
# Introducing industrial_ci

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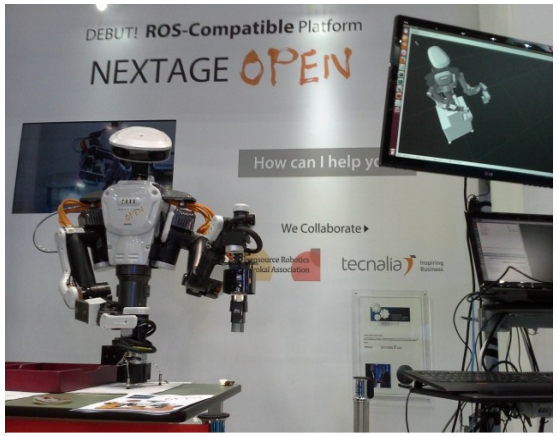
# **TORK** (Tokyo Opensource Robotics Kyokai Association)

- Non-profit consultancy (2013~)
- ROS package support
  - Kawada NEXTAGE Open
  - Denso VS series
- Workshop, seminar (50+ occurrences)
- Custom development




NEXTAGE Open

Toyota “HSR” welfare robot hackathon

Workshop to public

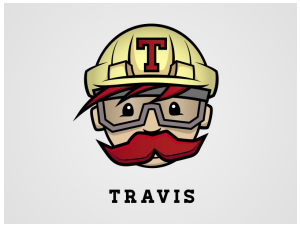
# CI (Continuous Integration)

- Automated software development processes
  - Build
  - Test
  - Deployment (install)
  - Test from install space

- With CI you can:
  - find earlier platform incompatibility
  - find earlier regression if any
  - get more confidence, get peace of mind

# Existing CI services/software

- Many CI services available online







- ros.org provides extensive features for ROS developers.


- buildbot-ros

# Issue with CI for robotics engineers

- Configuring CI jobs takes some experience (CI platform, s/w build process, etc.)
- “Tests are extremely important, but I didn't have time”
- Ends up with:
  - CI config not updated
  - CI not even introduced yet

# industrial_ci package

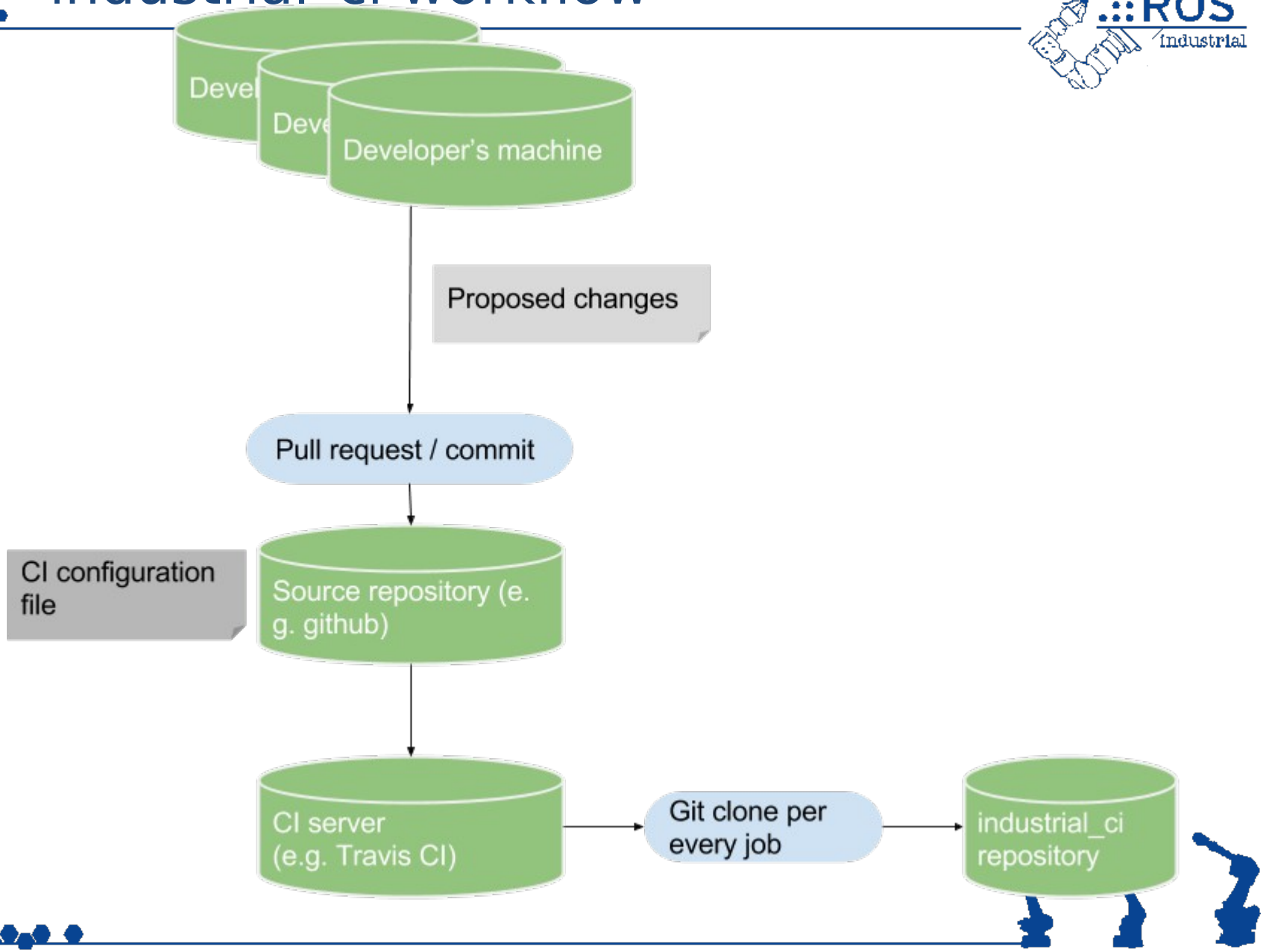
https://github.com/ros-industrial/industrial_ci/

- Provides CI configs commonly usable for ROS developers
- Originally a fork of jsk_travis (JSK lab, U-Tokyo)
- Travis CI is used mainly for now
  - Other CI service can be easily integrated
- ROS Indigo, Jade, Kinetic (docker)

# industrial_ci advantage

- Travis CI is maintained vigorously
- Flexibly customizable by setting environment variable (no programming knowledge required)
- Always the newest code is used (“git clone” for every test job)
- Can be used from private repo (e.g. corporate production)

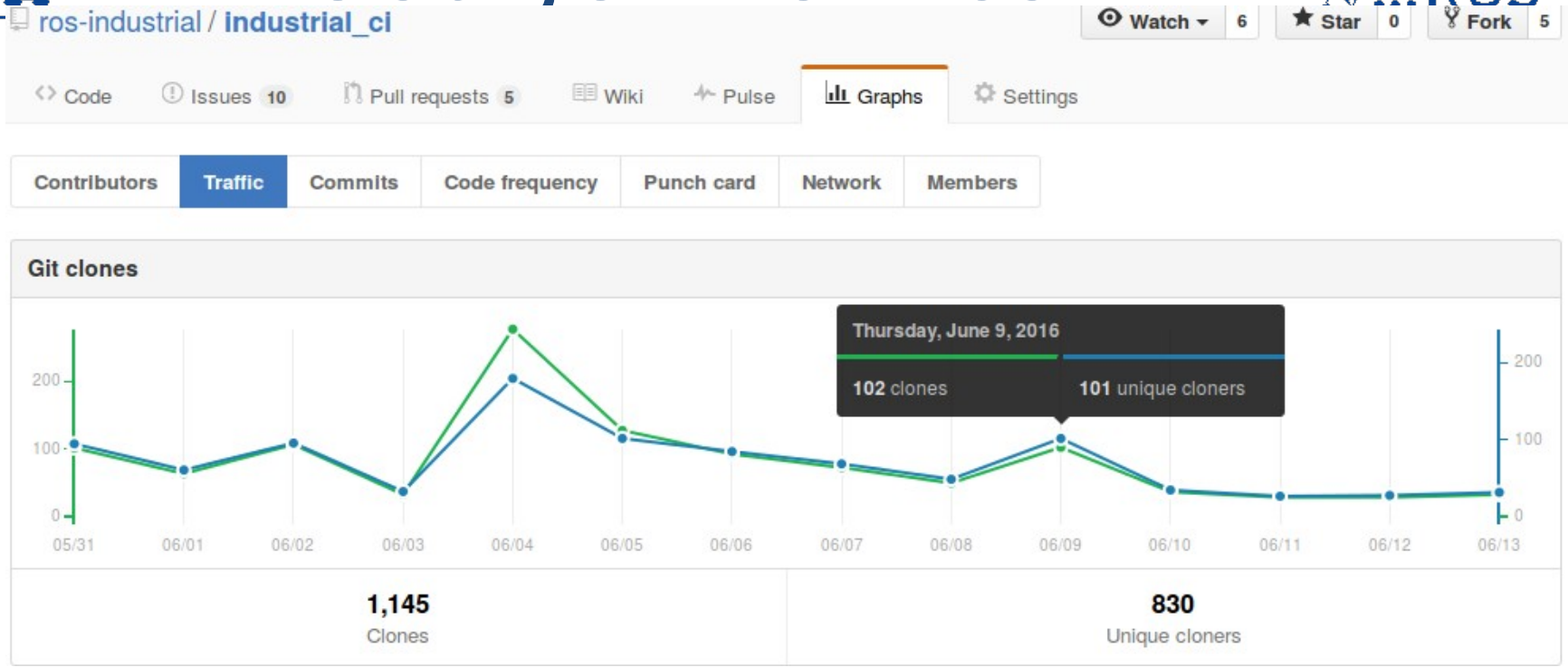
# industrial_ci workflow



# industrial_ci config file sample

```
# This config file for Travis CI utilizes ros-industrial/industrial_ci package.
# For more info for the package, see https://github.com/ros-industrial/industrial_ci/blob/master/README.rst
sudo: required
dist: trusty
services:
  - docker
language: generic
compiler:
  - gcc
notifications:
  email:
    on_success: always
    on_failure: always
    recipients:
      - gm130s@gmail.com
env:
  matrix:
    - ROS_DISTRO="indigo" ROS_REPOSITORY_PATH=http://packages.ros.org/ros/ubuntu  USE_DEB=true
    - ROS_DISTRO="indigo" ROS_REPOSITORY_PATH=http://packages.ros.org/ros-shadow-fixed/ubuntu  USE_DEB=true
    - ROS_DISTRO="indigo" PRERELEASE=true
    - ROS_DISTRO="jade"   ROS_REPOSITORY_PATH=http://packages.ros.org/ros/ubuntu  USE_DEB=true
    - ROS_DISTRO="jade"   ROS_REPOSITORY_PATH=http://packages.ros.org/ros-shadow-fixed/ubuntu  USE_DEB=true
    - ROS_DISTRO="jade"   PRERELEASE=true
matrix:
  allow_failures:
    - env: ROS_DISTRO="indigo" PRERELEASE=true  # Run docker-based ROS prerelease test http://wiki.ros.org/bloom/Tutorials/Prerele
    - env: ROS_DISTRO="jade"   PRERELEASE=true
    - env: ROS_DISTRO="jade"   ROS_REPOSITORY_PATH=http://packages.ros.org/ros/ubuntu  USE_DEB=true
    - env: ROS_DISTRO="jade"   ROS_REPOSITORY_PATH=http://packages.ros.org/ros-shadow-fixed/ubuntu  USE_DEB=true
install:
  - git clone https://github.com/ros-industrial/industrial_ci.git .ci_config
script:
  - source .ci_config/travis.sh
#  - source ./travis.sh  # Enable this when you have a package-local script
```

# Usage metrics




- Daily avg: 81 clones, 59 unique clones
- → Safe to say it's used 59 times per day

# Future work

- Improvements
  - Overcome Travis CI capacity (4MB)
- Delegate to software engineering tools ros.org provides
- Things to contribute to software maturity (as “industrial” context)
  e.g. CMMI?
- We’ll like to hear more usecases

# Followup

- Related resource in ROS community
  - “Continuous integration for ROS in commercial environments” by Mike Ferguson’s talk at ROSCon 2014
  - Test-driven development in ROS by Víctor González

    https://docs.google.com/presentation/d/1eraurS9rIMXyN0kbQMJdCyWOxRC5JTBV7FskyMaYNpM/present#slide=id.p

- Acknowledgement
  - All users!
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