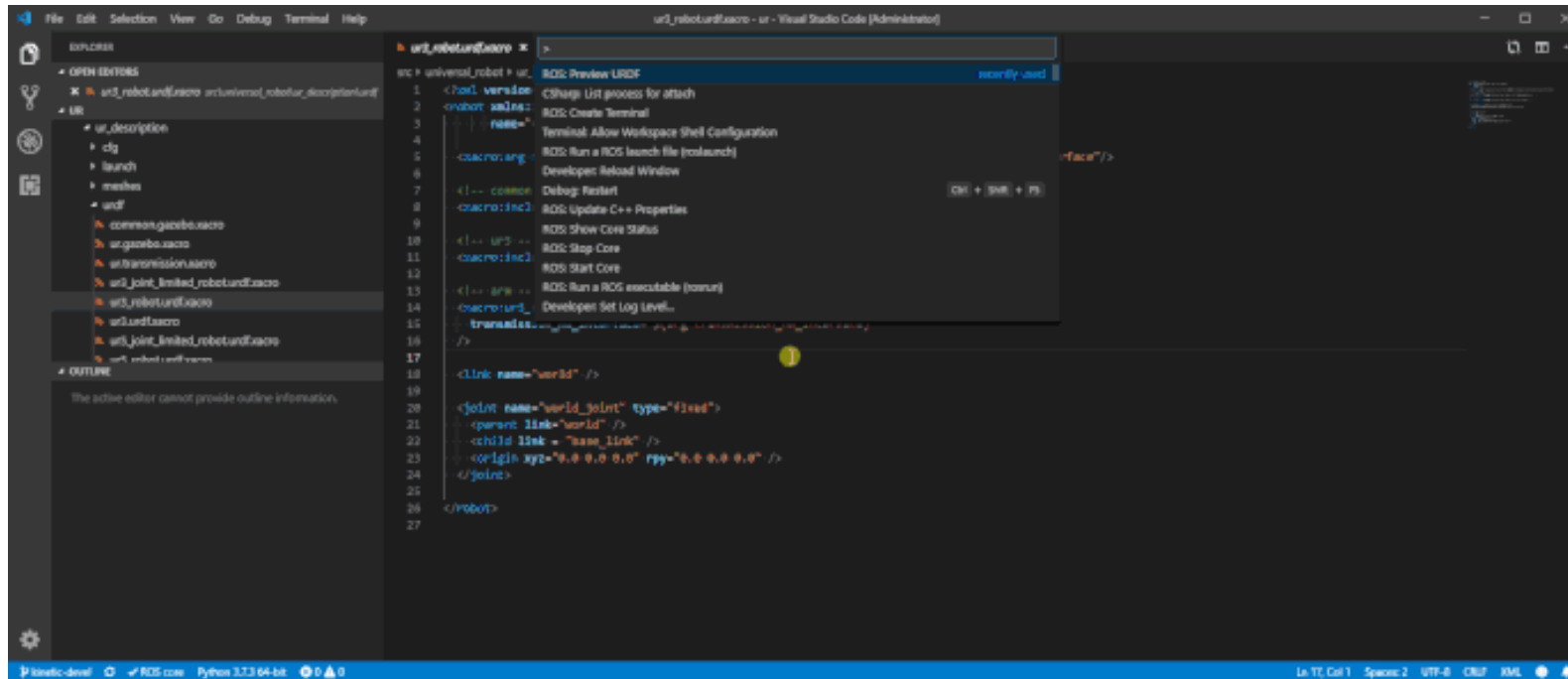
- GNU GCC on Linux\MacOS

- Visual C++ Workload on Windows

Demo: A simple ROS application

URDF Preview

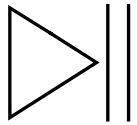
A tool built on top of [Robot Web Tools](#)
Visualize URDF\XACRO files in seconds



ROS2 Support



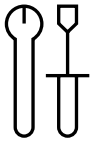
Workspace Discovery



ROS2 Daemon Start\Stop



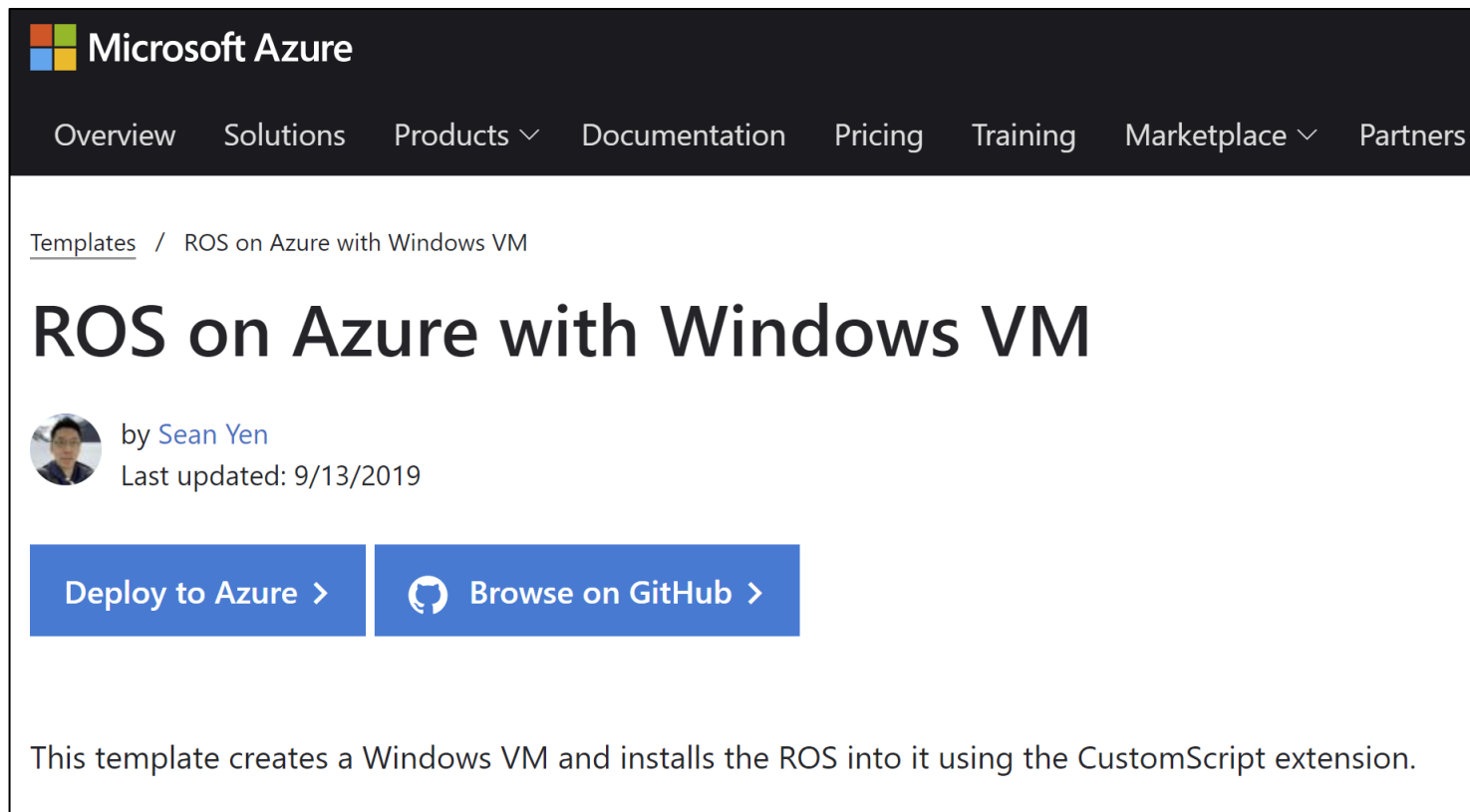
ROS2 Status Monitor



Colcon Build Tool Integration

ROS on Azure with Windows VM

Look for "ROS" on aka.ms/azure/quickstart



The screenshot shows the Microsoft Azure portal interface. At the top, there is a dark navigation bar with the Microsoft Azure logo and the text "Microsoft Azure". Below this, a horizontal menu contains the following items: "Overview", "Solutions", "Products" (with a dropdown arrow), "Documentation", "Pricing", "Training", "Marketplace" (with a dropdown arrow), and "Partners" (with a dropdown arrow). The main content area has a breadcrumb trail: "Templates / ROS on Azure with Windows VM". The title "ROS on Azure with Windows VM" is prominently displayed. Below the title, there is a circular profile picture of Sean Yen, followed by the text "by Sean Yen" and "Last updated: 9/13/2019". Two blue buttons are positioned below the author information: "Deploy to Azure >" and "Browse on GitHub >". At the bottom of the page, a descriptive paragraph reads: "This template creates a Windows VM and installs the ROS into it using the CustomScript extension."

ROS on Azure with Windows VM


Let's walk through the template

Home > ROS on Azure with Windows VM

ROS on Azure with Windows VM

Azure quickstart template

TEMPLATE

 ros-vm-windows
8 resources

[Edit template](#) [Edit paramet...](#) [Learn more](#)

BASICS

* Subscription

* Resource group
[Create new](#)

* Location

SETTINGS

Location

* Project Name

Virtual Machine Size

* Admin Username

* Admin Password

What's next?

Add debug support for ROS2 Launch system

Plus ROS and ROS2 coexistence environment

More improvement for cross-platform development

More visualization tooling

End-to-end DevOps workflow

Call to Action

Try it out aka.ms/ros/vscode

Give us feedback on github.com/ms-iot/vscode-ros

Learn more about ROS on Windows IoT and Azure aka.ms/ros

