ROS Embedded Working Group on 3 March 2021

Quality Levels for micro-ROS

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Quality Levels for micro-ROS
Introduction

- Allow developers to evaluate whether a package meet the quality standards in their project
- REP-2004 (https://ros.org/reps/rep-2004.html) defines Package Quality Categories for ROS
- Five Quality Levels from 1 (highest) to 5 (lowest)
  - Without any measures, a package/repo is Quality Level 5
  - Higher levels are strict super-sets of lower levels
  - Not per repo but per package. Tutorials, examples, etc. typically have a lower Quality Level

- Aspects: Version policy, change control, documentation, testing, dependencies, platform support, security

- Core packages (rmw, rcl, rclcpp) have reached Quality Level 1
  - Example https://github.com/ros2/rclcpp/ → rclcpp → QUALITY_DECLARATION.md

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Quality Levels for micro-ROS
Analysis of Quality Level Requirements

Requirement	QL	Evaluation for micro-ROS	
Version Scheme [1.i]	≤ 3	◕	Partially available. Easy to achieve.
Version Stability [1.ii]	≤ 3	◕	Can be argued for most of our packages.
Public API Declaration [1.iii]	≤ 2	●	Already available for core repositories.
API Stability Policy [1.iv]	≤ 3	◕	Probably not a problem for us. To be discussed.
ABI Stability Policy [1.v]	≤ 3	◕	Reduces speed w.r.t. new features. To be discussed.
ABI and ABI Stability (within Distro) [1.vi]	≤ 2	◔	Reduces speed w.r.t. new features. To be discussed.
Change Requests [2.i]	≤ 3	●	Already in place for core repositories.
Contributor Origin [2.ii]	≤ 2	◑	DCO used in upper layer repositories. Should be enforced as in ros2 org.
Peer Review Policy [2.iii]	= 1	◕	Lived practice for core repositories. Check for further technical measures.
Continuous Integration [2.iv]	≤ 3	●	Lived practice for core repositories. Well documented on website.
Documentation Policy [2.v]	= 1	◕	Straightforward

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Quality Levels for micro-ROS
Analysis of Quality Level Requirements (cont'd)

Feature Documentation [3.i]	≤ 2	◕	To be discussed. Much documentation already in place.
Public API Documentation [3.ii]	= 1	◕	Lived practice for core repositories. Should we add Doxygen?
License [3.iii]	≤ 4	●	Lived practice for core repositories.
Copyright Statements [3.iv]	≤ 4	◕	Copyright statements in place. Attribution of authors in NOTICE file.
Quality declaration document [3.v]	≤ 3	○	To be implemented.
Feature Testing [4.i]	≤ 2	◔	Not yet implemented systematically.
Public API Testing [4.ii]	= 1	◕	Not yet implemented systematically.
Coverage [4.iii]	≤ 2	◔	Only for few repositories so far (e.g., system modes).
Performance [4.iv]	= 1	○	Not yet implemented. Is there already something for Micro-XRCE-DDS?
Linters and Static Analysis [4.v]	≤ 2	◕	Standard tools are used from ROS 2 toolchain.
ROS Dependencies [5.i]/[5.ii]	≤ 2	○	Not analyzed yet, but probably not an issue
Direct Runtime non-ROS Depend. [5.iii]	≤ 2	○	To be analyzed and documented
Support of all tier 1 platforms [6]	≤ 3	◔	Not tested systematically. Is Windows supported? macOS to be removed from tier 1.
Vulnerability Disclosure Policy [7.i]	≤ 2	○	To be implemented.

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Quality Levels for micro-ROS
Proposal for Target Quality Levels

- Biggest step for us is between QL 3 and QL 2 (and not between QL 2 and QL 1)
- “Aim low, shoot high” – let’s start with QL 3

- How to align with Galactic roadmap (in particular for rclc repository)?
  - Upcoming dates from ROS 2 Galactic Geochelone (codename ‘galactic’; May, 2021)
    - March 22 - Release all packages into Rolling
    - April 5 - Feature and API freeze; only bugfixes after this
    - April 19 - Branch Galactic from Rolling

  https://discourse.ros.org/t/ros-2-tsc-meeting-minutes-2021-02-18/

- Focus on packages that go on the MCU
- [RTOS]_apps repositories may be considered as non-ROS dependencies

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