The Holy Trinity/Triforce of Software Engineering

Chris Allan
Outline

- The “Holy Trinity” or “Triforce”
- Integrating the components
- Case studies
- Discussion
WHAT IS THE HOLY TRINITY/TRIFORCE?
Holy Trinity/Triforce of Software Engineering

Issue Tracking

SCM

Continuous Integration
Holy Trinity/Triforce - Components

- Issue Tracking
  - Trello
  - Trac
  - Remine
  - GitHub pull requests (kind of)

- Continuous Integration
  - Jenkins
  - Travis
  - Snoopy Crime Cop (scc)

- Source Code Management (SCM)
  - Git
  - GitHub
HOW CAN WE INTEGRATE THESE COMPONENTS?
Holy Trinity/Triforce - Components

- Issue Tracking
  - Trello
  - Trac
  - Remine
  - GitHub pull requests (kind of)

- Continuous Integration
  - Jenkins
  - Travis
  - Snoopy Crime Cop (scc)

- Source Code Management (SCM)
  - Git
  - GitHub
Holy Trinity/Triforce of Software Engineering

- Issue Tracking
- Continuous Integration
- SCM
Typical CI workflow
Typical corgi™ workflow

GitHub Service Hook Event(s)

Build Triggers

Ticket, Issue, Card Updates

Talkback

Talkback

Talkback

Talkback

Talkback
CASE STUDY
ISSUE TRACKING
Case Study – Issue Tracking

- On GitHub
  - glencoesoftware/corgi
  - glencoesoftware/corgi#17
- Update issue (forward) and pull request (backward) links
- Change issue states
- Update issue with pull request commits
- Pick up tokens from commits or pull request
Case Study – Issue Tracking

Support #1070

Fix flake8, header and style errors in corgi

Added by Chris Allan less than a minute ago.

- Status: New
- Priority: Normal
- Assignee: Chris Allan
- Category: -
- Target version: -

Description
There are various flake8, header and style errors that need to be fixed in corgi.

Subtasks

Related issues

Also available in: Atom | PDF
Case Study – Issue Tracking

Flake8 and style (See gs-1070) #17

Referenced Issues:
- Issue 1070: Fix flake8, header and style errors in corgi

We can't automatically merge this pull request.
Use the command line to resolve conflicts before continuing.
Case Study – Issue Tracking

Support #1070

Fix flake8, header and style errors in corgi

Added by Chris Allan 14 minutes ago. Updated 2 minutes ago.

Status: In Progress
Priority: Normal
Assignee: Chris Allan
Category: 
Target version: 

Description
There are various flake8, header and style errors that need to be fixed in corgi.

Subtasks

Updated by Chris Allan less than a minute ago

PR 17: Flake8 and style from chris-allan/corgiflake8-and-style into glencoesoftware/corgi/master synchronized by chris-allan

Most recent commit: "Merge remote-tracking branch 'origin/master' into flake8-and-style"

Conflicts:
server.py":https://github.com/glencoesoftware/corgi/commit/5cdf6cc8c189f8d8911e7c97cae1adbaccd91e4e

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Case Study – Issue Tracking

- **chris-allan** added some commits 3 days ago
  - Fix flake8 warnings
  - Fix flake8 warnings
  - Fix flake8 warnings
  - Adding header
  - Move main code into main()
  - Merge remote-tracking branch 'origin/master' into flake8-and-style ...
  - Fix flake8 warnings

- **knabar** commented 6 minutes ago
  Changes look good to merge

- **joshmoore** commented just now

- **joshmoore** referenced this pull request from a commit just now
  - Merge pull request #17 from chris-allan:flake8-and-style ...

- **joshmoore** merged commit 1a75579 into glencoesoftware:master from chris-allan:flake8-and-style just now

- **joshmoore** closed the pull request just now

Pull request successfully merged and closed.
Case Study – Issue Tracking

There are various flake8, header and style errors that need to be fixed in corgi.

History

Updated by Chris Allan 32 minutes ago

- **Status** changed from New to In Progress

PR 17: Flake8 and style from chris-allan/corgi/flake8-and-style into glencoesoftware/corgi/master opened by chris-allan

Most recent commit: Move main code into main()

Updated by Chris Allan 24 minutes ago

PR 17: Flake8 and style from chris-allan/corgi/flake8-and-style into glencoesoftware/corgi/master synchronized by chris-allan

Most recent commit: "Merge remote-tracking branch ‘origin/master’ into flake8-and-style"

Conflicts:
server.py":https://github.com/glencoesoftware/corgi/commit/5cdf6cc8c169f6d8911e7c97cae1edbcdd91e4e

Updated by Chris Allan 20 minutes ago

PR 17: Flake8 and style from chris-allan/corgi/flake8-and-style into glencoesoftware/corgi/master synchronized by chris-allan

Most recent commit: Fix flake8 warnings

Updated by Josh Moore 2 minutes ago

- **Status** changed from In Progress to Resolved

PR 17: Flake8 and style from chris-allan/corgi/flake8-and-style into glencoesoftware/corgi/master merged by joshmoore

Most recent commit: Fix flake8 warnings
CASE STUDY
CONTINUOUS INTEGRATION
Case Study – Continuous Integration

- Truly continuous integration
  - Great for OMERO.web plugins

- On GitHub
  - glencoesoftware/corgi
  - will-moore/figure
  - chris-allan/figure

- On Jenkins
  - OMERO-4.4-webfigure
  - OMERO-4.4-webfigure-dev

- Trigger specific builds on pull request update
- Perform SCC merges
- Re-deploy with zero downtime on successful build

AKA: How Chris gobbled all the disk space on Howe!
Demo! (Part I)
Typical corgi™ workflow

GitHub Service Hook Event(s) → Talkback → Build Triggers → Ticket, Issue, Card Updates → Talkback

Talkback → Corgi

Talkback → Trac

Talkback → Redmine

Talkback → Trello
Case Study – Continuous Integration

![GitHub settings page with WebHook URLs](https://github.com/chris-allan/figure/settings/hooks)
Case Study – Continuous Integration
Case Study – Continuous Integration
Demo! (Part II)
DISCUSSION
TODOs

- **Trac**
  - A better performing environment
  - Version upgrade
  - Loose Agilo?

- **Modularize CORGI integration points**
  - Issue Tracking (Currently: Redmine; Needs: Trac, Trello)
  - Increase size of test suite
  - Pull requests welcome!

- **Expand SCC beyond the “merge build” use case**
  - Remove requirement on GitHub issues
  - Merge of more than just pull requests (integration branches)

- **Establish workflow with usable tokens**

- **Documentation**
  - Provide better exposure to `OMER0.py` artifacts
  - Zero downtime deployments with `nginx`