ROS-Industrial Consortium European Union Update

2022 Annual Meeting

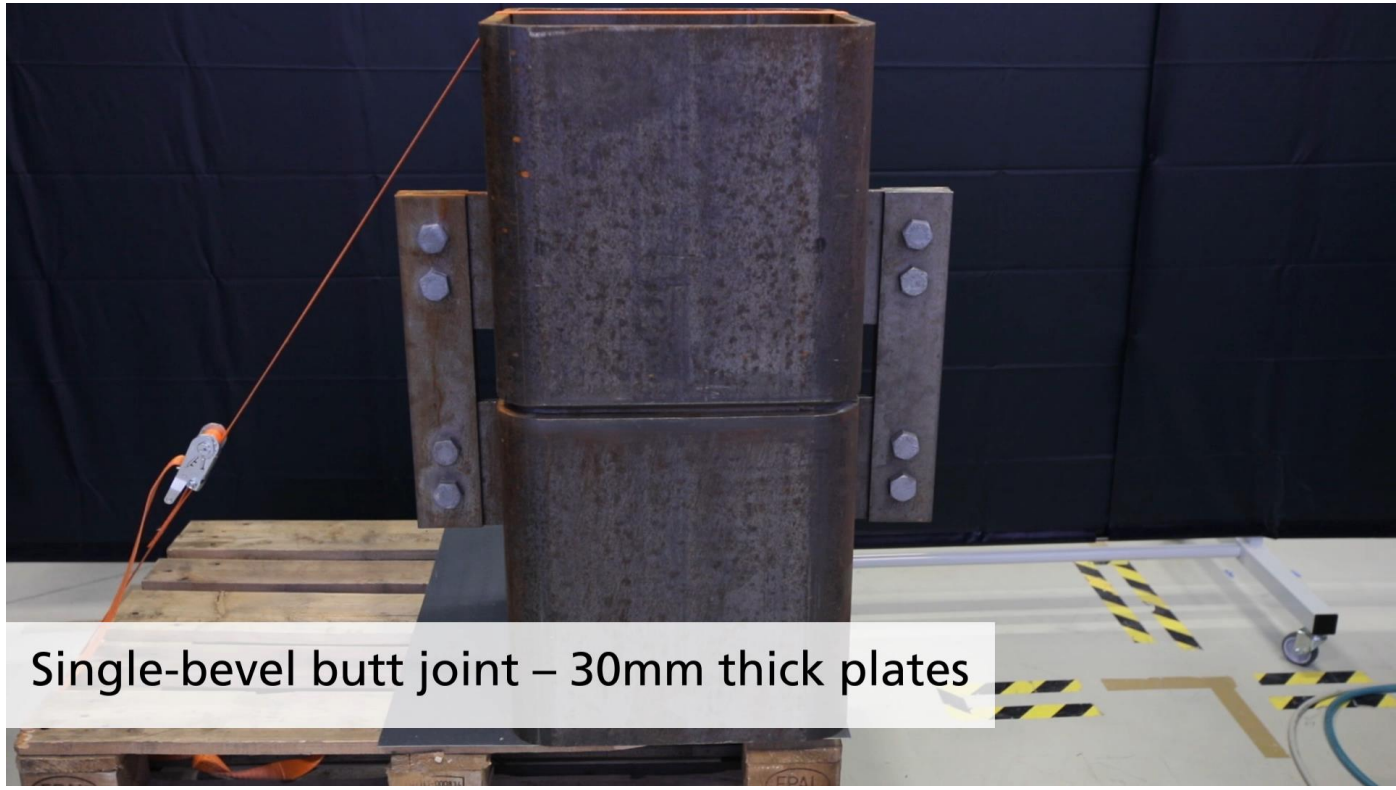
Contents

- New applications
- New packages
- New integration technologies

New Application Technologies

Welding

- Robotic multi-path welding on construction sites
- Weld seam detection
- Weld path planning for optimal process quality
- Collision avoidance
- Slag removal

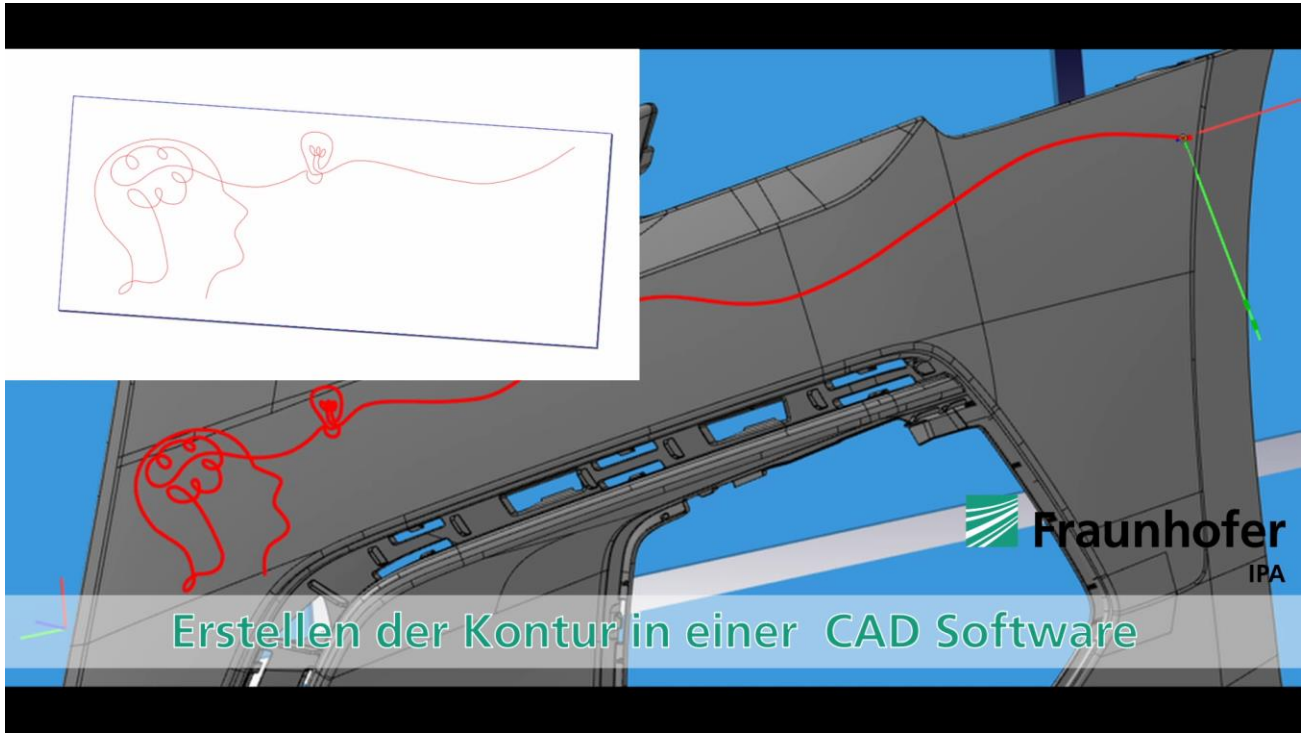


Available Code:

https://github.com/PickNikRobotics/UR10e_welding_demo

Printing

- Planning based on CAD data in CAD software
- Online trajectory adaption to achieve higher accuracy, based on line laser
  - Correction of spraying tool angle
  - Correction of spraying tool distance

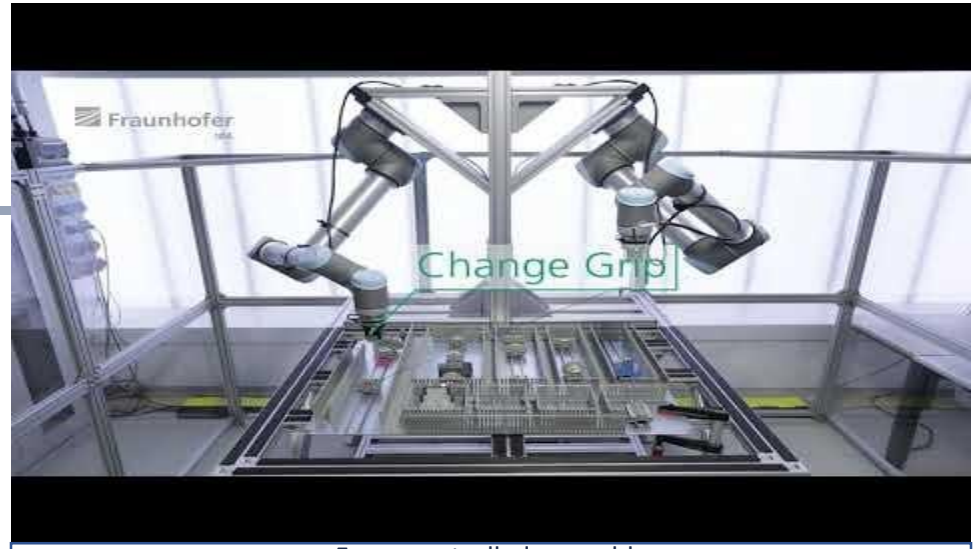


Code: Not published yet.

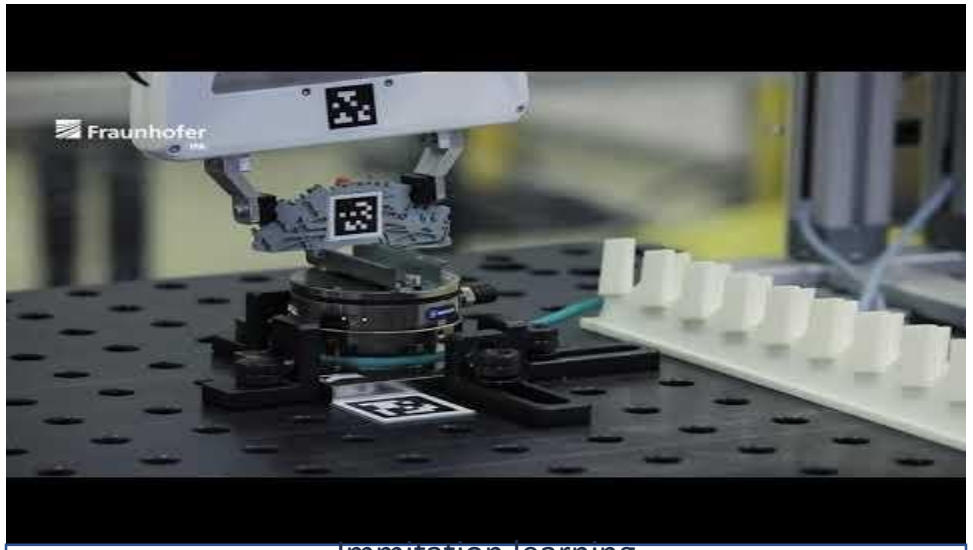
Assembly

- pitasc framework for force controlled assembly applications
- Enables describing assembly task based on skills
- Currently being integrated with imitation learning solution
- Looking for applications

Code: Not published yet, but on agenda.



Force controlled assembly
https://www.youtube.com/watch?v=xXR2FxPVqa4

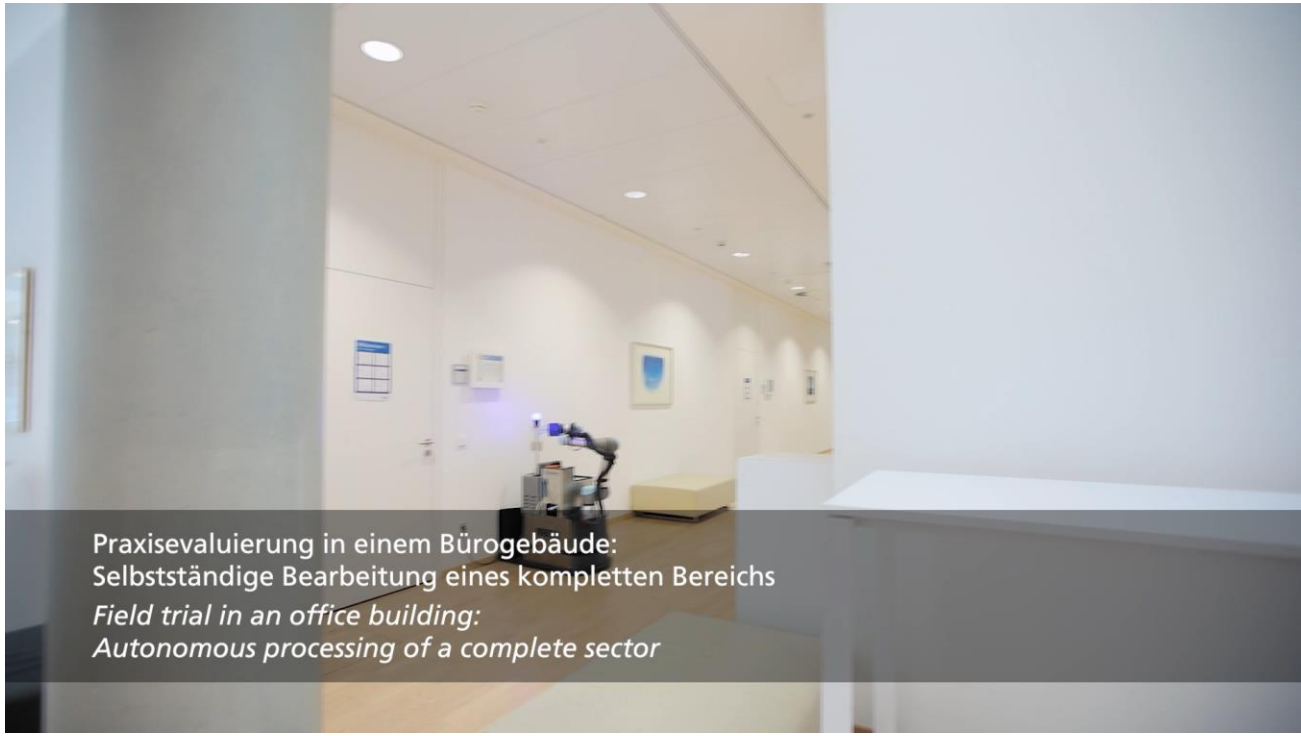


Immitation learning
https://www.youtube.com/watch?v=cBf5LdvRLV8

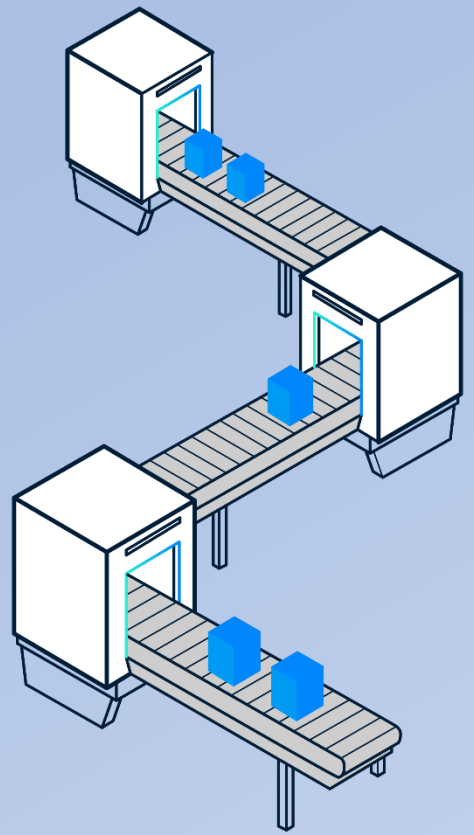
Cleaning

- Cleaning of door handles and light switches
- Detection of door handles and light switches
- Thorough Cleaning using brushes

Code: Not published yet.

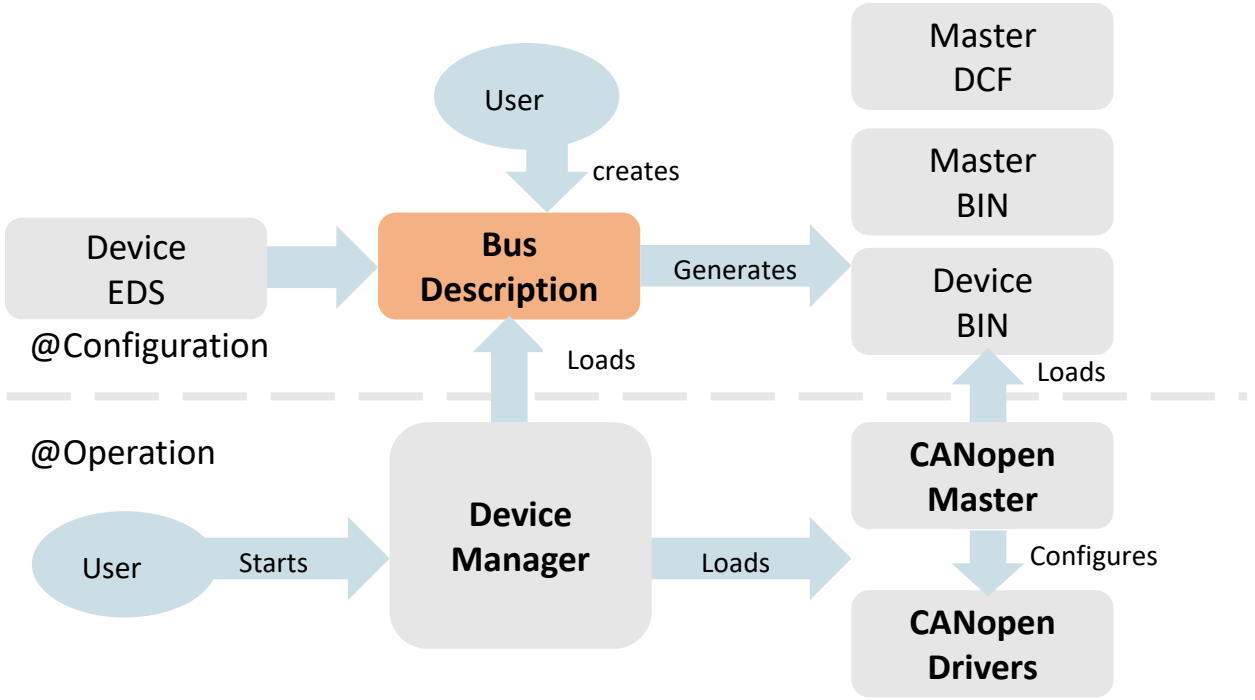


New Packages



CANopen

- Bringing CANopen to ROS2
- Complete redesign of ros_canopen packages
- Integration with Lely's CANopen stack
- Advanced configuration
- Using ROS2's composition and lifecycle features
- Integration with ros2_control on roadmap
- Beta release planned for September



Code: https://github.com/ros-industrial/ros2_canopen (Alpha version)

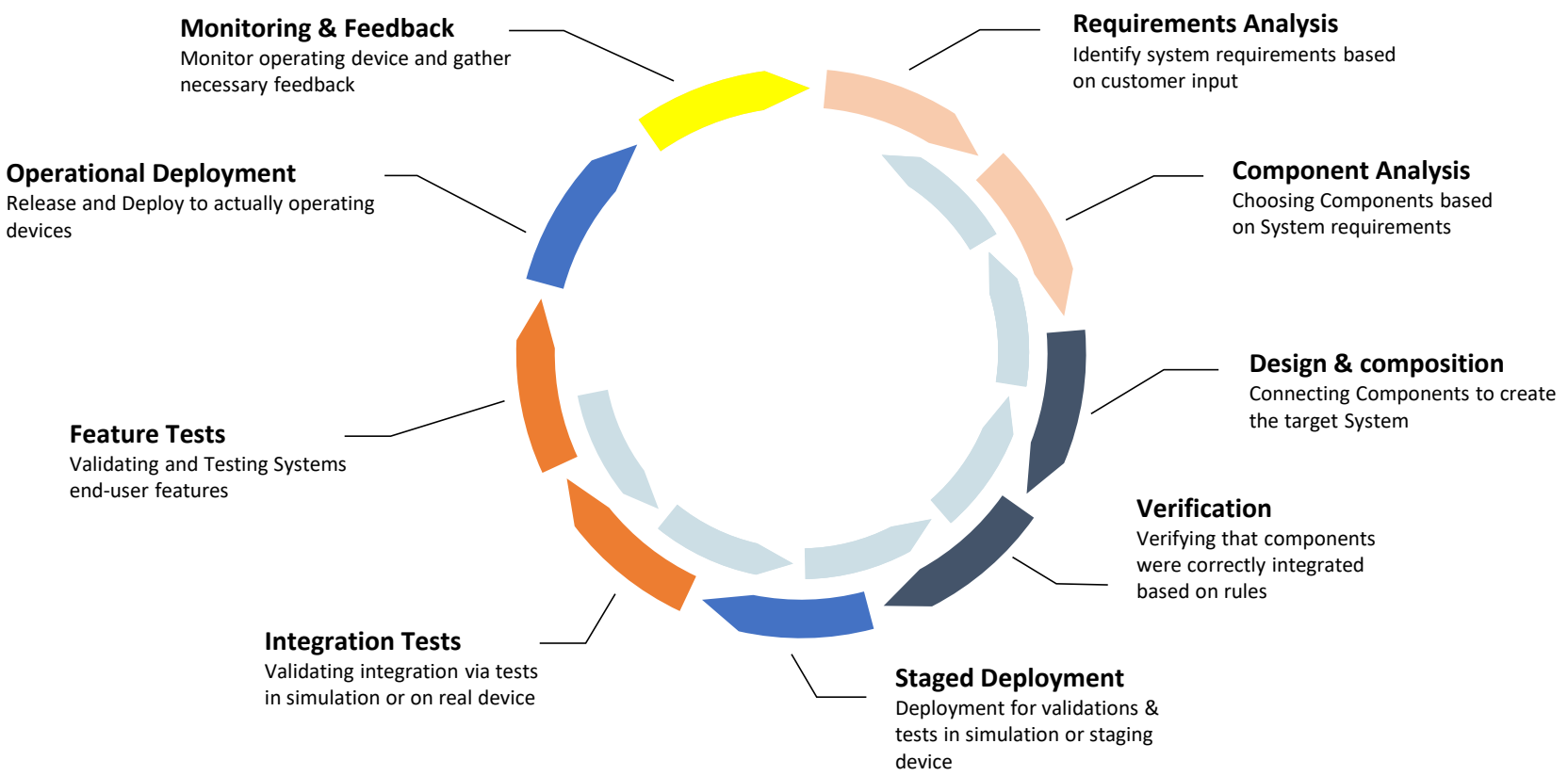
Pepperl+Fuchs Laserscanner

- Refactoring for better stability
- Integration of new functionalities
- Porting to ROS2 under way

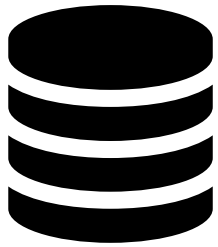
Code: https://github.com/PepperlFuchs/pf_lidar_ros_driver

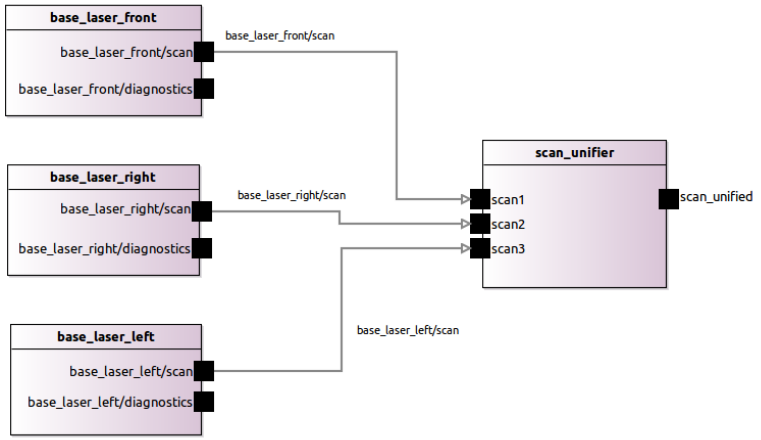
System Integration Technologies

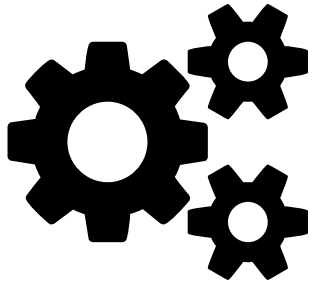
Robot Software System Lifecycle



ROS Model







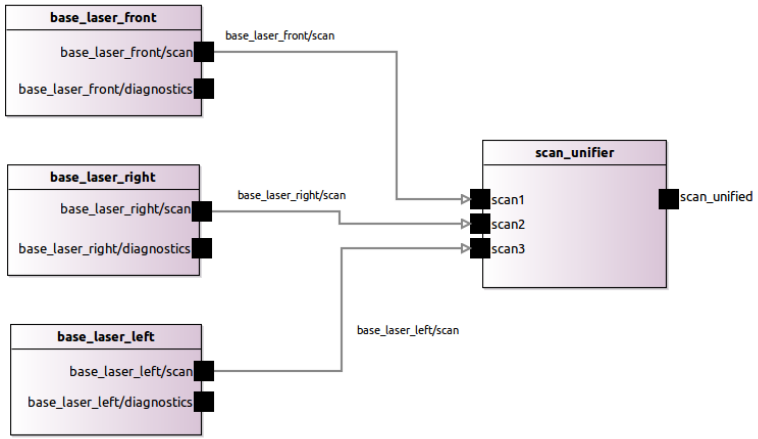
Component Model Database

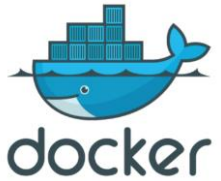
Graphical composition tool

Composition Verification Checks

Code: https://github.com/ipa320/ros-model

ROS Deploy





System model

System image / Runtime

Code: internal incubation, to be published soon.

Thank You

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