LArSoft migration to GitHub

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Fermilab

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LArSoft migration to GitHub

- LArSoft central repositories moving from Redmine to GitHub
  - Better collaboration tools
  - More performant platform, e.g., for browsing / searching code
  - Aligned with direction SCD is moving
    The Redmine repositories will remain, but will be read-only
    New repositories in the LArSoft organization on GitHub: https://github.com/LArSoft

- Accompanying the move
  - We are adopting a pull-request model for code integration
    - Widely used within GitHub community
  - Pull requests will trigger a testing and approval workflow
    - Modeled after that used by CMS for the past 5-6 years
    - Based on a combination of custom scripts and GitHub features

The pull-request code integration model

- Most aspects of code development remain the same but…

    ...users no longer push code directly to the central repositories, or merge branches into develop

    - Central repositories are owned by the LArSoft organization on GitHub
        - Write access limited to a few people

The pull-request code integration model
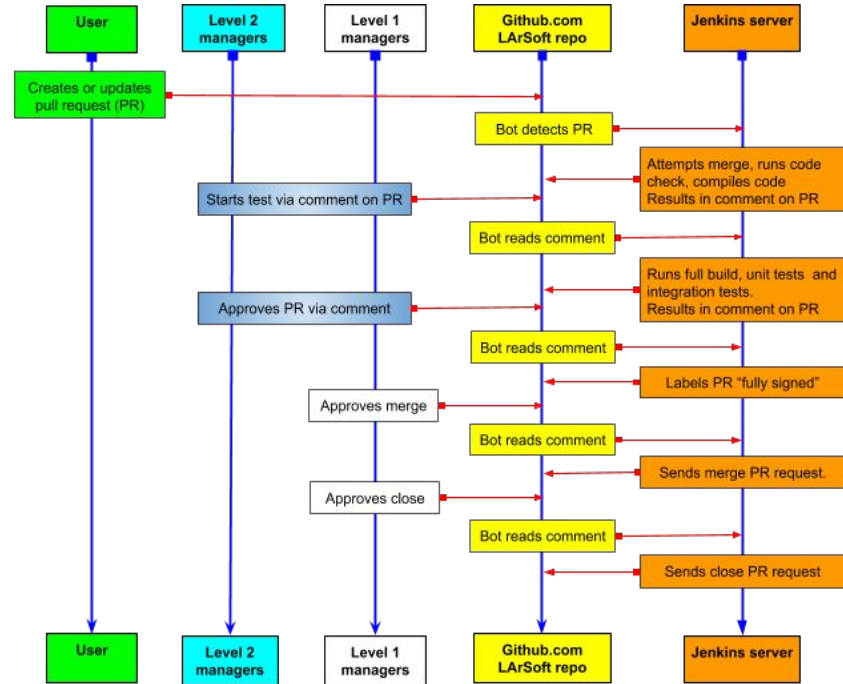
- Instead

  - Code is committed to repositories in *personal* GitHub accounts

    - Accounts / repositories owned by the individual developers
    - The personal repositories there are "forked" (ie, cloned) from the central repos

  - Then use GitHub to create a "pull-request" on a LArSoft repository

    - A request to take code from a branch in the source (personal) repository, and merge it into a branch (develop) in the target (central) repository

    - Provides an opportunity to run CI tests and review code *before* it is merged
    - An improvement over current system, which runs CI tests *after* the fact

Overview of the pull-request testing & approval workflow

- Based on a sequence of automated tests run on CI system mediated by "level 2 managers" with each experiment

  - Tests include:
    - a set of "code checks"...
      - Potentially checks formatting and coding convention compliance.
      - Nothing at present
    - ...full build...
    - ...run of complete CI test suite…
    - ...final L2 approval…

- Code is then merged by "level 1 managers"
  - Members of SciSoft team

Overview of the pull-request testing & approval workflow

○ The workflow operates via scripts that read and post comments attached to the pull-request

  ■ CI jobs launched in response to comments by L2 / L1 managers

  ■ The CI system posts comments with test results, updates labels attached to PRs

  ■ The labels indicate the status / state of the approval workflow

https://cdcvs.fnal.gov/redmine/projects/larsoft/wiki/Pull_request_testing_and_approval_workflow 6

Example PR workflow

New PR created

Third cosmetic change to test GitHub PR process #7

Edit

Open erica-snider wants to merge 1 commit into `LArSoft:develop` from `erica-snider:feature/es_gh_test3`

Conversation 0 | Commits 1 | Checks 0 | Files changed 1   +1 −1 ■■□□□

erica-snider commented 29 seconds ago   Member +☺ ···

No description provided.

Third cosmetic change to test GitHub PR process   a599a4d

FNALbuild added `code-checks-pending` `L1-pending` `L2-pending` `signatures-pending` `tests-pending` labels now

FNALbuild commented now   Member +☺ ···

A new Pull Request was created by **@erica-snider** for develop.

It involves the following packages:

larreco

@LArSoft/level-1-managers, **@LArSoft/level-2-managers**, **@FNALbuild** can you please review it and eventually sign? Thanks.
@gartung this is something you requested to watch as well.

cms-bot commands are listed here

FNALbuild commented now   Member +☺ ···

The code-checks are being triggered in jenkins.

Reviewers   ⚙
No reviews

Assignees   ⚙
No one—assign yourself

Labels   ⚙
L1-pending
L2-pending
code-checks-pending
signatures-pending
tests-pending

Projects   ⚙
None yet

Milestone   ⚙
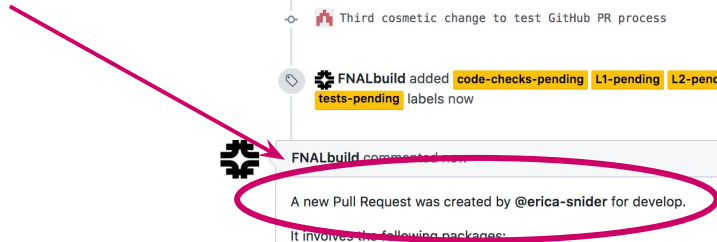No milestone

Notifications   Customize
🔇 Unsubscribe
You're receiving notifications because you're watching this repository.

2 participants

Example PR workflow

Workflow scripts detect new PR and launch code checks

CI system updates labels to reflect change in state

Example PR workflow

CI system posts comment with result of code checks, which in this case pass

Labels updated to reflect change in state

CI system updates labels to reflect change in state

Third cosmetic change to test GitHub PR process #7

Edit

🔀 Open   **erica-snider** wants to merge 1 commit into `LArSoft:develop` from `erica-snider:feature/es_gh_test3` 🗂

| 🗨 Conversation 0 | ⊙ Commits 1 | ✔ Checks 0 | 📄 Files changed 1 | +1 −1 ▮▮▯▯▯ |

erica-snider commented 1 minute ago   Member +😊 ···

No description provided.

Third cosmetic change to test GitHub PR process   a599a4d

Reviewers ⚙
No reviews

Assignees ⚙
No one—assign yourself

Labels ⚙

-checks-pending   L1-pending   L2-pending   signatures-pending

Labels:
L1-pending
L2-pending
code-checks-approved
signatures-pending
tests-pending

FNALbuild commented 1 minute ago   Member +😊 ···

The code-checks are being triggered in jenkins.

FNALbuild commented 32 seconds ago   Member +😊 ···

+code-checks
for details see
http://buildmaster.fnal.gov/buildmaster/job/GithubIntegration/job/run-pr-code-checks//292/console

🏷 **FNALbuild** added `code-checks-approved` and removed `code-checks-pending` labels now

Add more commits by pushing to the **feature/es_gh_test3** branch on **erica-snider/larreco**.

ed by @erica-snider for develop.

es:

@LArSoft/level-2-managers, @FNALbuild can you please review it
u requested to watch as well.

here

Projec
None

Milest
No mi

Notifications   Customize
🔕 Unsubscribe
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2 participants

9

Example PR workflow

Code checks passed, so L2 approver triggers build and test via comment

Third cosmetic change to test GitHub PR process #7

Edit

Open erica-snider wants to merge 1 commit into LArSoft:develop from erica-snider:feature/es_gh_test3

Conversation 0   Commits 1   Checks 0   Files changed 1   +1 −1

erica-snider commented 4 minutes ago   Member +☺ ⋯

No description provided.

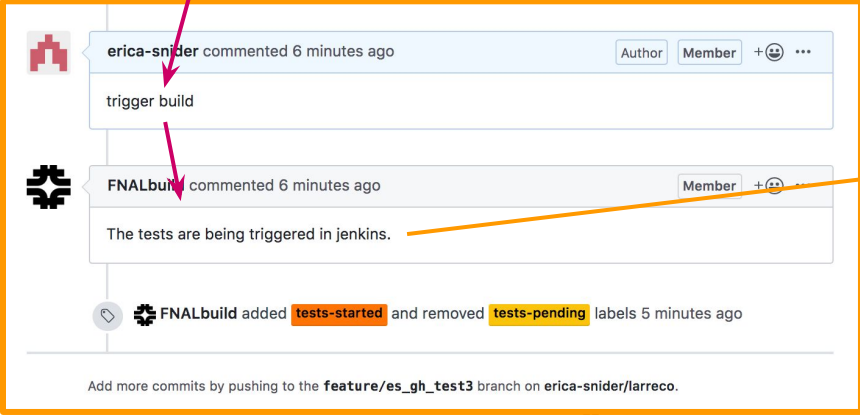Third cosmetic change to test GitHub PR process   a599a4d

erica-snider commented 6 minutes ago   Author Member +☺ ⋯

trigger build

FNALbuild commented 6 minutes ago   Member +☺ ⋯

The tests are being triggered in jenkins.

🏷 FNALbuild added tests-started and removed tests-pending labels 5 minutes ago

Add more commits by pushing to the **feature/es_gh_test3** branch on erica-snider/larreco.

...cks-pending   L1-pending   L2-pending   signatures-pending
...go

...go   Member +☺ ⋯

@erica-snider for develop.

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...quested to watch as well.

...go   Member +☺ ⋯

The code-checks are being triggered in jenkins.

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No reviews

Assignees ⚙
No one—assign yourself

Labels ⚙
L1-pending
L2-pending
code-checks-approved
signatures-pending
tests-started

Projects
None yet

Milestone
No milestone

Notifications   Customize
◀× Unsubscribe

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2 participants

CI system updates labels to reflect change in state

Example PR workflow

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Third cosmetic change to test GitHub PR process #7

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💬 Conversation 0   ◇ Commits 1   ☑ Checks 0   📄 Files changed 1   +1 -1 ■■■■

erica-snider commented 4 minutes ago   Member +😀 ⋯

a599a4d

L2-pending   signatures-pending

And so on...

erica-snider commented 6 minutes ago

trigger build

FNALbuild commented 6 minutes ago   Member +😀 ⋯

The tests are being triggered in jenkins.

@erica-snider for develop.

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Labels ⚙
L1-pending
L2-pending
code-checks-approved
signatures-pending
tests-started

Projects
None yet

Milestone
No milestone

Notifications   Customize
🔕 Unsubscribe
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2 participants

CI system updates labels to reflect change in state

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The Level 1 and Level 2 managers

- The approval workflow managers
  - Level 1 managers
    - Lynn Garren, Patrick Gartung, Erica Snider

    https://github.com/orgs/larsoft/teams/level-1-managers/members for live list of active L1 managers

  - Level 2 managers
    - DUNE: David Adams, Christoph Alt, Tom Junk, Tingjun Yang
    - ICARUS: Tracy Usher
    - LArIAT: Jonathan Asaadi
    - MicroBooNE: Herb Greenlee
    - SBND: Roxanne Guenette, Andrzej Szelc
    - SBN: Andy Mastbaum

    TBC!!

    https://github.com/orgs/larsoft/teams/level-2-managers/members for live list of active L2 managers

GitHub migration deployment plan

- **System nearing end of testing phase now**
  - Available to experiment offline leaders for several months now
  - Seeking further input asap

- **Plan to perform the migration on Tues or Wednesday of next week**
  - Jan 21 or 22

- **Procedure: estimate 4 hours total**
  - Delete contents of current LArSoft organization repositories on GitHub
  - Freeze commits to Redmine repository (early am Chicago time)
  - Clone repositories into GitHub
  - Final checks
  - Open the system

GitHub migration deployment plan

Should unforeseen problems occur:

- Fallback 1
  - Migrate repositories, but do not operate full testing workflow

- Fallback 2
  - Re-open Redmine repositories and postpone migration

Resources and documentation

- Documentation on LArSoft wiki (still under development -- comments welcome)

  - Top level page: "Working with GitHub"
    - https://cdcvs.fnal.gov/redmine/projects/larsoft/wiki/Working_with_GitHub
    - This page linked from "Quick links" and "Developing with LArSoft" pages
    - Contains quick overview and navigation links to other pages
  - Important pages to note
    - Overview of PR testing and approval system
      - https://cdcvs.fnal.gov/redmine/projects/larsoft/wiki/Pull_request_testing_and_approval_workflow
    - Basics of working with LArSoft on GitHub
      - https://cdcvs.fnal.gov/redmine/projects/larsoft/wiki/WorkingWithLArSoftGithubRepos
    - Moving existing feature branches from Redmine to GitHub
      - https://cdcvs.fnal.gov/redmine/projects/larsoft/wiki/Migrating_Redmine_Feature_Branches
    - For L1 and L2 managers, executing the workflow
      - https://cdcvs.fnal.gov/redmine/projects/larsoft/wiki/Executing_the_pull_request_approval_workflow
    - Also, explanations of labels, PR comment "commands", etc

Resources and documentation

- Other resources

    - Google for help with GitHub issues
    - SciSoft team members for approval workflow issues
    - Level 2 managers for your experiment to approve your code changes

The end