Multi-robot Localization

Application to Area Coverage Optimization

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Intrduction

History and Legacy

- Started in 2007 by researches from Stanford AI Robot (Stair) and the Personal Robots (PR) Program and was sponsored by Willow Garage a visionary robotics incubator.
- Used Worlwide in Research and Industry.
- Currently supported by the Open Source Robotics Foundation.

Figure: Stair

Intrduction

Robot Programming Before ROS

- No common platform for develeoping robotics
- Build every thing from scratch
- Algorithm implementation

Intrduction

ROS is ..

A flexible framework for writing robot software. It is a collection of tools, libraries, and conventions that aim to simplify the task of creating complex and robust robot behavior across a wide variety of robotic platforms.

Intrduction

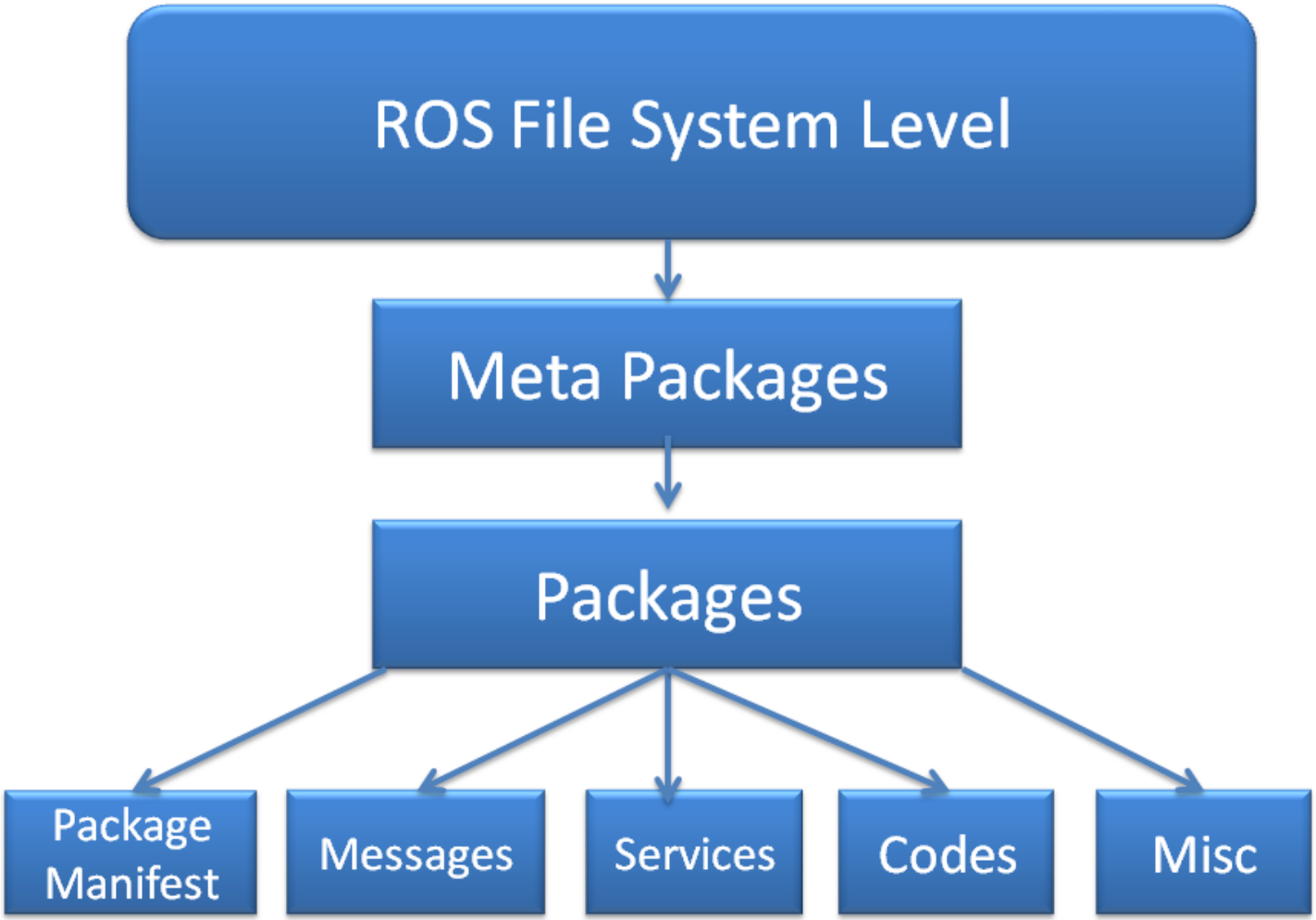
Ros Equation

Intrduction

Applications

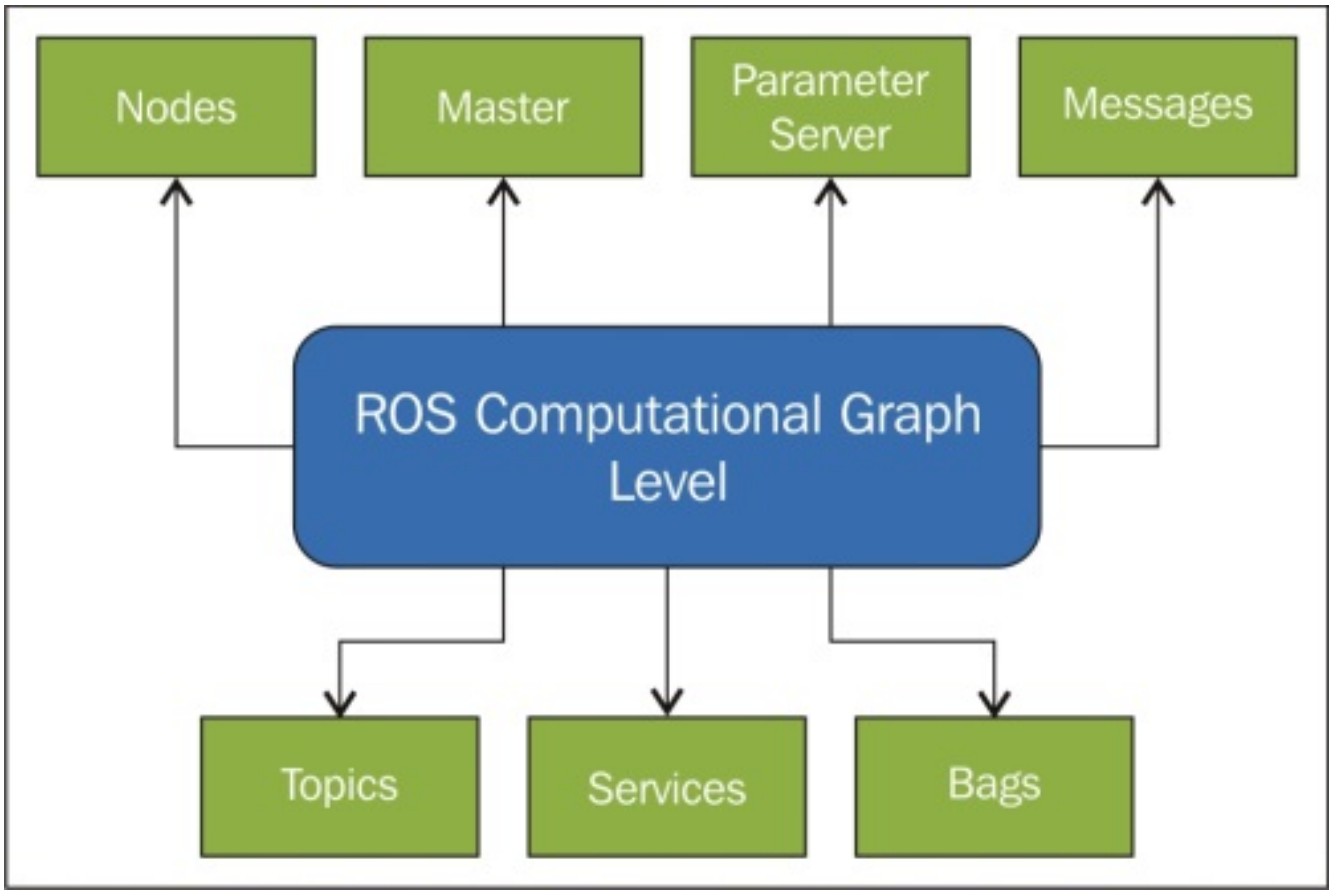
ROS Concepts

Filesystem



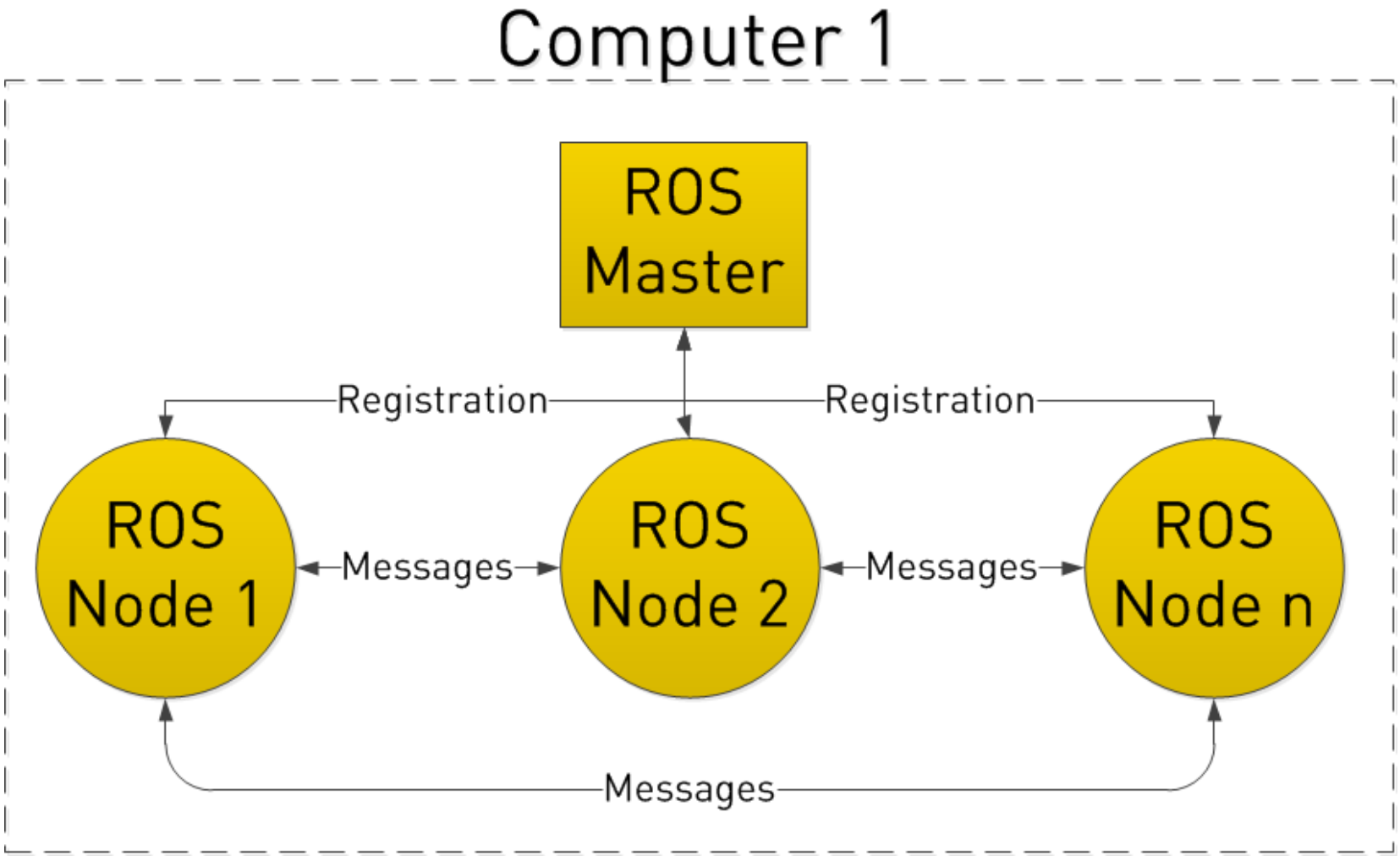
ROS Concepts

Computation Graph



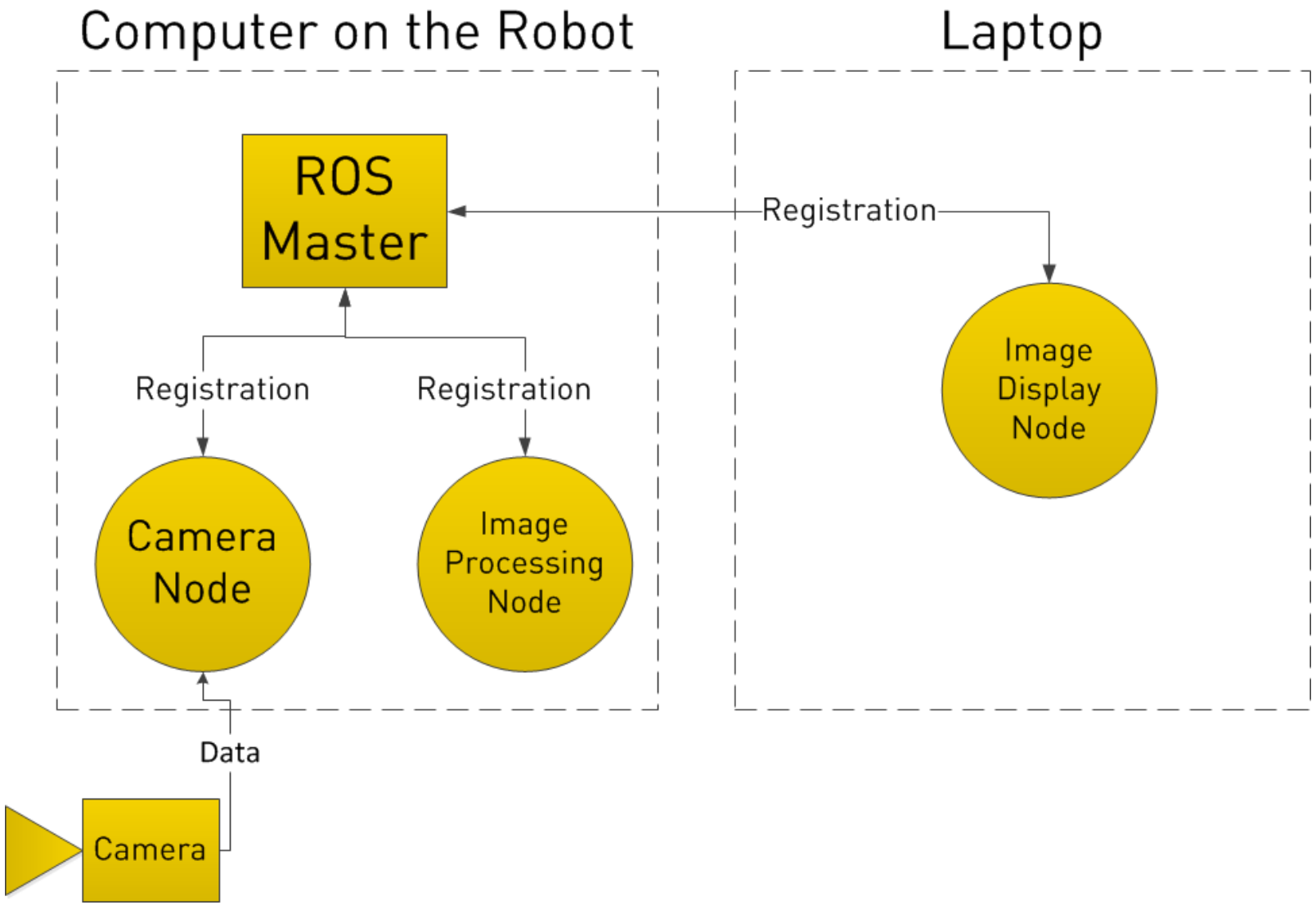
ROS Concepts

Computation Graph: Master



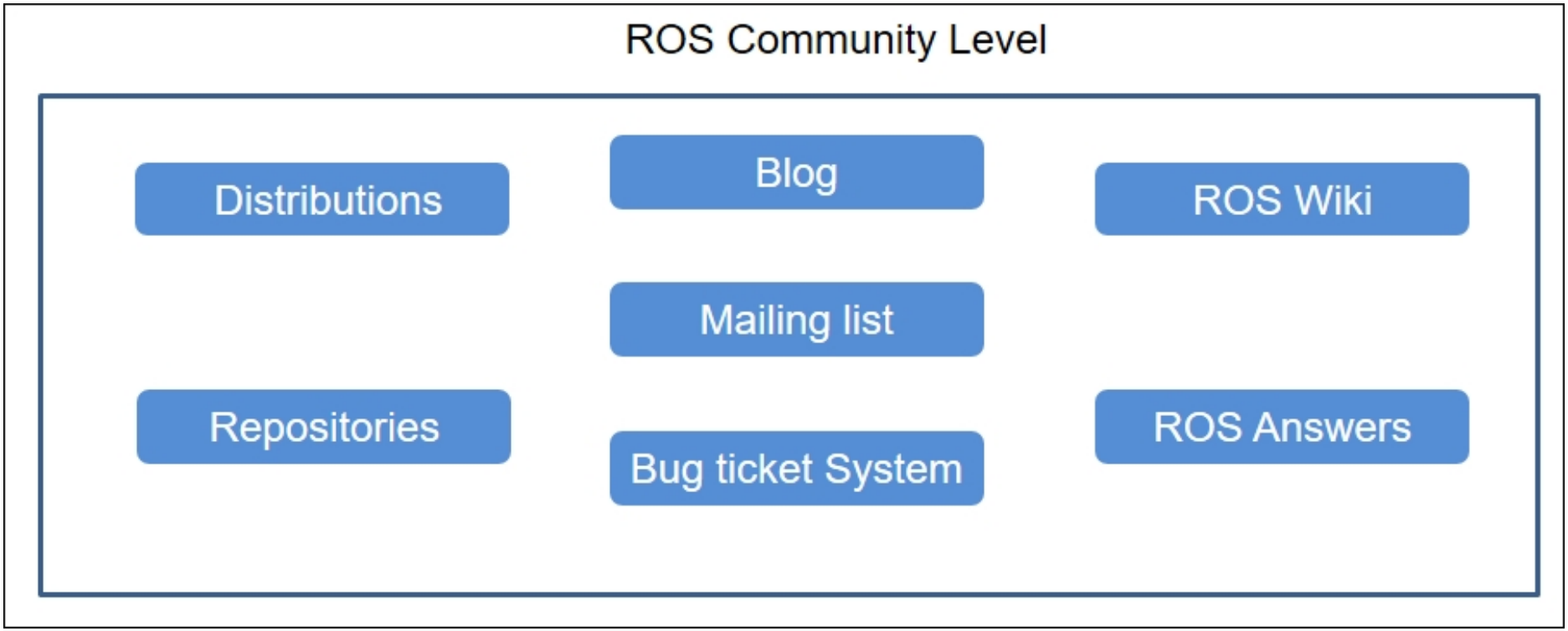
ROS Concepts

Computation Graph: Master



ROS Concepts

Community level



Installation

- Debian-based distributions such as Ubuntu.
- Many robots.
- Current supported distributions
  - ROS Kinetic Kame, Released May, 2016.
  - ROS Melodic Morenia, Released May, 2018

Installation

After choosing the distribution follow the instruction on ROS Wiki which start by:

- Configure your Ubuntu repositories.
- Setup your sources.list.
- Set keys.
- Install with "sudo apt-get install ros-kinetic-desktop-full".

Future of ROS

- Security
- Critical Missions
- Distributed Processing

Thanks !