



# R-IDE

Robotics Operating System (ROS) - Integrated Development Environment

*Team Orange*

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**Problem:** ROS development contains high barriers of entry for new developer and environments.

**Solution:** An extension to simplify and speed of the development lifecycle and learning process for ROS developers

## Problem Characteristics

ROS workflows leverage several non-attributional windows that elevate the difficulty of debugging, monitoring, and understanding ROS applications.

- Each ROS node has at least one terminal window associated with it.
- There is no distinction when changes in one node affect a related node.
- Simple Debugging methodologies become time consuming due to how ROS displays errors.
- Many parts of the documentation are not up to date and require significant technical knowledge

## Solution Characteristics

### Simplify UI

- Create a GUI that simplifies common tasks and commands and accesses visualization tools

### Custom Solutions

- Create custom solutions that can analyze and autofill based on preexisting code

### Quick Environment Setup

- Create a process to quickly build an environment for any ROS project existing or

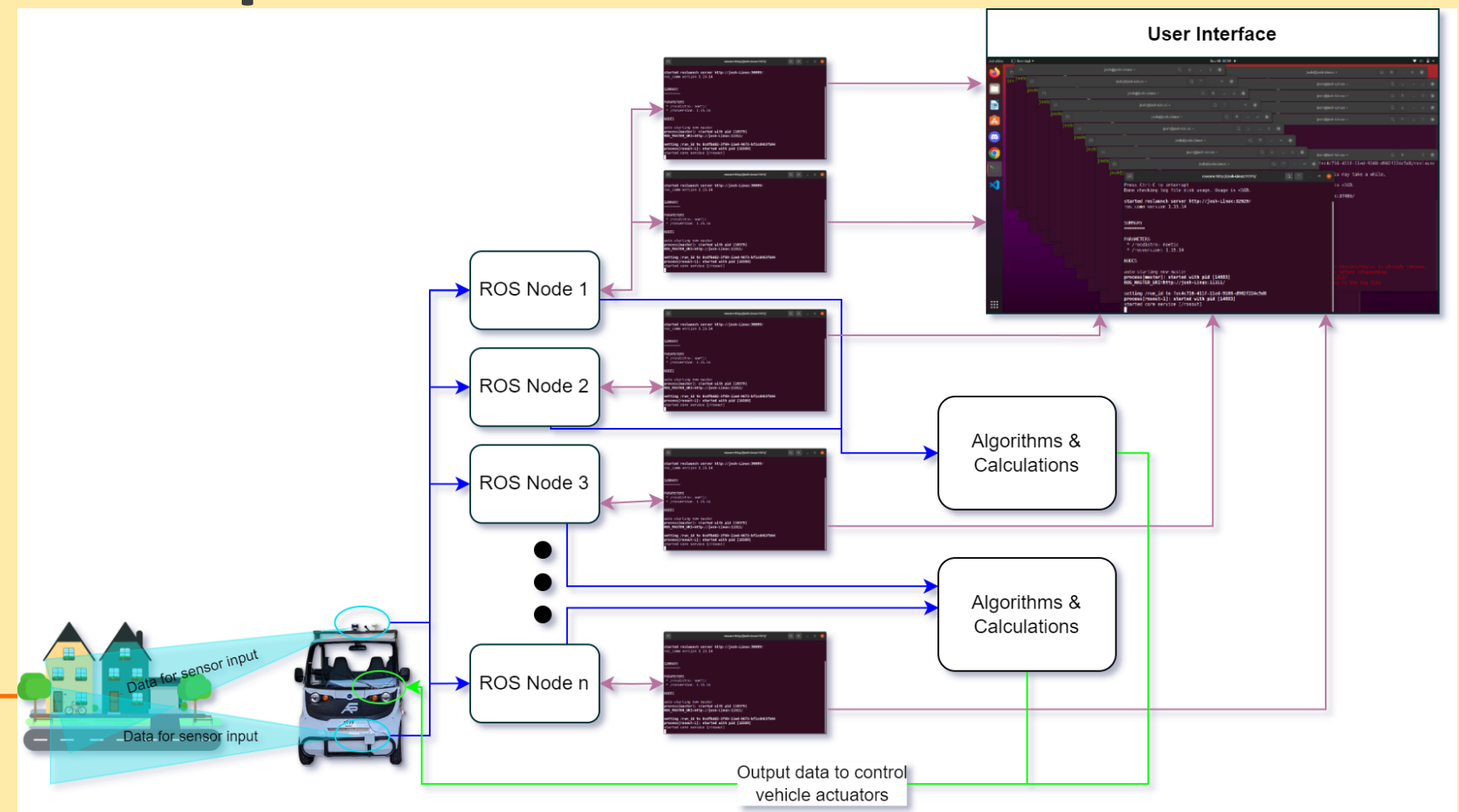
### Perspective Shifts

- Create a system that allows for perspectives to quickly change and mutate as required

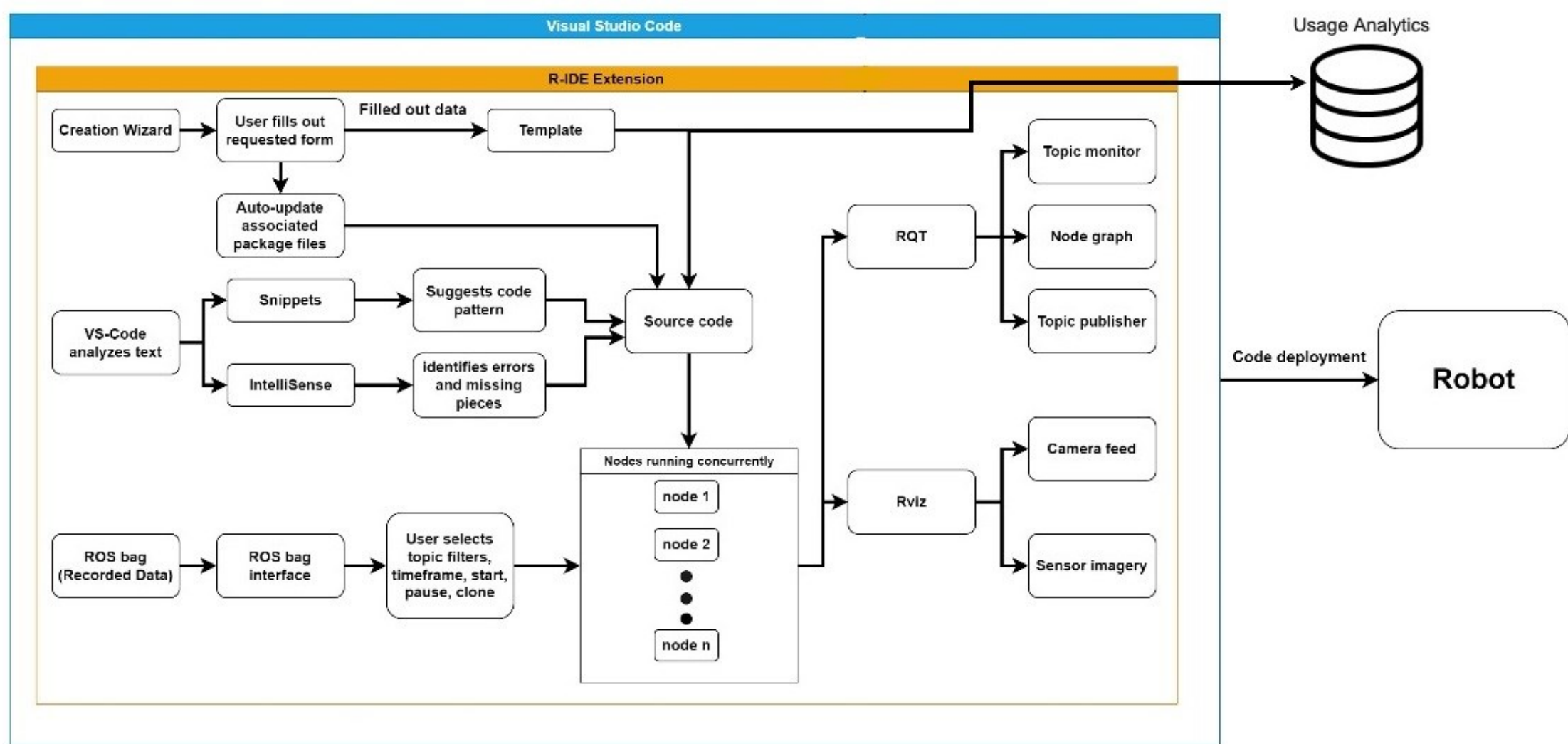
## Innovative Features vs. Competition

- Creation Wizard for automatically generating common ROS components
- Snippets and templating for custom code completion
- Visualization tools to display camera and sensor imagery
- ROS bag manager to record/playback and clone ROS bags

## Development environment before R-IDE



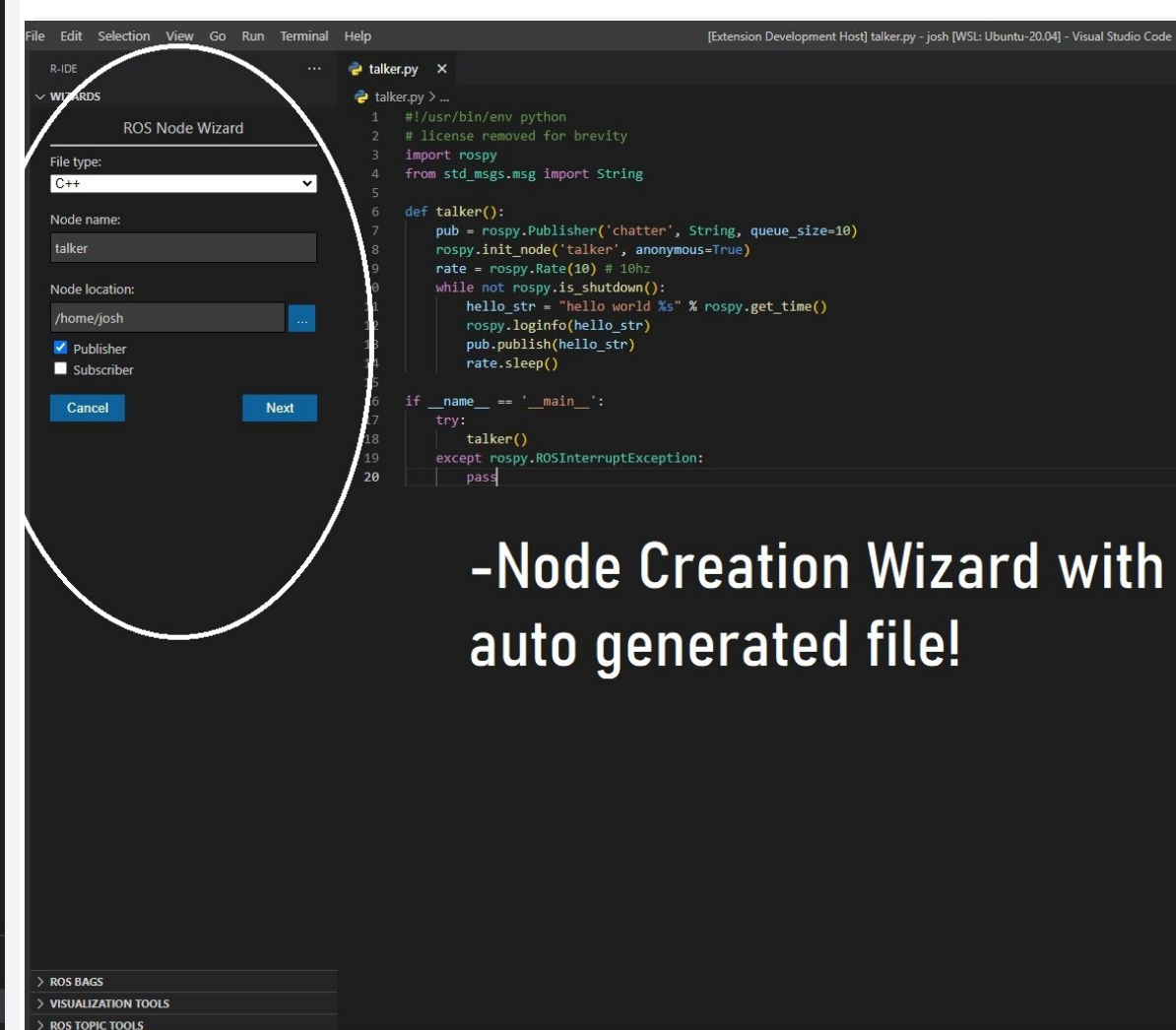
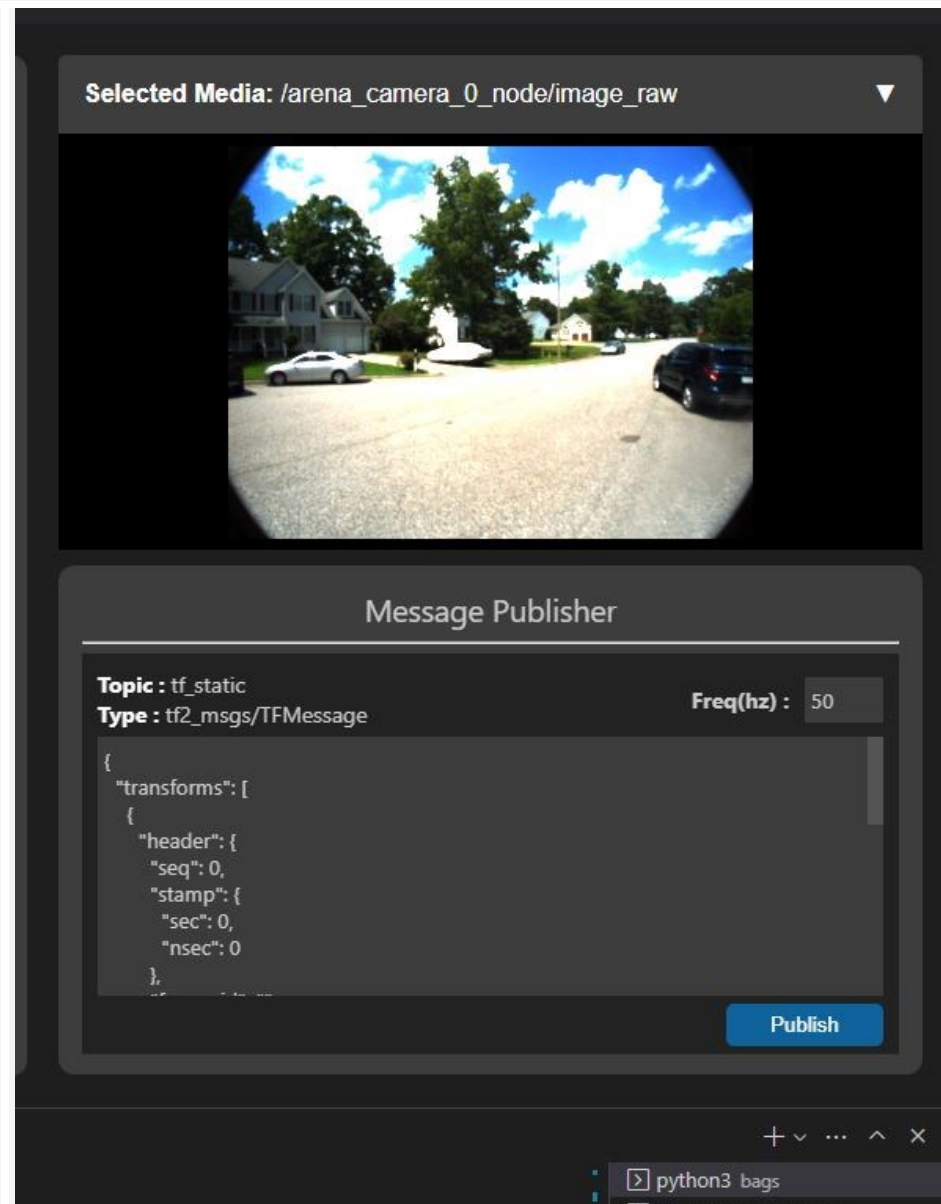
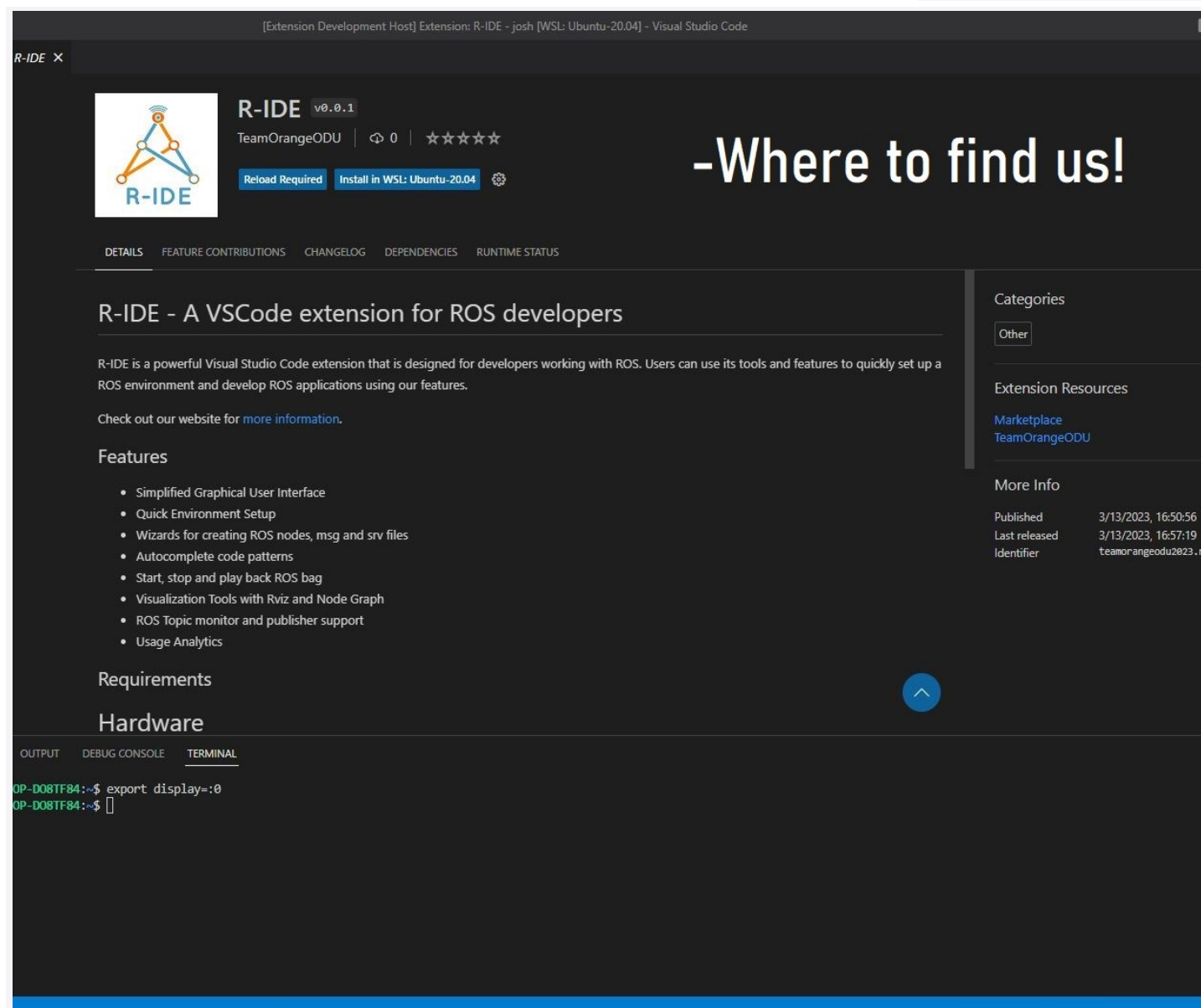
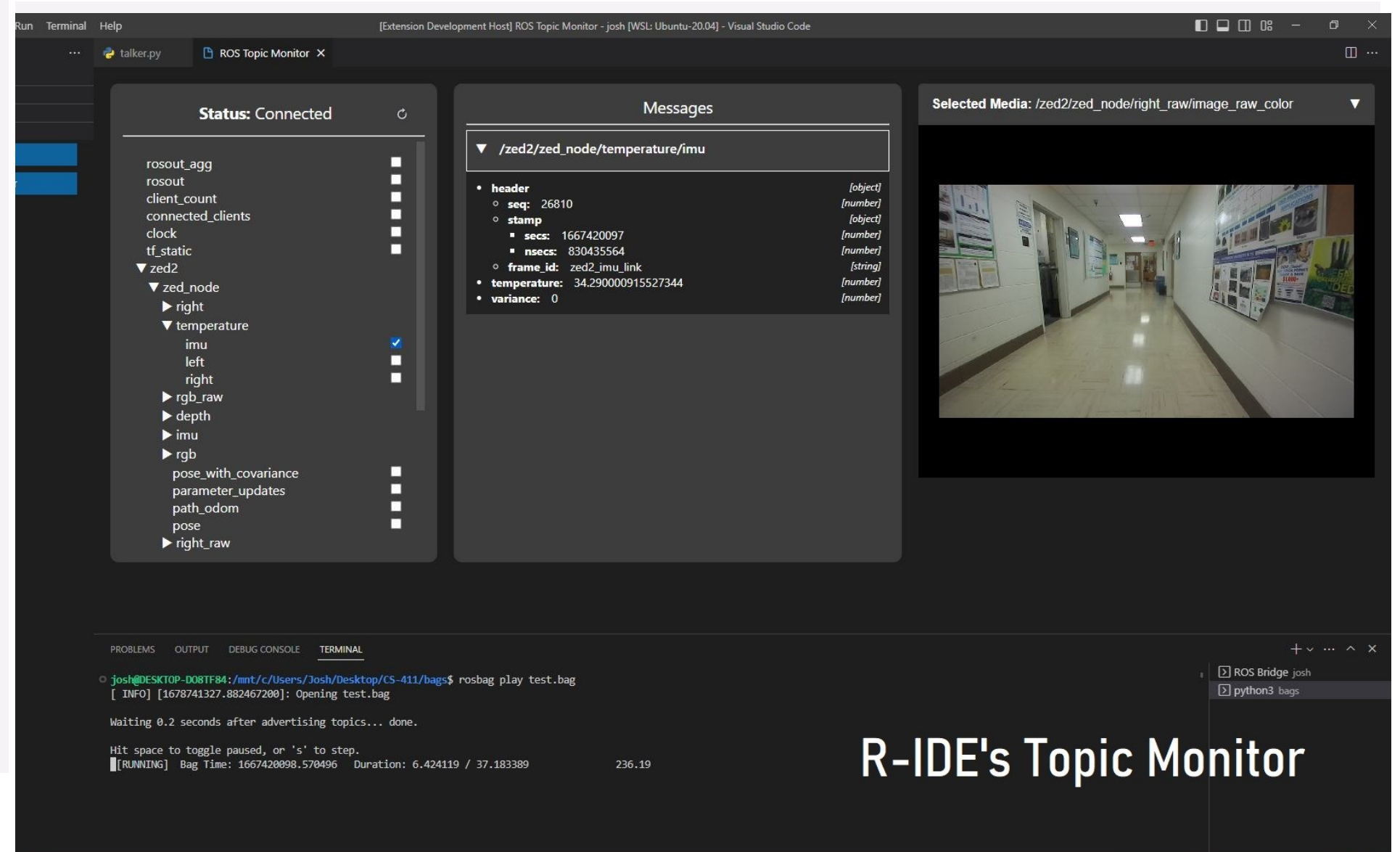
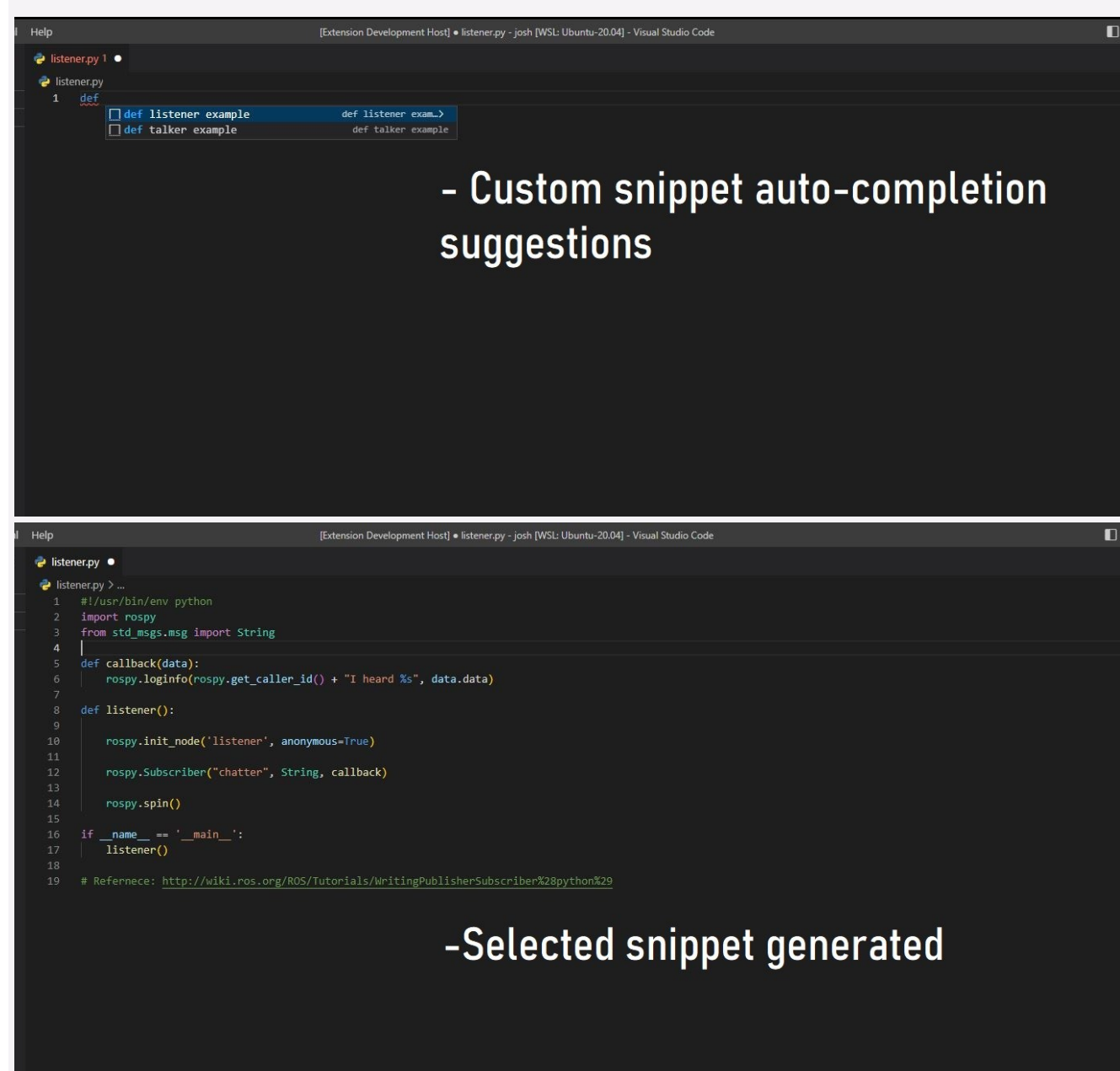
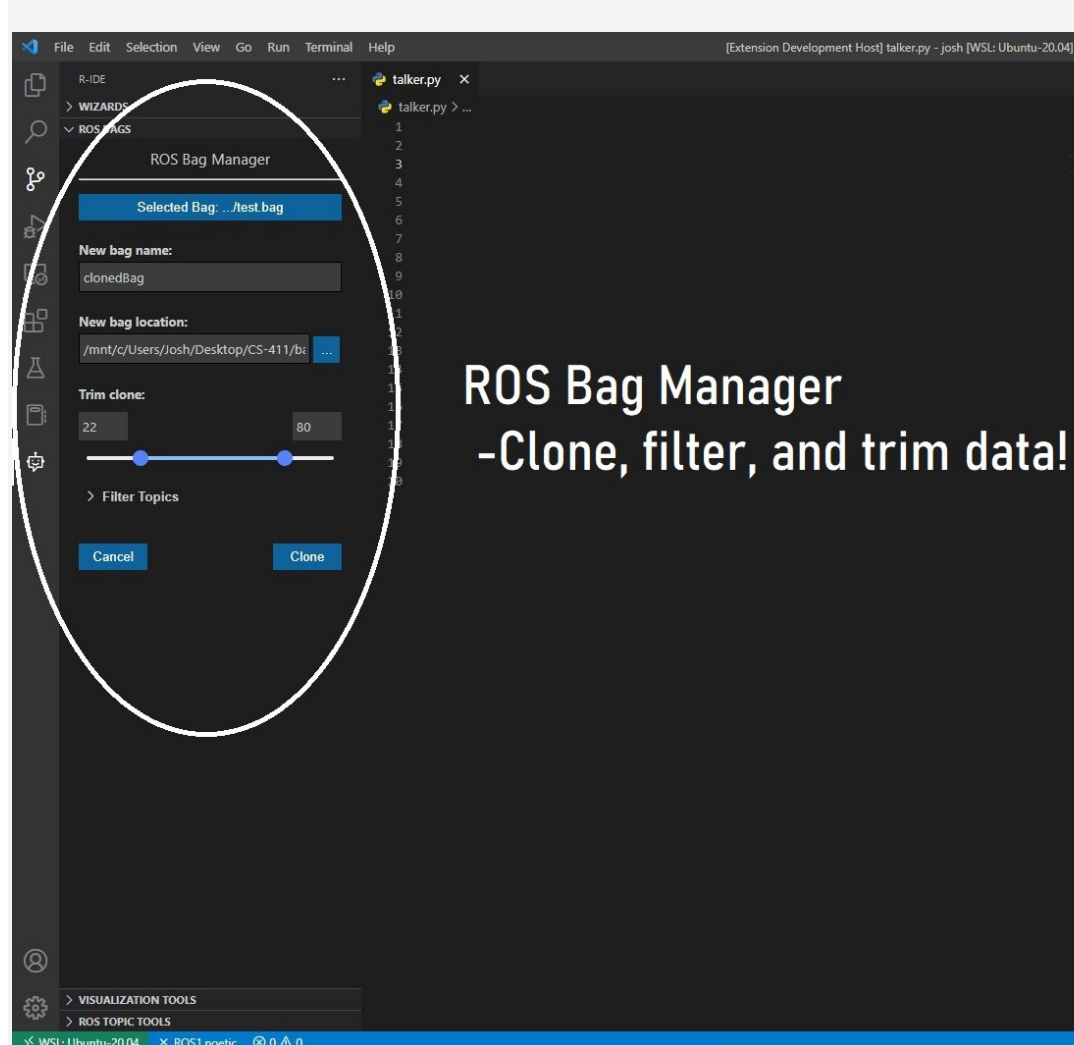
## Prototype MFCD



## Prototype Features

	Feature	RWP	Prototype
Wizard	Create node w/ templated publisher or subscriber	Full	Full
	Create msg	Full	Full
	Create srv	Full	Full
Auto update	cmake file	Full	Full
	package.xml	Full	Full
Snippets	Autocomplete Code Patterns for Srv	Full	Full
	Autocomplete Code Patterns for Msg	Full	Full
	Autocomplete Code Patterns for C++ Packages	Full	Full
ROS bag	Start Rosbag recording	Full	Full
	Stop Rosbag recording	Full	Full
	Play back Rosbag	Full	Full
	Filter topics from Rosbag	Full	Full
Visuals	rviz	Full	Partial: Depending on performance of embedded features
	Node Graph	Full	Full
ROS Topic	ROS topic monitor	Full	Full
	ROS topic publisher	Full	Full
	ROS topic media viewer	Full	Full
Data Management	Usage Analysis	Full	Full
Test Management	Create Mock Data	Eliminated	Full
	Automated Tests	Eliminated	Full

## UI/UX Screens



See Team Orange's full website:

<https://www.cs.odu.edu/~411orang>

