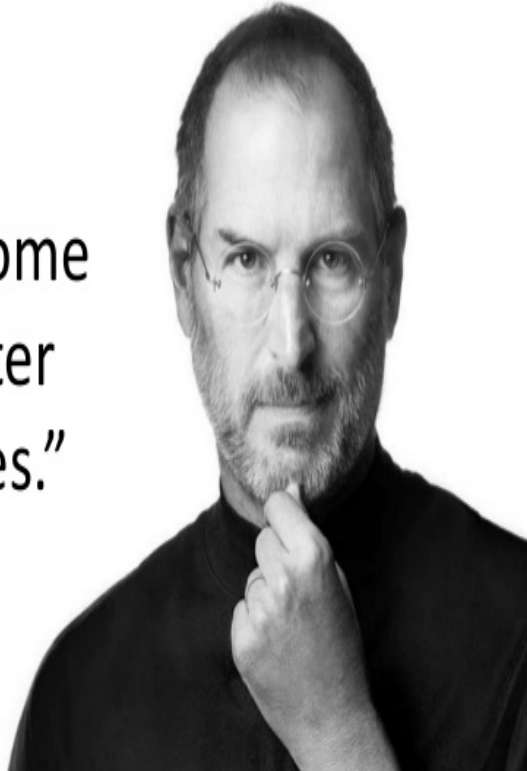


“Quality is more important than quantity. One home run is much better than two doubles.”
- *Steve Jobs*



HOW DOES ROS CARE ABOUT QUALITY?

HOW DOES ROS CARE ABOUT QUALITY?

A preliminary study of ROS Quality Assurance (QA) practices and the nature of ROS bugs



rosin-project.eu



Preliminary Study

■ Objectives:

■ Understand the As Is

- What are the current quality assurance (QA) and quality control practices?
- What are the current quality assurance challenges?
- What are the characteristics of ROS bugs?

■ Methods:

- Intensive interviews conducted with community members
- Analysis of ROS Wiki and online documentations
- The analysis of 177 reported bugs representative collection of ROS code repositories

This is what we learned from the community

I. THIS IS WHAT WE LEARNED FROM THE COMMUNITY

It's a role-based environment:

- (1) Core Development,
- (2) Driver and Reusable Packages Development,
- (3) Application Development

ROS cares about quality: some industry established practices have been implemented but experiencing some challenges.

Quality Assurance Challenges

Core Development

- ❖ Lack of overview for new contributors
- ❖ Heterogeneous quality criteria
- ❖ Maintenance effort
- ❖ Lack of maintainers
- ❖ Unmaintained packages
- ❖ Late detection of errors

Driver and Reusable Packages Development

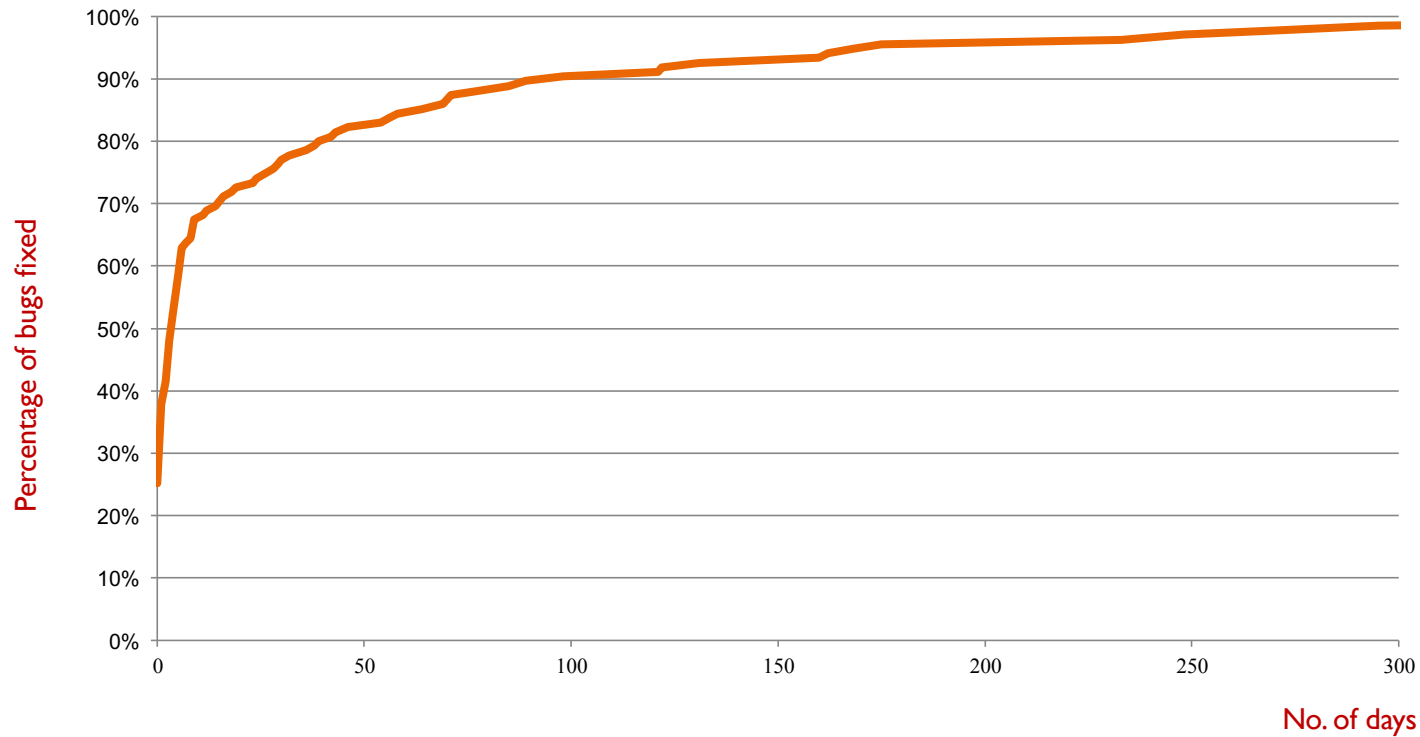
- ❖ Connection to hardware
- ❖ Quality of architectural design
- ❖ Lack of established processes

Application Development

- ❖ Complexity
- ❖ Selecting the right module
- ❖ Interdisciplinary domain
- ❖ User Interfaces

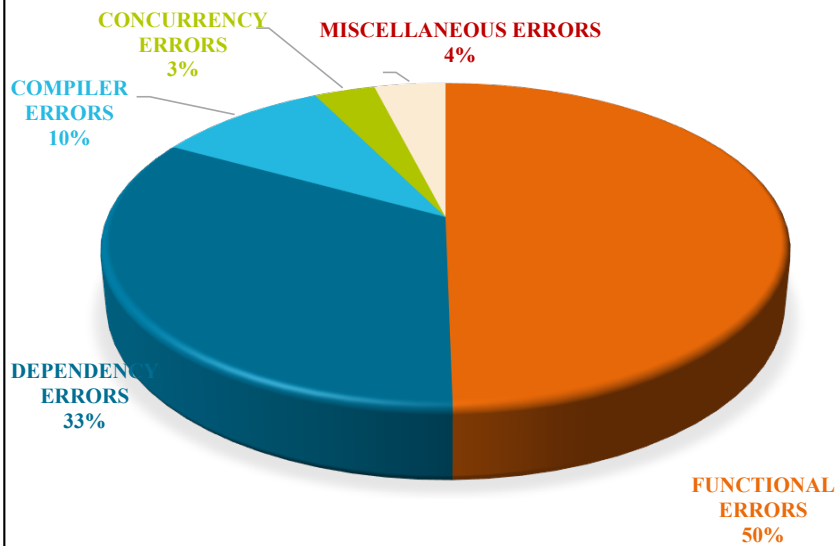
This is what we learned about ROS bugs

■ ROS Bugs Longevity

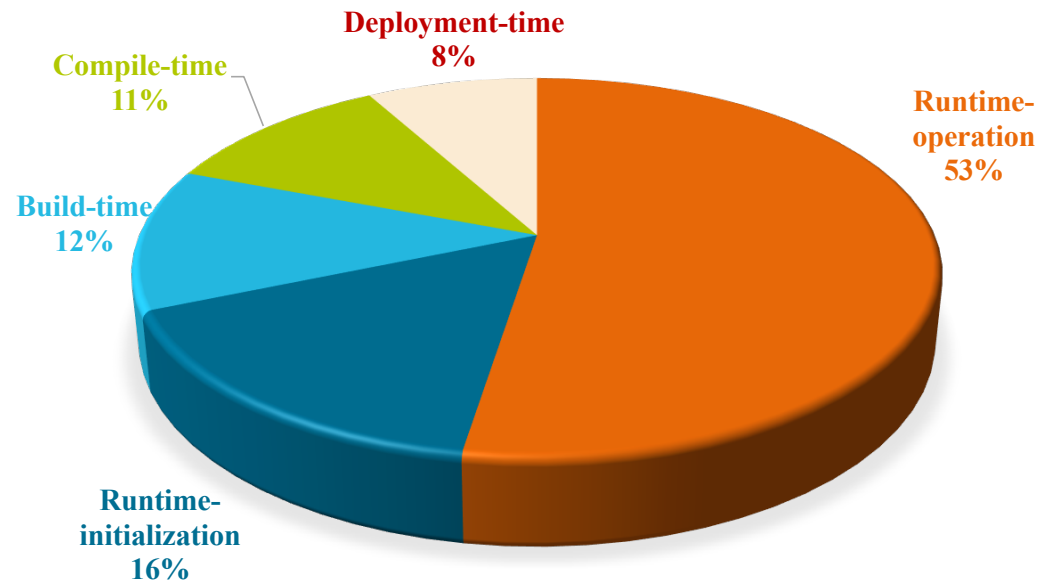


This is what we learned about ROS bugs

■ ROS Bugs Classification (i.e. types)



■ ROS Bugs Detection Phase



- Finding the functional errors is likely to take a wide collection of different techniques and tools. It appears to be worthwhile to add a wide collection of different code scanners to the continuous integration service.
- One out of seven bugs is reported by users.

How does ROS care for quality?

- ROS cares about quality:
 - Established QA practices are in place
 - However:
 - The execution and implementation of these practices is experiencing some challenges.
 - It seems that these practices are not ingrained in the community, lacks of consistency in the application of QA practices.
 - Tools and methods in practice need to be expanded (i.e. code scanning techniques) and further analysis required to identify the right fits.
- Next:
 - Work closely and collaboratively with the community:
 - To address the current challenges
 - Implement the recommendations (i.e. CI, code scanning techniques, etc.)
 - Extend this study to more participants to understand further the current challenges

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Poster session for questions, feedback and discussion

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