

# ROS2 Package

from code to deploy





# ROS2

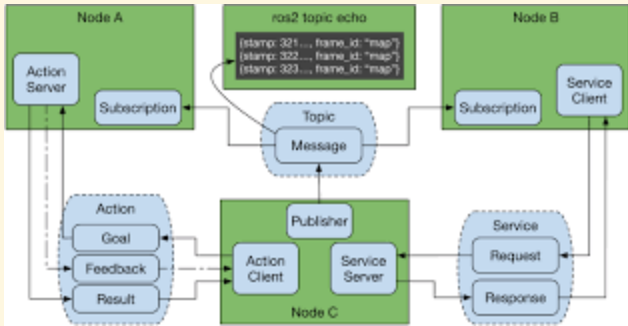
Robot Operating System (ROS) is an open-source robotics middleware suite. Although ROS is not an operating system (OS) but a set of software frameworks for robot software development (wikipedia)

# ROS2

1. How to resolve the robotic problem
2. Why of thinking
3. Think only on your's.
4. Standard. Standard. Standard.
5. Community

# ROS2 Framework

5. Nodes / Process
6. Communication (DDS)
7. Tools (rqt, bag, ..)
8. ECO System (diagnostics, logging, allot of packages)
9. Standard. Standard. Standard.



# Verbs

- Package
- Nodes
- Topics
  - Pub
  - Sub
  - Service
  - Action
- Parameters
- Messages

# Code to Deploy

let's start

# AXE and other tools

"Give me six hours to chop down a tree and I will spend the first four sharpening the axe"  
(Abraham Lincoln)

- Dev environment
  - VSCode



# Package from code to deploy

- Requirements analysis
- Design
- Coding

# Continue ...

- Code quality
  - Tests
  - Linters
  - Static and Dynamic analyze
- Source Control
- Documents
- Package Version
- Deploy
- CI / Maintenance

# Language

- Python (3.10)
- CPP (C++17)
- CMAKE
- XML / yaml / json / schema
- BASH
- GIT
- Network
- Physics and Simulation
- Markdown

# Dev Environment

- GIT
- VSCode
  - Extensions
- ROS2
- Docker
- Network and diagnostic tools

# VSCode

- Python
  - autoDocstring
  - pylint, pylance
- Git
  - Git Graph
  - Git Lance

# VSCode more Extensions

- Other
  - xml
  - xml tools
  - yaml
- Helper
  - tabout
  - draw.io
  - project manager
  - Code spell checker

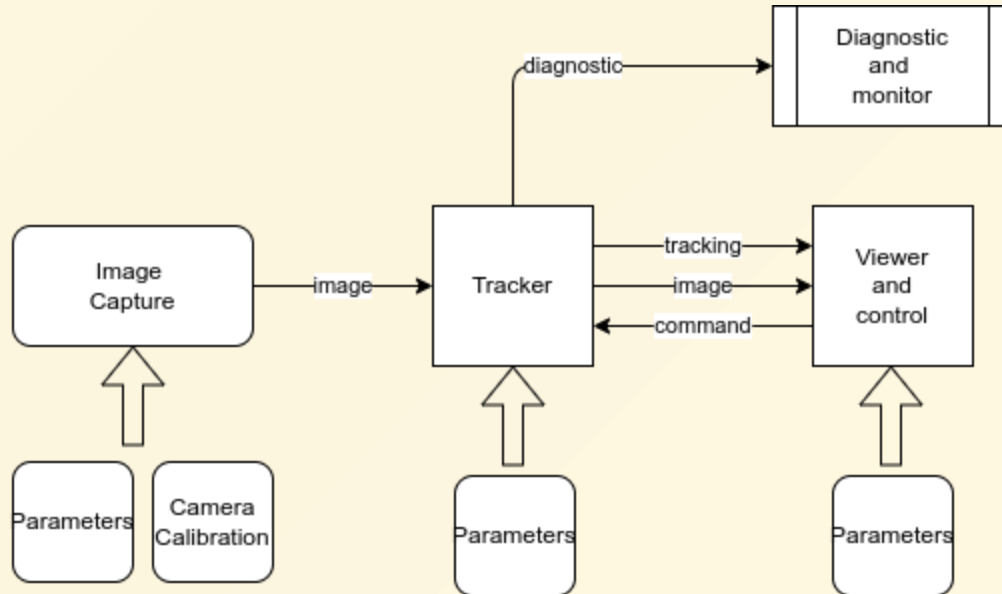
# Demo Time

Simple python package from code to deploy

- Requirements and Design
- Code
- Code Quality
- Source Control
- Versioning
- Dependencies
- Deploy

# Demo

## Optical Flow simple tracker





# Design

## 4 Nodes

- Image source
  - test
  - camera
- Tracker
- Viewer and controller

# Topic and messages

# Code Quality

**Take time but pay off in the long run**

- Type hinting
- Formatters
- Linters
- Test (pytest)
  - unit test
  - integration test
- Commit / Pre-commit

# Type hinting

Type hint should be use whenever unit test are worth writing

They help you as a developer write better code

# Linters

A linter is a tool to help you improve your code

- Fewer errors in production
- Readable, maintainable, consistent code
- Code Style (no endless arguments)
- More secure and performant code

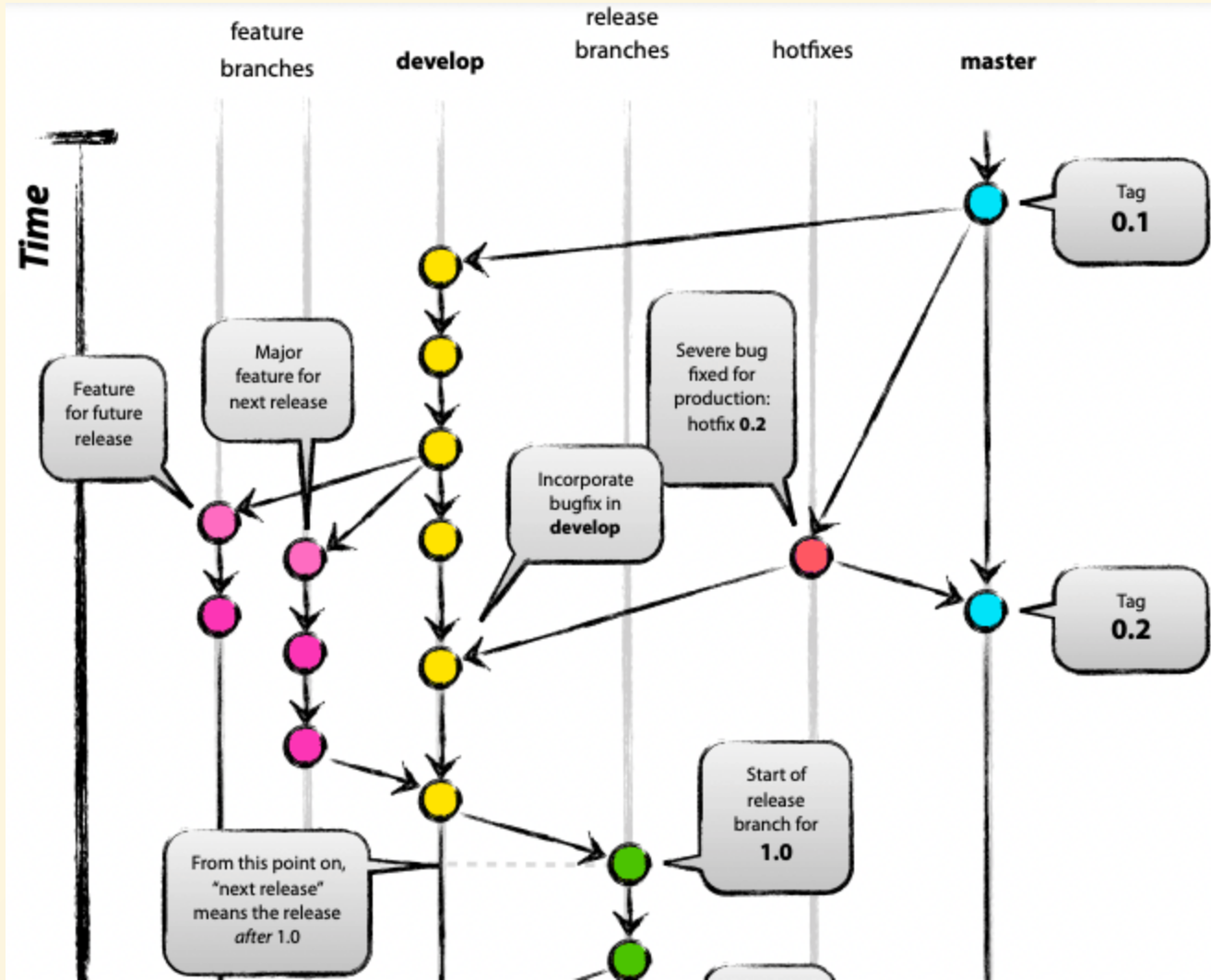
# Linters tools

- Pylint
- Flake8
- mypy

# GIT

- branching strategy
- commit
- tag
- merge request

# branching strategy





# GIT helping tools

- GIT cli
- VSCode
  - Builtin
  - GitLens
  - Git Graph



# Thinks that left out

- C++
- Cross Compiler
- Simulation
- CI/CD
- Docker and Dev container