

A Crash Course for SU2 Hackers

Dr. Thomas D. Economon

3rd Annual SU2 Developers Meeting
University of Strathclyde
September 16, 2018

So, you want to be an SU2 developer?

Good news: it's easy.

**We leverage standard development processes
and the latest tools for open-source projects.**

You will be ready to hack at the end of this talk.

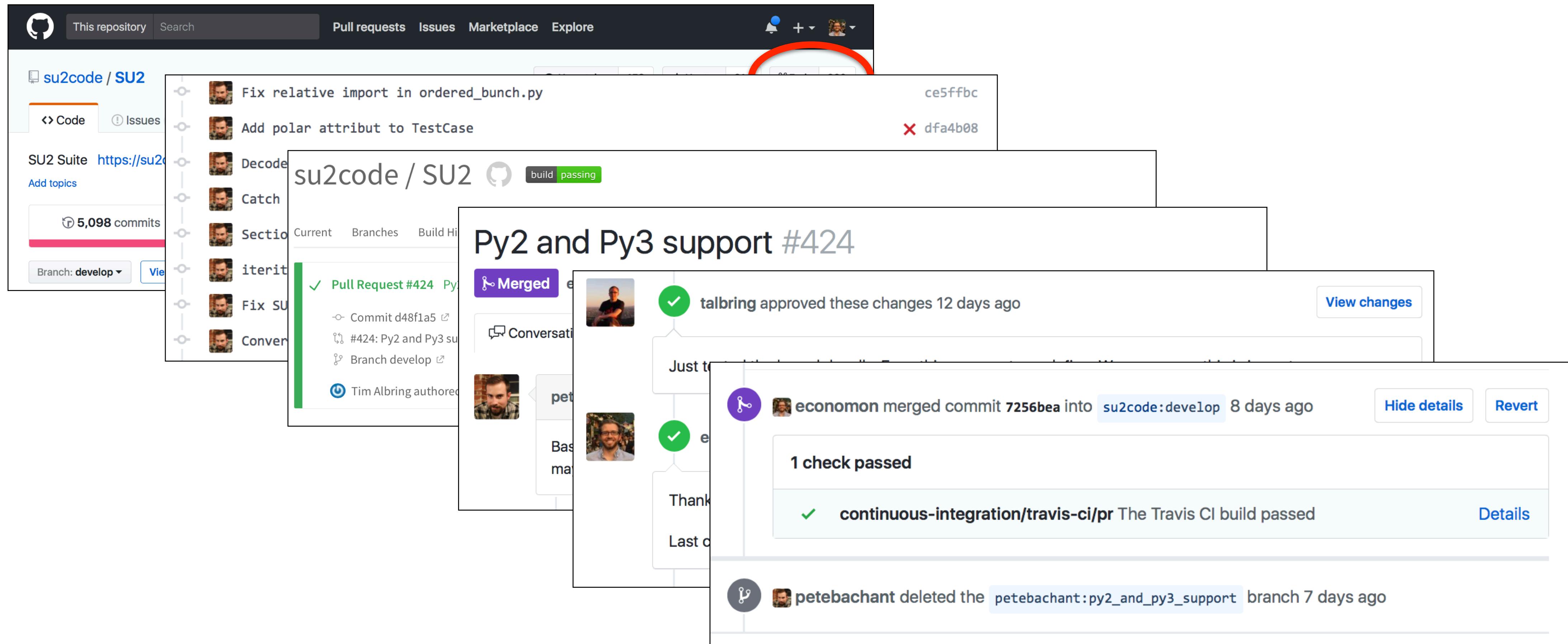
Git/Branching

Development

Regressions

Pull Request

Release



Anyone can be an SU2 developer.

Git/Branching

Development

Regressions

Pull Request

Release

The screenshot shows the GitHub repository page for `su2code/SU2`. At the top, there is a horizontal progress bar with five segments, each representing a stage of the software development lifecycle. The first segment, 'Git/Branching', is highlighted with a red circle. The second segment, 'Development', has a white circle. The third, 'Regressions', the fourth, 'Pull Request', and the fifth, 'Release', both have black circles. Below the progress bar is the GitHub header with the repository name, search bar, and navigation links for Pull requests, Issues, Marketplace, and Explore. The repository summary shows 5,764 commits, 151 branches, 36 releases, 52 contributors, and is licensed under LGPL-2.1. The main content area displays the commit history, with the latest commit being a merge from the `develop` branch. The 'Clone or download' button is highlighted with an orange oval.

SU2: An Open-Source Suite for Multiphysics Simulation and Design <https://su2code.github.io>

Manage topics

5,764 commits 151 branches 36 releases 52 contributors LGPL-2.1

Branch: master New pull request Create new file Upload files Find file Clone or download

koodlyakshay Change back to original. Latest commit f4116f4 7 days ago

File/Folder	Description	Time
<code>.github</code>	Added the PR template to the <code>.github/</code> folder in the root dir.	6 months ago
<code>Common</code>	Change back to original.	7 days ago
<code>QuickStart</code>	Merging <code>develop</code> .	3 months ago
<code>SU2_CFD</code>	Merging <code>develop</code> .	3 months ago
<code>SU2_DEF</code>	Merging <code>develop</code> .	3 months ago
<code>SU2_DOT</code>	Changed version numbers for v6.1.0.	3 months ago
<code>SU2_GEO</code>	Changed version numbers for v6.1.0.	3 months ago
<code>SU2_IDE</code>	Changed version numbers for v6.1.0.	3 months ago
<code>SU2_MSH</code>	Changed version numbers for v6.1.0.	3 months ago

Your starting point: <https://github.com/su2code/SU2>.

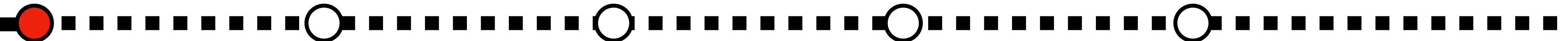
Git/Branching

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Here's that list of shell commands you should memorize:

- \$ git clone <https://github.com/su2code/SU2.git>
 - \$ git branch
 - \$ git checkout -b feature_awesome origin/feature_awesome
 - \$ git status
 - \$ git diff
 - \$ git commit -am "This is an awesome commit."
 - \$ git push origin feature_awesome
 - \$ git checkout develop
 - \$ git pull origin develop
 - \$ git merge develop

And their translations:

- Get a fresh copy of the entire repo (master branch to start)
 - Check which branches I have locally
 - Check out my feature branch that is already on the remote
 - Check which files have changed since last commit
 - Detailed diff of code changes since last commit
 - While working, make commits frequently with messages
 - Regularly push to the remote on GitHub
 - Switch to the develop branch (assuming you have it locally)
 - Merge the changes in the remote develop into local develop
 - Merge the changes from local develop into current local branch

Git/Branching

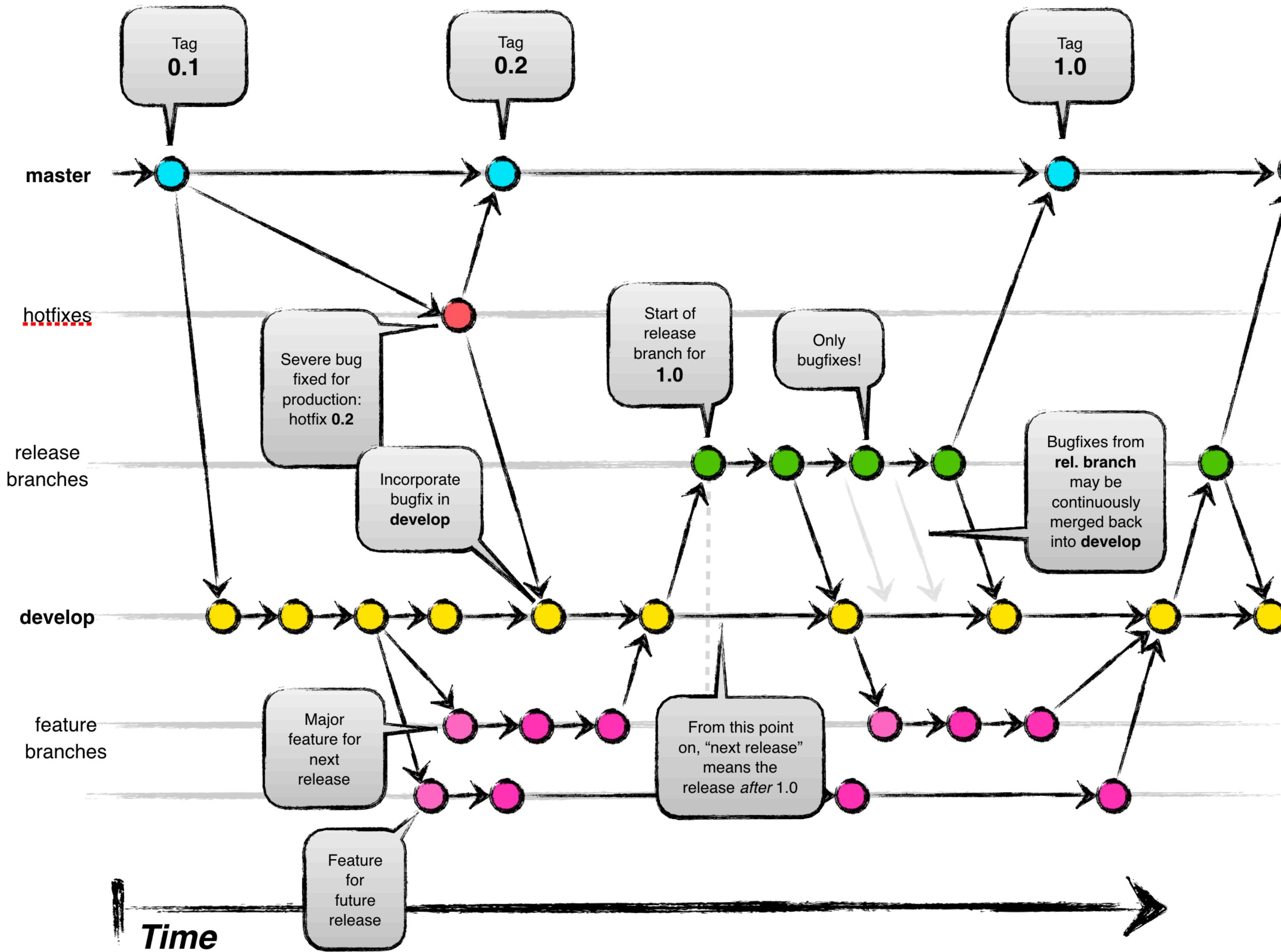
Development

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We use the popular
Gitflow branching
model.



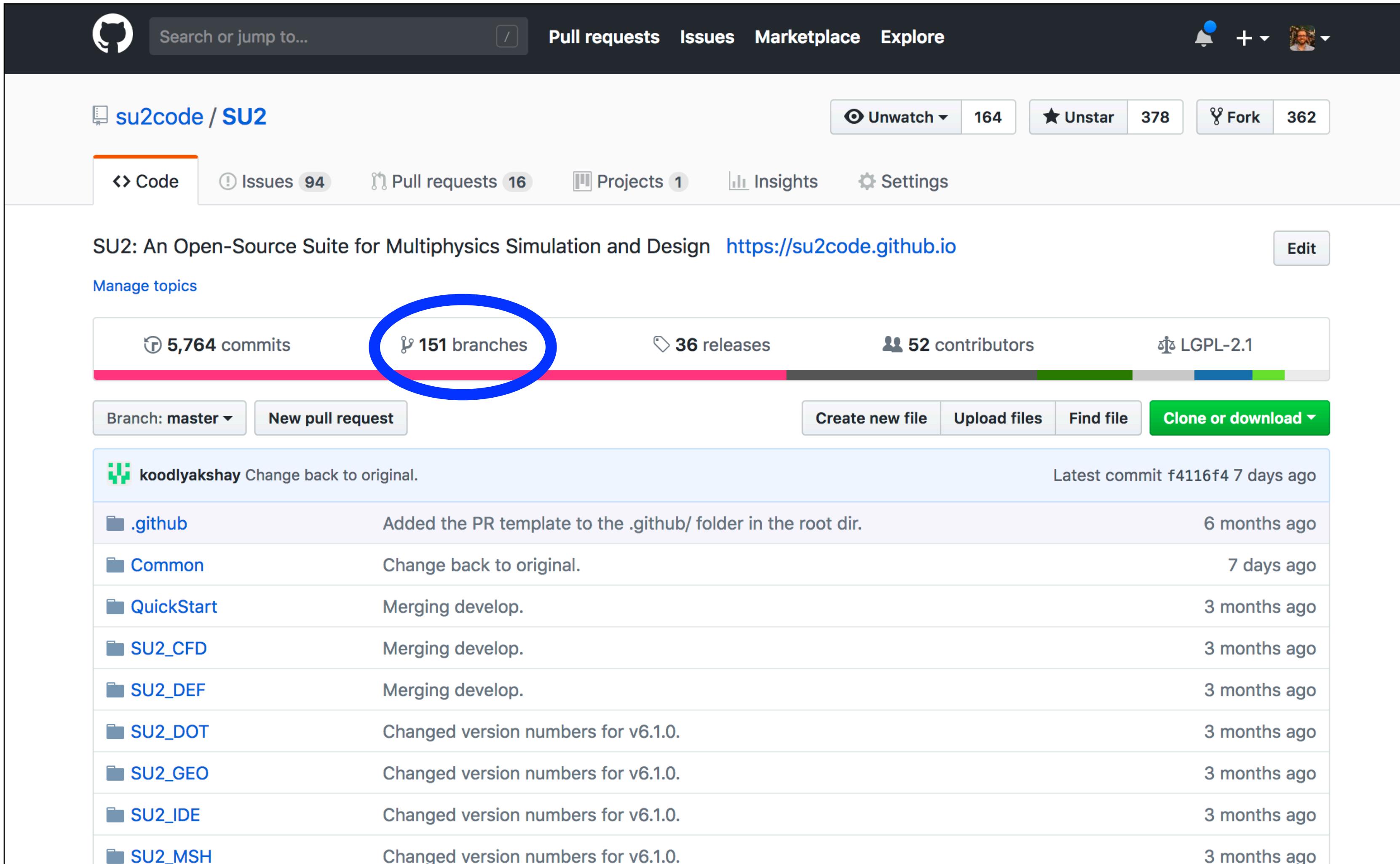
Git/Branching

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The screenshot shows the GitHub profile page for the repository `su2code/SU2`. At the top, there's a navigation bar with links for **Pull requests**, **Issues**, **Marketplace**, and **Explore**. Below the navigation bar, the repository name `su2code / SU2` is displayed, along with statistics: **164** (Unwatch), **378** (Unstar), and **362** (Fork). The main content area includes tabs for **Code**, **Issues 94**, **Pull requests 16**, **Projects 1**, **Insights**, and **Settings**. A summary bar at the top provides metrics: **5,764 commits**, **151 branches** (circled in blue), **36 releases**, **52 contributors**, and **LGPL-2.1**. Below this, a list of recent commits is shown:

Author	Commit Message	Date
koodlyakshay	Change back to original.	Latest commit f4116f4 7 days ago
	Added the PR template to the .github/ folder in the root dir.	6 months ago
	Change back to original.	7 days ago
	Merging develop.	3 months ago
	Merging develop.	3 months ago
	Merging develop.	3 months ago
	Changed version numbers for v6.1.0.	3 months ago
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See all of our public repo branches here.

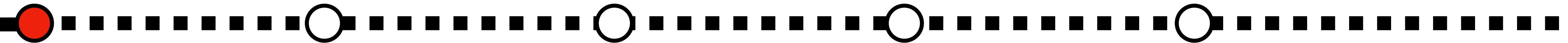
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Active branches				
feature_hom_Intel	Updated 4 hours ago by vdweide	2 725	New pull request	Delete
feature_hom_wallModel	Updated 21 hours ago by GomerOfDoom	2 743	New pull request	Delete
feature_output	Updated a day ago by talbring	2 199	New pull request	Delete
feature_SST_UQ	Updated 2 days ago by jayantmukho	✓ 2 207	#570 Open	Delete
feature_hom_shock_capturing	Updated 2 days ago by chamsolli	2 809	New pull request	Delete
feature_hom	Updated 2 days ago by vdweide	✓ 2 806	#565 Open	Delete
feature_caa	Updated 2 days ago by BeckettZhou	✗ 384 80	New pull request	Delete
feature_reformat_config	Updated 2 days ago by rsanfer	✓ 2 215	New pull request	Delete
feature_external_sens	Updated 2 days ago by economon	2 118	New pull request	Delete
feature_error_message	Updated 4 days ago by vdweide	✓ 2 178	#574 Open	Delete
feature_custom_fluid	Updated 7 days ago by economon	2 173	New pull request	Delete
feature_cgns	Updated 7 days ago by economon	2 174	New pull request	Delete
feature_periodic	Updated 7 days ago by economon	2 170	New pull request	Delete
fix_sorting	Updated 7 days ago by economon	✓ 2 171	#576 Open	Delete
remove_poisson_wave_solvers	Updated 7 days ago by rsanfer	✓ 2 181	#573 Open	Delete
feature_TNE2	Updated 8 days ago by WallyMaier	2 104	New pull request	Delete
feature_inc_wf	Updated 8 days ago by vdweide	✓ 2 166	New pull request	Delete
develop	Updated 8 days ago by vdweide	✓ 2 166	New pull request	Delete

A current snapshot of active branches

Note that develop is a protected branch

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The screenshot shows the GitHub repository page for `su2code/SU2`. At the top, there's a navigation bar with links for Pull requests, Issues, Marketplace, and Explore. Below the header, the repository name `su2code / SU2` is displayed, along with statistics: 5,764 commits, 151 branches, 36 releases, 52 contributors, and a license of LGPL-2.1. A yellow circle highlights the "Branch: master" dropdown menu. A pink circle highlights the "Fork" button, which has a count of 362. The main content area shows a list of recent commits from a user named `koodlyakshay`, with the latest commit being `f4116f4` from 7 days ago. The commits are listed in descending chronological order.

Commit	Message	Date
<code>Change back to original.</code>	<code>koodlyakshay</code>	Latest commit <code>f4116f4</code> 7 days ago
<code>Added the PR template to the .github/ folder in the root dir.</code>	<code></code>	6 months ago
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New branches can be made in the browser interface here or by pushing local branches to the remote with git.

Git/Branching

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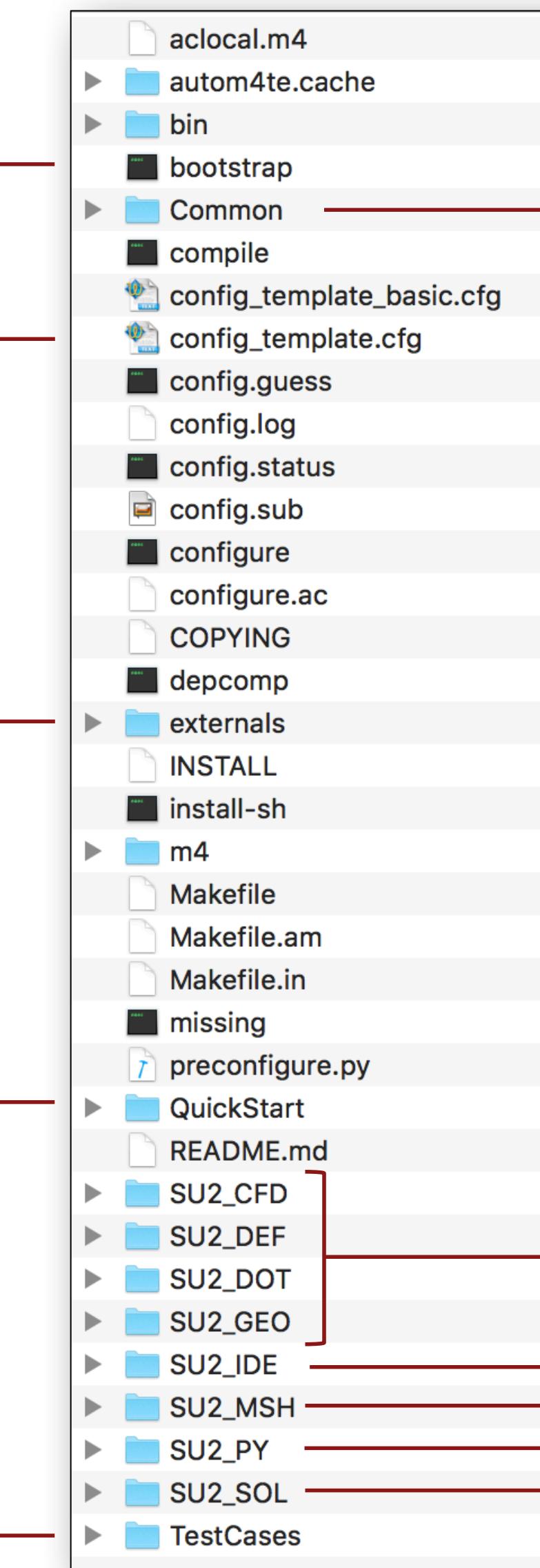
Run ./bootstrap to
reset autotools

Template config file
with all options

External source files,
e.g., ParMETIS

Inviscid NACA 0012

Config files for tests

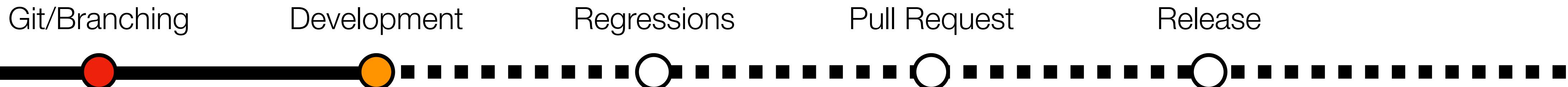


**Here is what you see
inside the SU2/ repo.**

C++ Source Code in SU2_*/src/, majority of lines in
Common/src/ & SU2_CFD/src

IDE project files, e.g., Xcode

Python Scripts



C++ Executables

- SU2_CFD -> Primary multiphysics PDE solver for primal and adjoint
- SU2_SOL -> Solution export code
- SU2_DEF -> Mesh deformation
- SU2_DOT -> Gradient projection
- SU2_GEO -> Geometry definition
- SU2_MSH -> Mesh adaptation

Python Scripts (just a subset of them)

- parallel_computation.py
- mesh_deformation.py
- shape_optimization.py
- continuous_adjoint.py
- discrete_adjoint.py
- finite_differences.py
- direct_differentiation.py



- C++ class abstractions encourage code reuse and data encapsulation ensures you can make localized changes easily.
 - Common base classes/methods (grid, linear solvers, output, etc.) are reused for many sets of physical governing equations.
 - For a particular PDE, we define iteration, numerics, solver, and variable classes that are customized for the particular methods and algorithms.
 - Files with *_structure.cpp contain base classes.
 - Files with solver_*.cpp, variable_*.cpp, numerics_*.cpp, contain child classes for a particular PDE, e.g., solver_direct_mean.cpp for mean flow.

Git/Branching

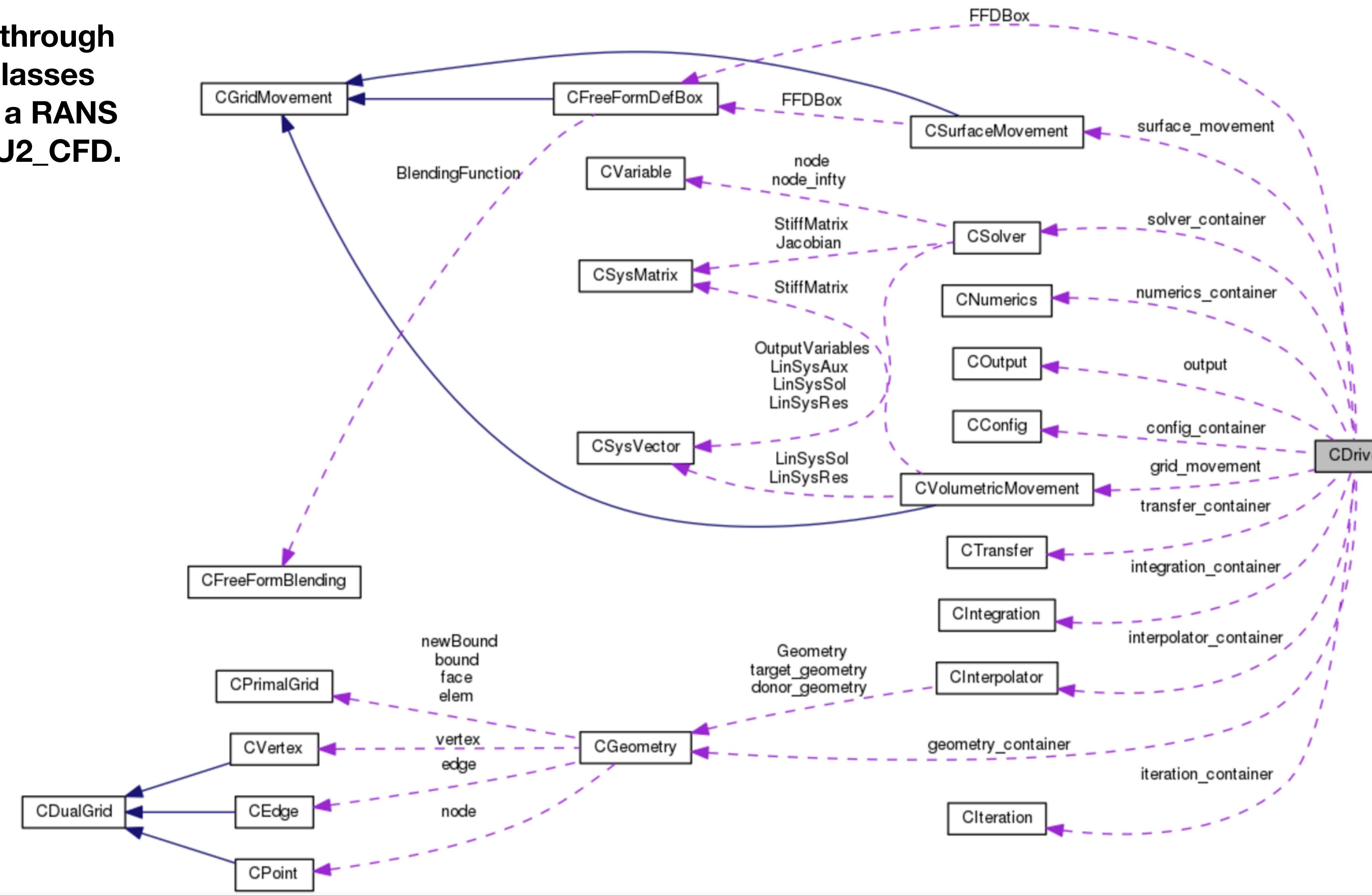
Development

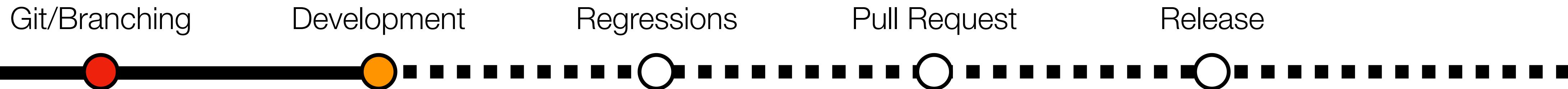
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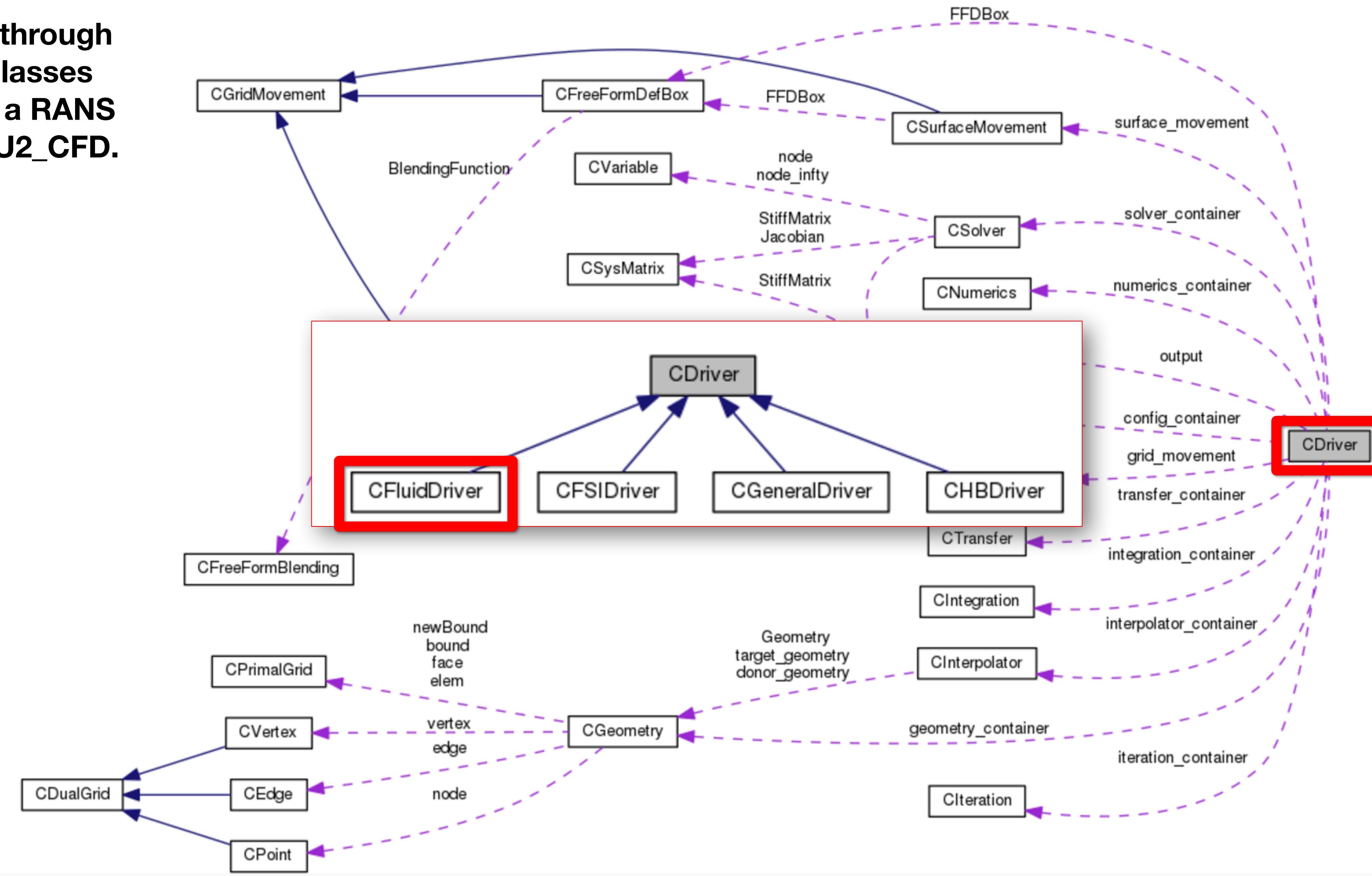
Release

**Top-down walkthrough
of some key classes
instantiated for a RANS
calculation in SU2_CFD.**





Top-down walkthrough of some key classes instantiated for a RANS calculation in SU2_CFD.



Git/Branching

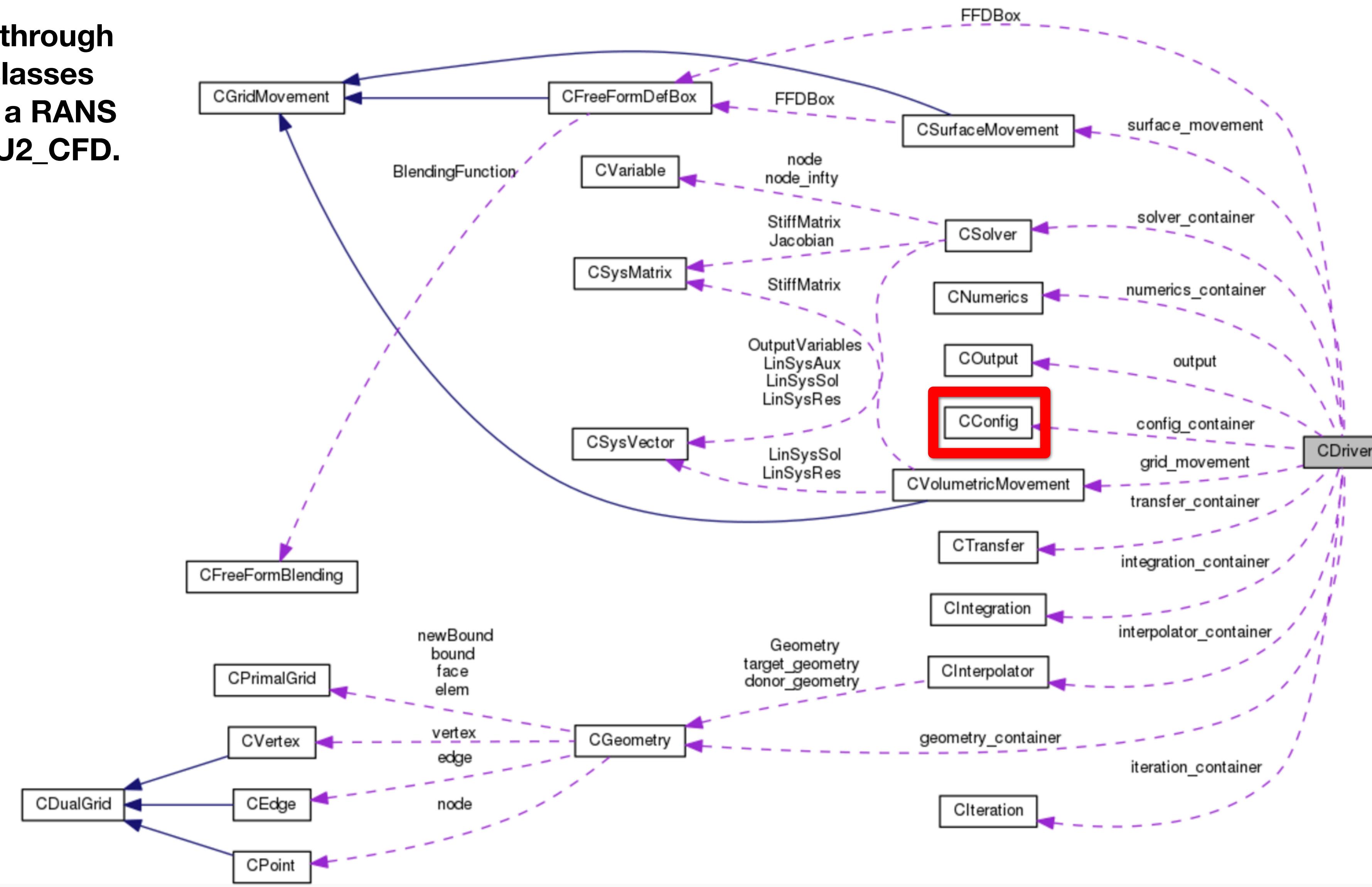
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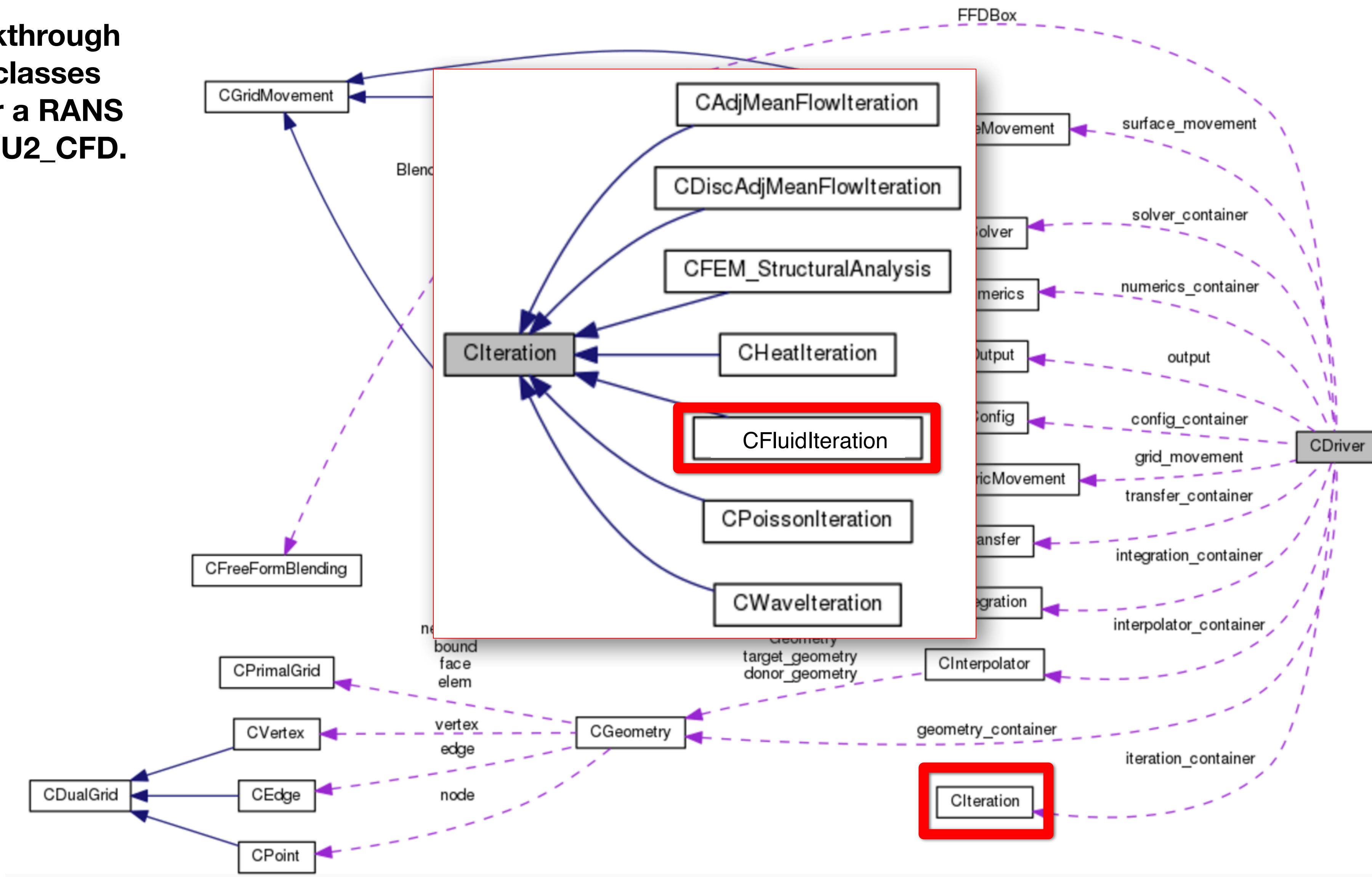
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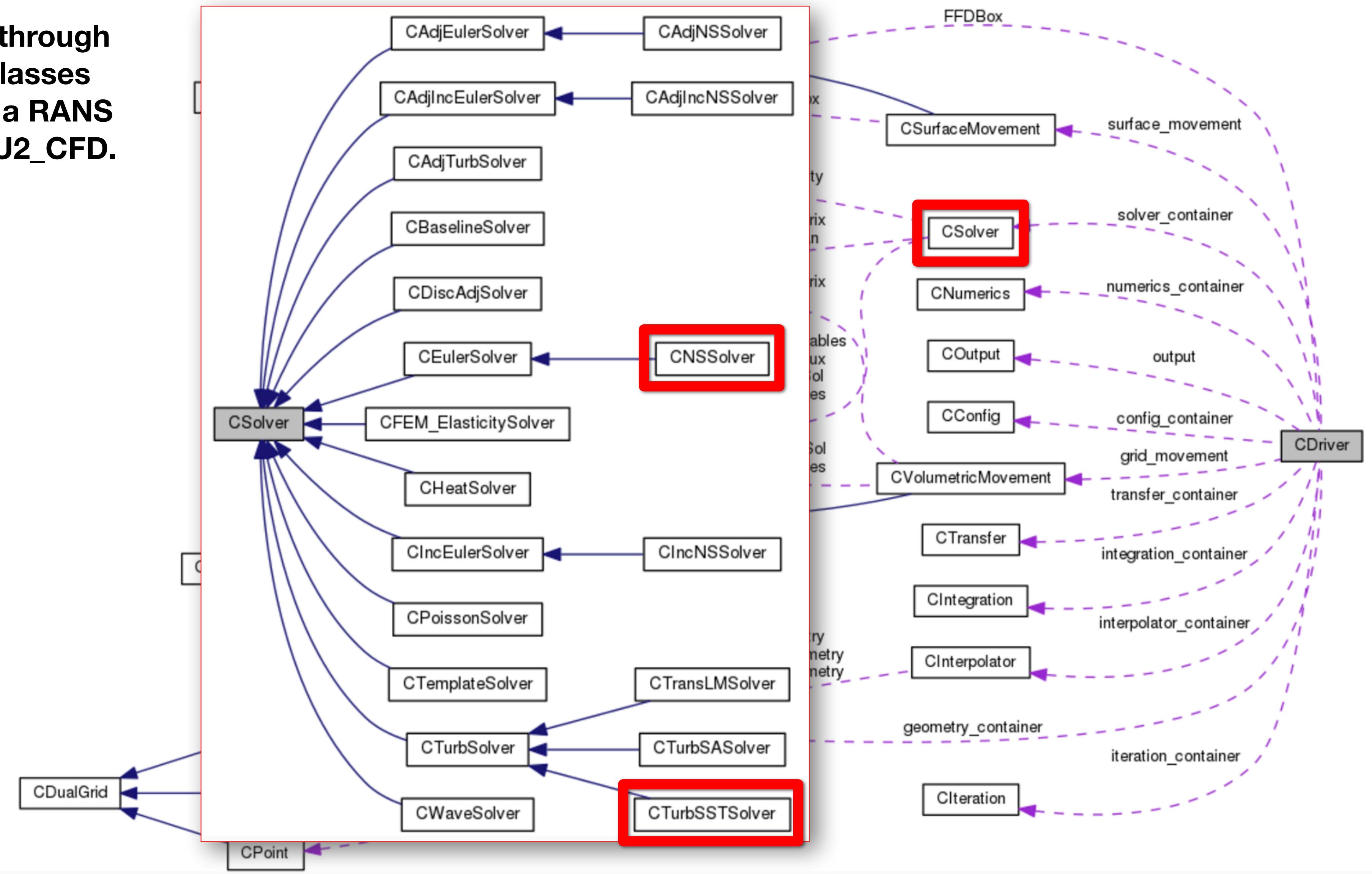
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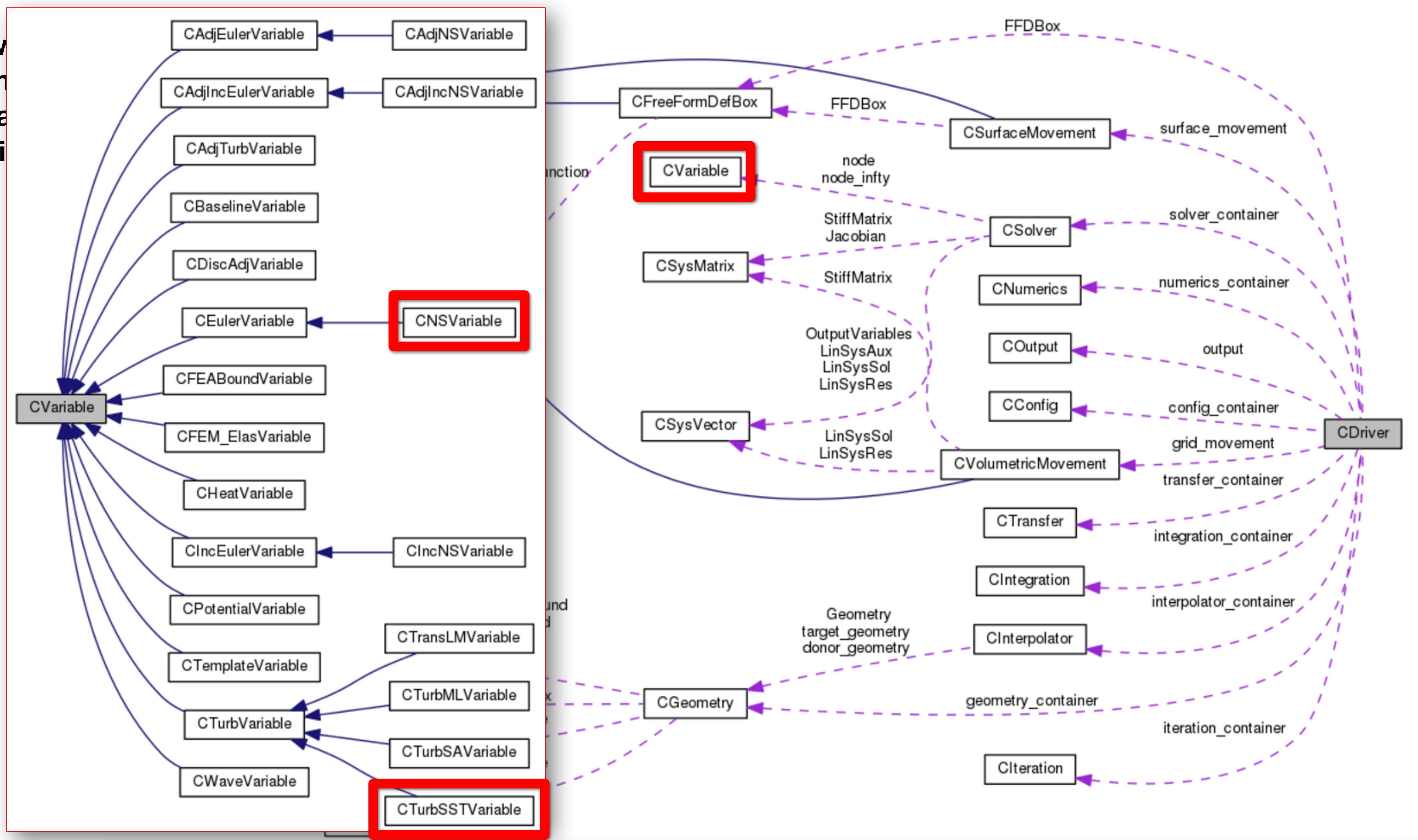
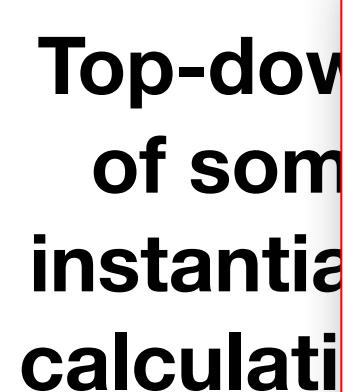
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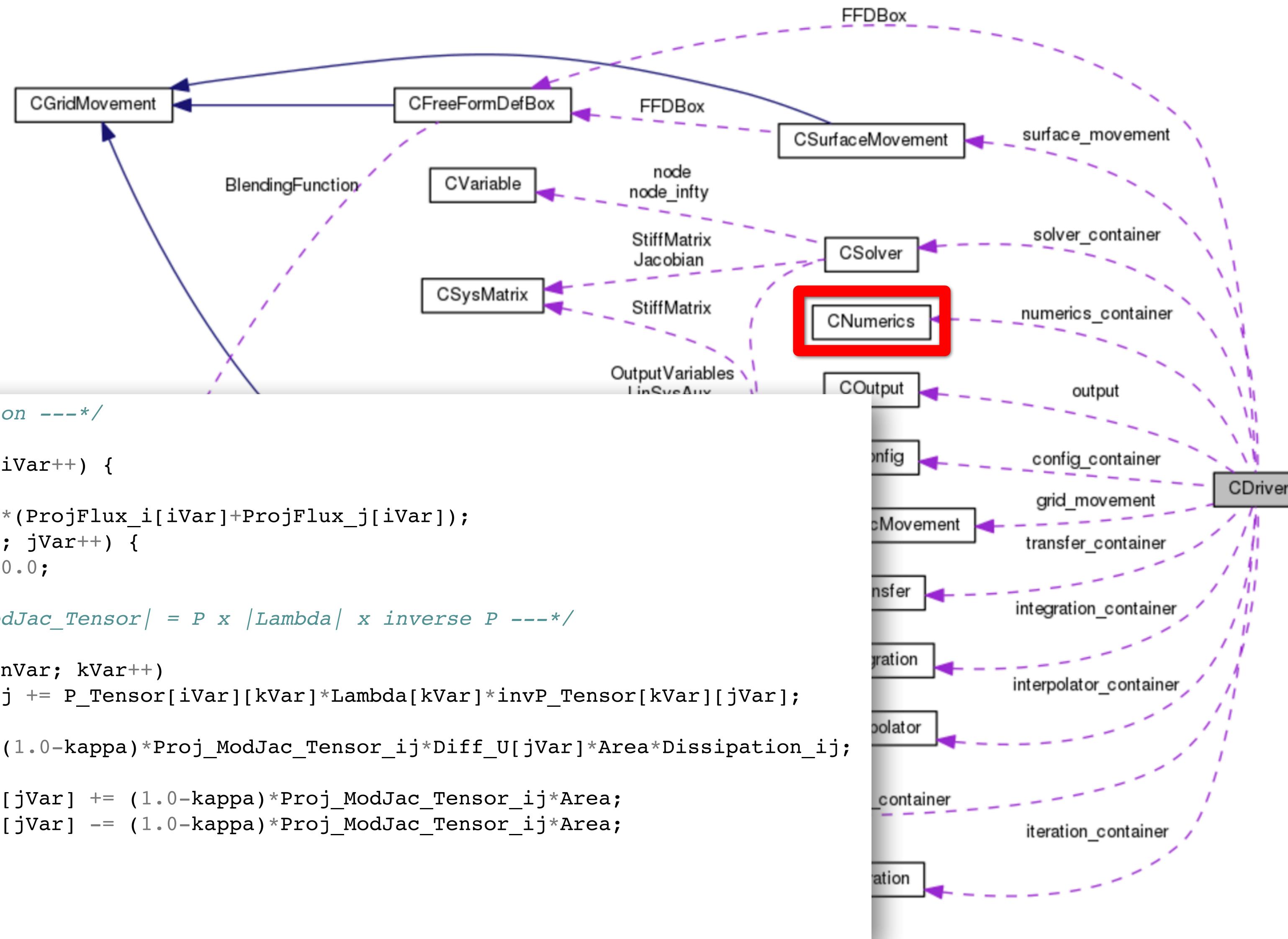
Development

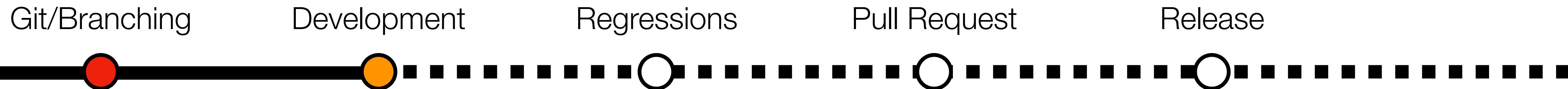
Regressions

Pull Request

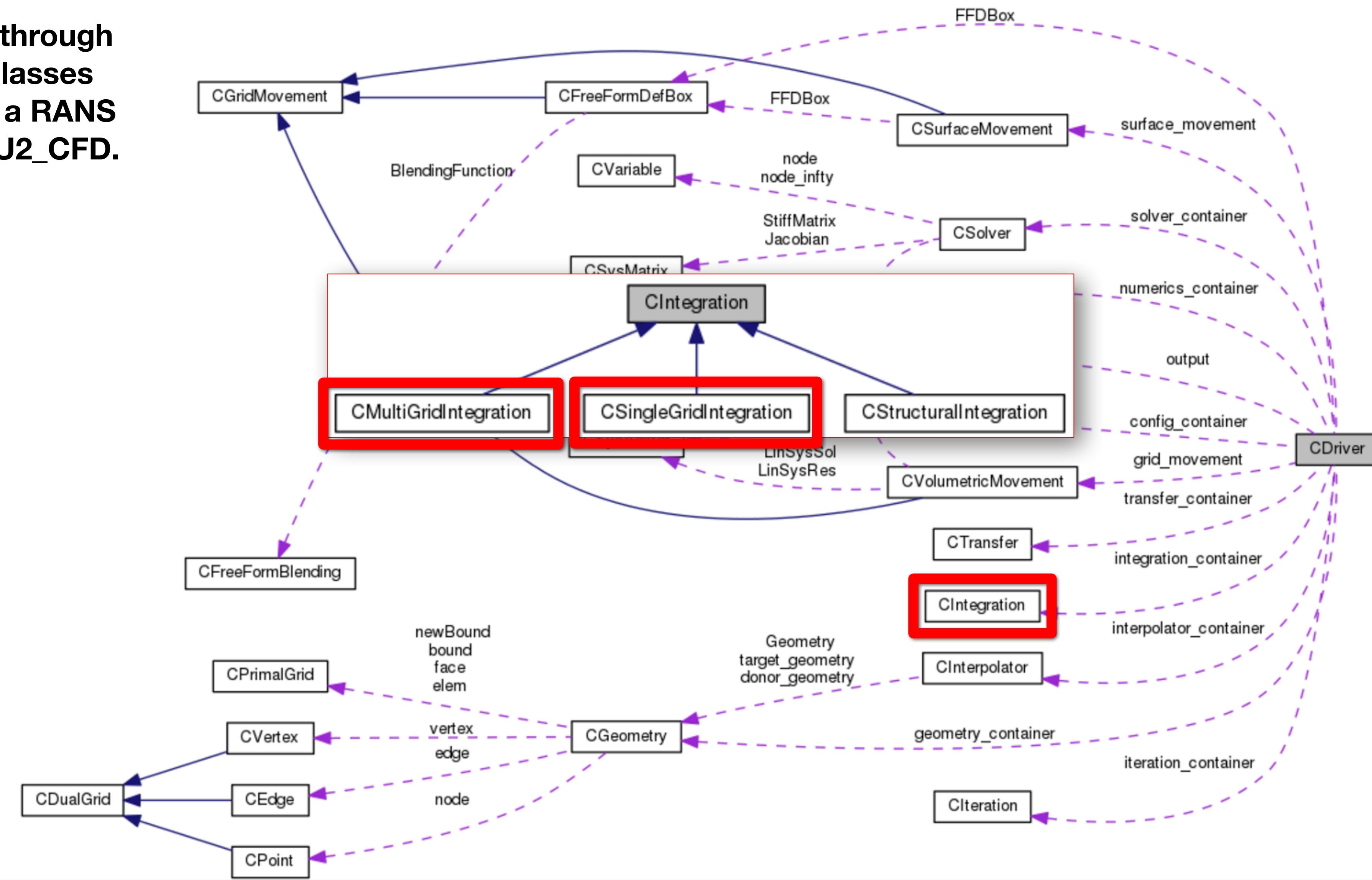
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Top-down walkthrough of some key classes instantiated for a RANS calculation in SU2_CFD.



Git/Branching

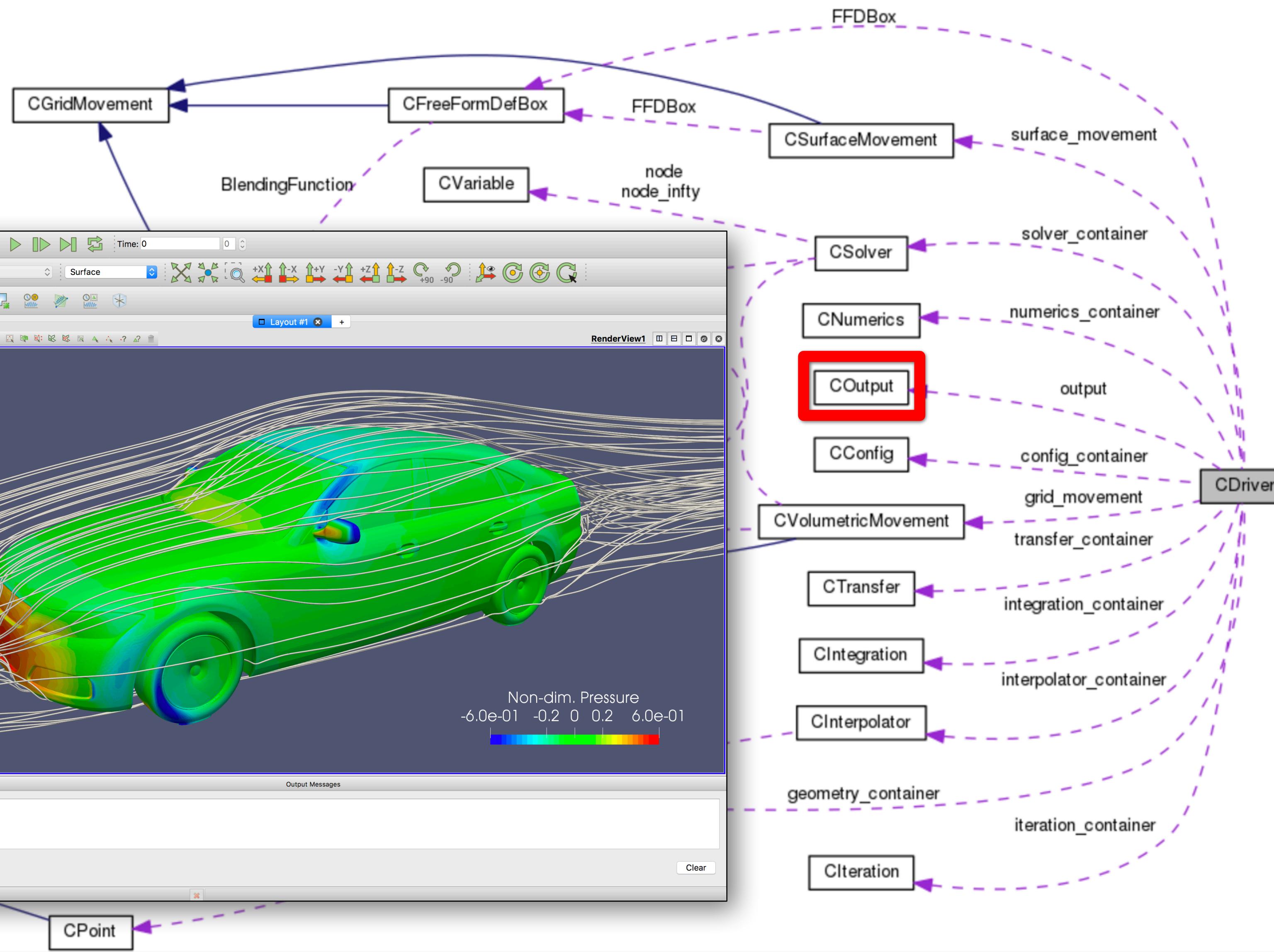
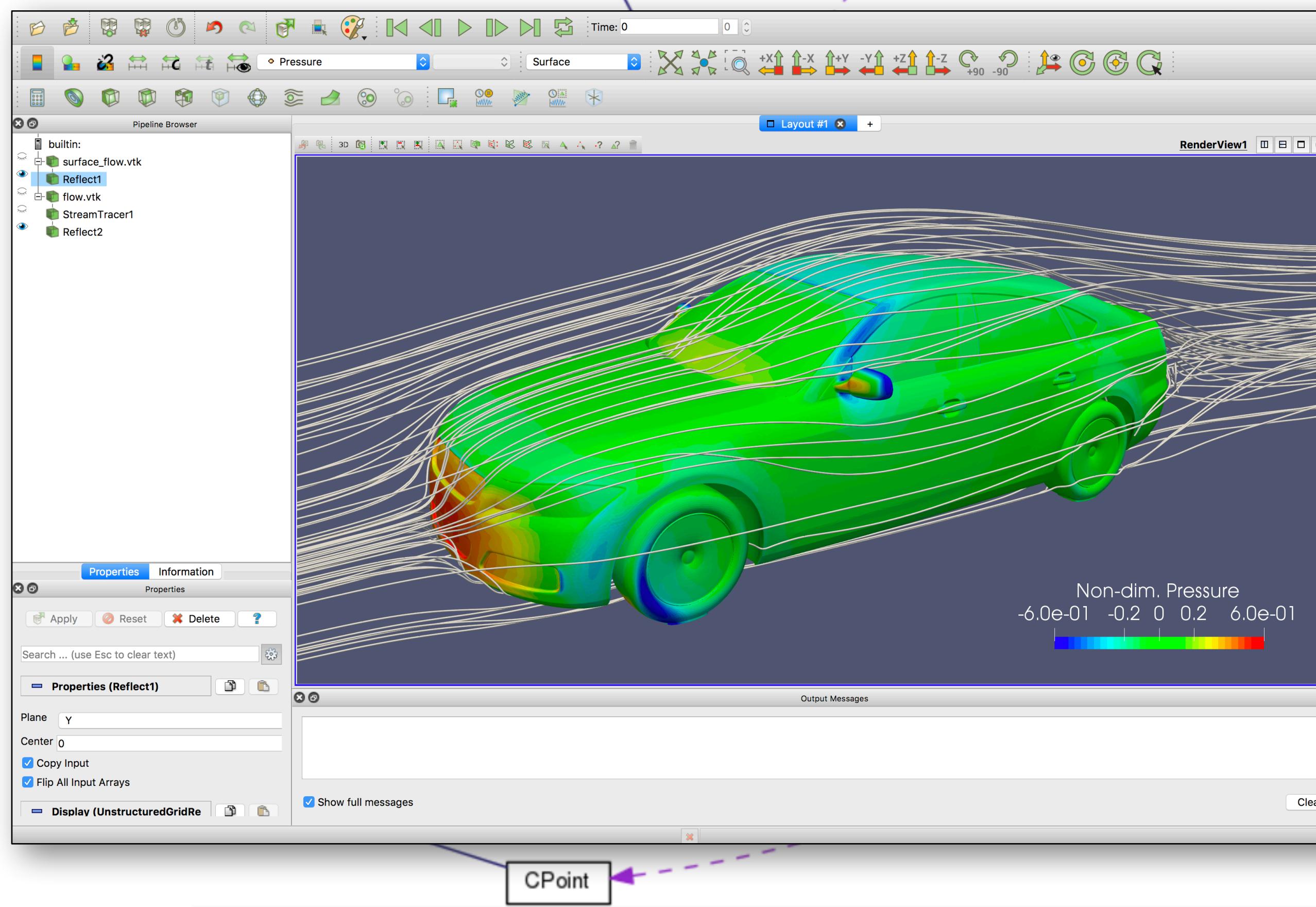
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**Top-down walkthrough
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- Now that you know the basics, you are ready to create a new branch for your awesome feature (feature-awesome) and start hacking.
 - But you might say, "Wait, how do I coordinate my contribution with other ongoing work in the repository?"
 - Posting **issues on GitHub** and interacting with the SU2 IDS are great ways to discuss potential developments and coordinate among other developers in the open.
 - And then maybe you'll ask, "How can I make sure that my work doesn't 'break' other capabilities that already exist in SU2?"
 - **Continuous integration will save your bacon.** Travis CI is free for open-source!

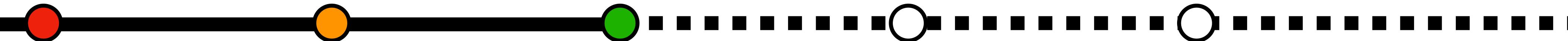
Git/Branching

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su2code / SU2 build unknown

Current Branches Build History Pull Requests > Build #2312

More options

SU2 (ver. 6.1.0 "Falcon"): The CFD Code

Computational analysis tools have revolutionized the way we design aircraft. Proprietary, unavailable, or prohibitively expensive, these tools have limited our ability to analyze and design freely available as open-source software.

For an overview of the technical details in SU2, see the following paper:

"SU2: An open-source suite for multiphysics simulation of aerospace vehicles,"
<http://arc.aiaa.org/doi/10.2514/1.J053813>

build passing

Travis CI

Build #2312

✓ develop Merge pull request #575 from pecos-hybrid/bugfix_viscosity_in_FD

Change dynamic viscosity in FD hybrid central / upwind blending to kinematic viscosity

○ #2312 passed

○ Ran for 2 hrs 5 min 54 sec

○ Total time 8 hrs 9 min 37 sec

○ 8 days ago

○ Commit d00c3b3 ↗

○ Compare a0ecddf..d00c3b3 ↗

○ Branch develop ↗

○ Edwin van der Weide authored GitHub committed

Build Jobs

Job ID	Python Version	Command	Duration	Action
# 2312.1	Python: 2.7	CONFIGURE_COMMAND="./preconfigure.py --prefix=\$TRAVIS_BUIL...	1 hr 3 min 49 sec	↻
# 2312.2	Python: 3.6	CONFIGURE_COMMAND="./preconfigure.py --prefix=\$TRAVIS_BUIL...	1 hr 3 min 25 sec	↻
# 2312.3	Python: 2.7	CONFIGURE_COMMAND="./preconfigure.py --enable-mpi --with-cc...	58 min 49 sec	↻
# 2312.4	Python: 3.6	CONFIGURE_COMMAND="./preconfigure.py --enable-mpi --with-cc...	58 min 31 sec	↻
# 2312.5	Python: 2.7	CONFIGURE_COMMAND="./preconfigure.py --with-cc=gcc --with-c...	1 hr 3 sec	↻
# 2312.6	Python: 3.6	CONFIGURE_COMMAND="./preconfigure.py --with-cc=gcc --with-c...	59 min 52 sec	↻
# 2312.7	Python: 2.7	CONFIGURE_COMMAND="./preconfigure.py --enable-mpi --with-cc...	1 hr 36 sec	↻
# 2312.8	Python: 3.6	CONFIGURE_COMMAND="./preconfigure.py --enable-mpi --with-cc...	1 hr 4 min 32 sec	↻

Our security blanket: a comprehensive suite of ~200 regression test cases for serial, parallel, physics, AD, python, etc.

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Use continuous integration to guide your development by activating Travis CI for your own branches! Update SU2/.travis.yml with your own email and branch.

```
# Continuous Integration setup for SU2.

dist: trusty
sudo: required

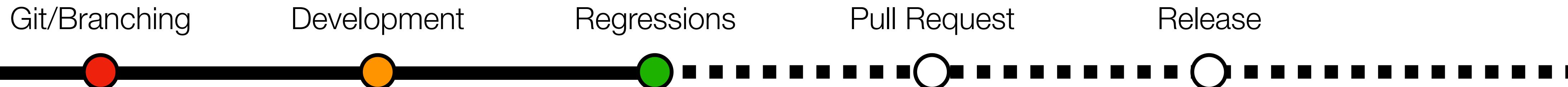
language: python

compiler:
  - gcc

notifications:
  email:
    recipients:
      - your.email@here.com
      - [REDACTED]

branches:
  only:
    - feature-awesome
    - [REDACTED]
```

Branch	Build Status	Commit Hash	Author	CI Status	Build Status	CI Status	Build Status	CI Status	Build Status	CI Status
feature_reformat_config	# 2339 passed	af1b06	Ruben Sanchez	✓	✗	✗	✗	✗	✗	✗
feature_caa	# 2340 errored	76c8489	Beckett Y. Zhou	✗	✗	✗	✗	✗	✗	✗
fix_sorting	# 2319 failed	bd56f3b	Thomas D. Economou	✗	✗	✗	✗	✗	✗	✗
develop	# 2312 passed	d00c3b3	GitHub	✓	✓	✓	✓	✓	✓	✓
feature_hom	# 2308 canceled	c3097db	GitHub	✗	✓	✓	✗	✗	✗	✗
feature_error_message	# 2301 passed	de983c2	vdweide	✓	✗	✗	✗	✗	✗	✗
remove_poisson_wave_solvers	# 2284 canceled	afbee6b	Ruben Sanchez	✗	✗	✓	!	✓	✓	✓
fix_SU2SOL_segfault	# 2269 passed	afc668b	TobiKattmann	✓						



New capabilities in your feature branch should also have a test case to protect them in the future.

```
# NACA0012
naca0012      = TestCase('naca0012')
naca0012.cfg_dir = "euler/naca0012"
naca0012.cfg_file = "inv_NACA0012_Roe.cfg"
naca0012.test_iter = 20
naca0012.test_vals = [-4.047448, -3.538057, 0.338691, 0.023131] #last 4 columns
naca0012.su2_exec = "SU2_CFD"
naca0012.timeout = 1600
naca0012.tol     = 0.00001
test_list.append(naca0012)
```

If the computed values after one of your commits don't match these values, you will get an email with details of the failed cases. Investigate it!

1. Add a new test case to `serial_regression.py`, `parallel_regression.py`, etc. Use others as a guide. See NACA 0012 example.

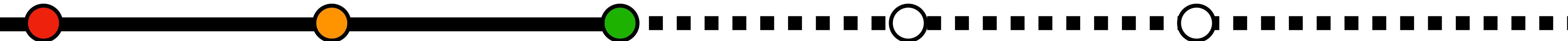
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2. Put the config file and any supporting data in the corresponding locations. Travis CI combines the complementary sets.

su2code / SU2

Code Issues 94 Pull requests 16 Projects 1 Insights Settings

Branch: master [SU2 / TestCases / euler / naca0012 /](#)

[Create new file](#) [Upload files](#) [Find file](#) [History](#)

economon Merging develop. Latest commit 08c5178 on Jun 19

..

[inv_NACA0012.cfg](#) Merging develop. 3 months ago

[inv_NACA0012_Roe.cfg](#) Changed version numbers for v6.1.0. 3 months ago

Lighter weight, more frequently updated files go in code repo.

su2code / TestCases

Code Issues 0 Pull requests 0 Projects 0 Wiki Insights Settings

Branch: master [TestCases / euler / naca0012 /](#)

[Create new file](#) [Upload files](#) [Find file](#) [History](#)

economon Moved config files only back over into SU2 repo from the TestCases repo. Latest commit 7b020e6 on Aug 11, 2015

..

[mesh_NACA0012_inv.su2](#) Added all of the mesh files that are < 30 MB 4 years ago

Larger, more static files that support the tests go in the TestCases repo.



- So, you've finished your awesome feature and the tests are passing. You've even added your own regression test (or two), and you checked that there are no new compiler warnings and the style conforms to the SU2 standard.
- At this point you are wondering, “I would like to contribute my feature to the open source, but how do I do that?”
- To get your work into an official open-source release of SU2, the modifications have to first be staged in the develop branch.
- To do so, we use the standard **Pull Request (PR)** approach.

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Commit	Message	Time Ago
<code>.github</code>	Added the PR template to the .github/ folder in the root dir.	6 months ago
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Once you're ready to contribute, it's PR time.

Git/Branching

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The screenshot shows the GitHub repository `su2code/SU2`. The top navigation bar includes links for Code, Issues (94), Pull requests (16, highlighted in orange), Projects (1), Insights, and Settings. Below the navigation is a search bar with the filter `is:pr is:open`, and buttons for Labels and Milestones. On the right, a green button labeled "New pull request" is circled in orange. The main area displays a list of 16 open pull requests:

- Fix Commands for SOL_FSI, SOL and GEO in SU2_PY/SU2/run/interface.py** ✓
#579 opened 3 days ago by Patschke • Review required 0 of 1
- Fix NTS duplicate calc** ●
#577 opened 6 days ago by clarkpede • Review required 3 of 4
- Efficiency improvements for sorting + loading of grid information.** ✓
#576 opened 7 days ago by economon • Changes requested 3 of 4
- Feature error message** ✓
#574 opened 10 days ago by vdweide • Review required 0 of 1
- Remove legacy Poisson & Wave solvers** ✓
#573 opened 11 days ago by rsanfer • Review required 3 of 4
- Fix linear elasticity discrete adjoint** ✓
#571 opened 16 days ago by pcarruscag • Changes requested 3 of 4

A PR is a request to the project to pull in your contribution. Can be from an internal branch or from an external fork.

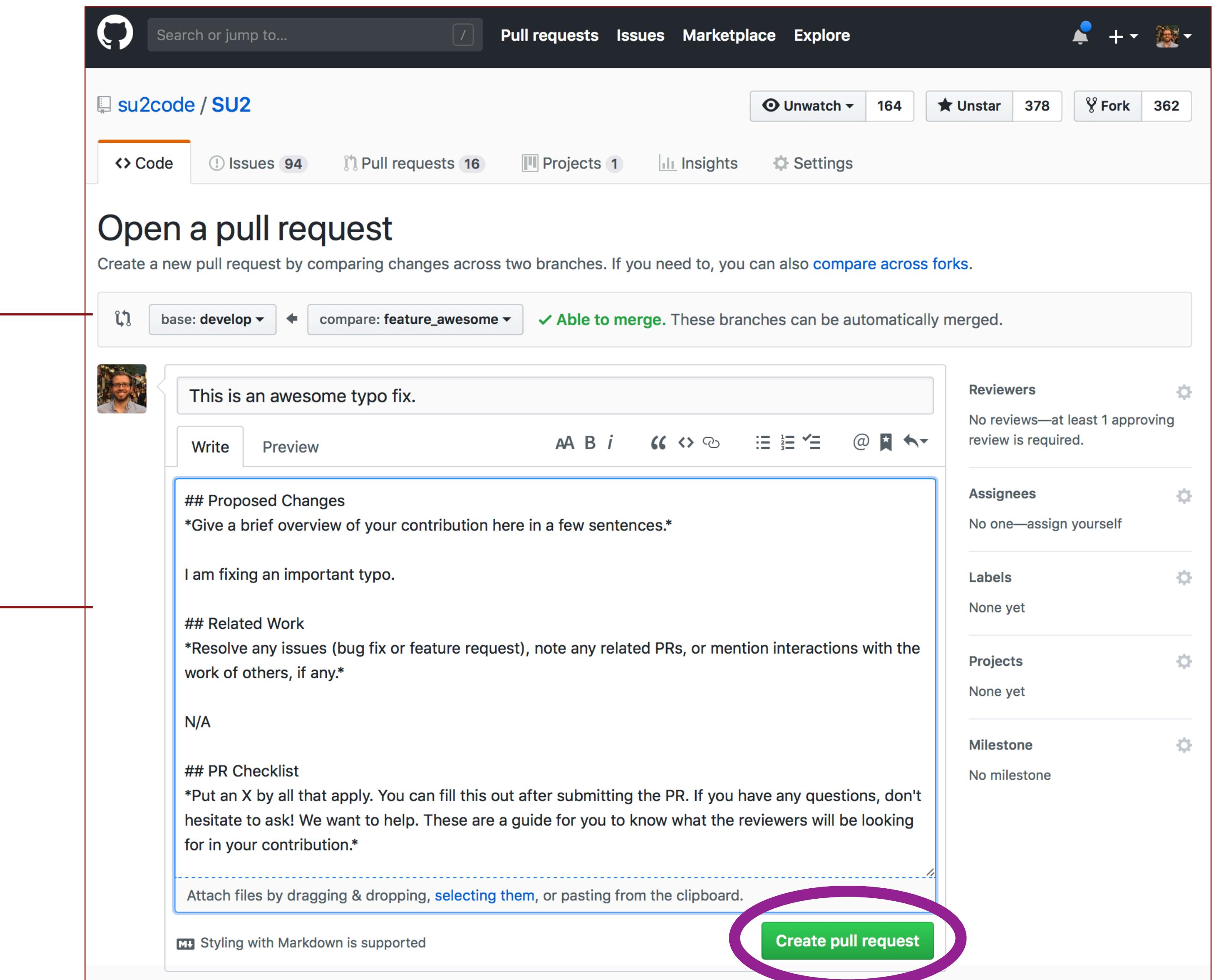
Git/Branching

Development

Regressions

Pull Request

Release



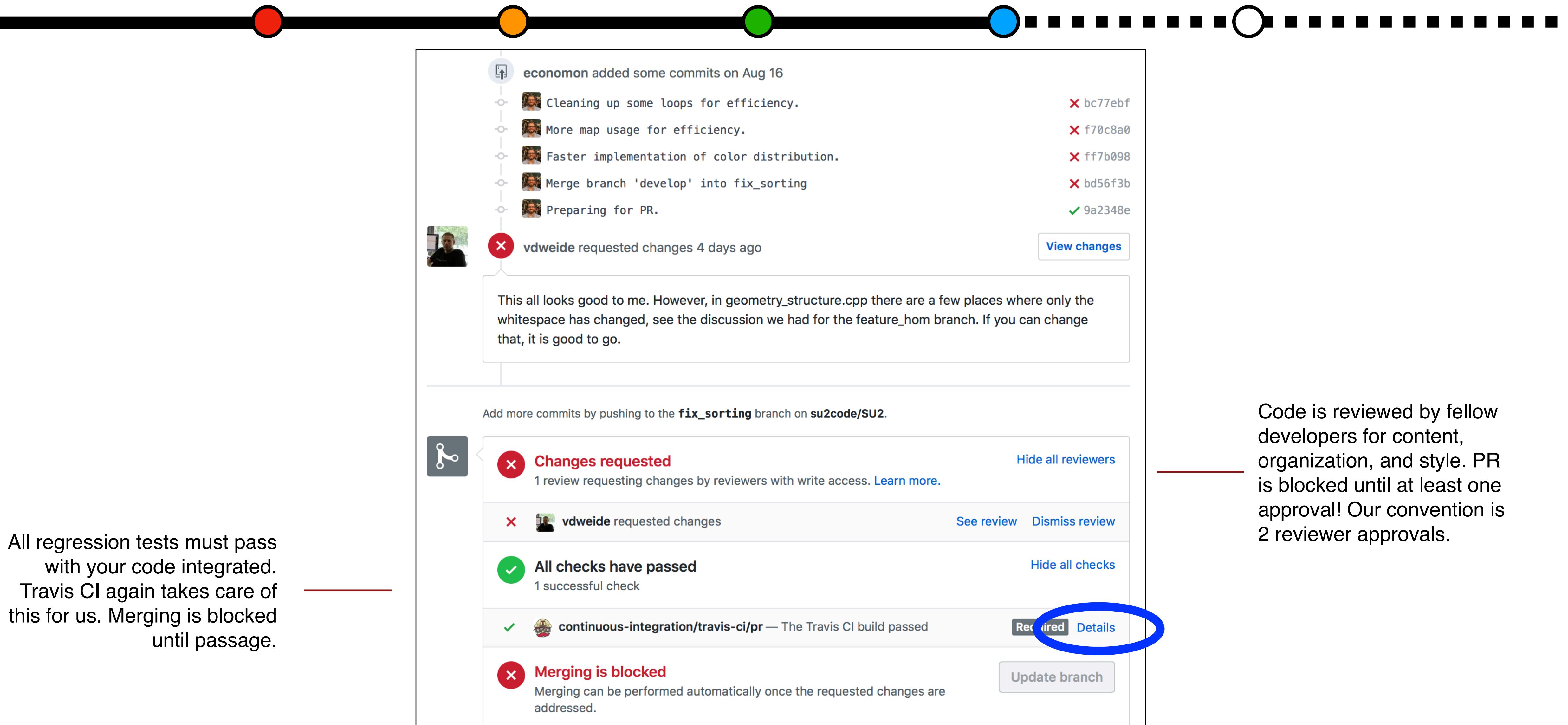
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PRs keep community informed, offer opportunity for discussion, and are a *controlled gate* for quality assurance of contributions.

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Details of the tests for all PRs can be found over in Travis CI.

su2code / SU2			
Current	Branches	Build History	Pull Requests
			build unknown
			More options
✓ PR #570	Feature sst uq	#2342 passed	7 hrs 54 min 5 sec
(+) Jayant Mukhopadhyaya		d7e05f9 ↗	about 17 hours ago
✓ PR #565	Feature hom	#2341 passed	9 hrs 33 min 54 sec
(+) vdweide		e82f700 ↗	a day ago
✓ PR #565	Feature hom	#2338 passed	9 hrs 35 min 20 sec
(+) vdweide		e6418bb ↗	2 days ago
✓ PR #579	Fix Commands for SOL_FSI, SOL and GEO in SU2_PY/SU2/r	#2335 passed	8 hrs 1 min 48 sec
(+) Patrick		e9f8913 ↗	2 days ago
✓ PR #565	Feature hom	#2334 passed	9 hrs 29 min 55 sec
(+) vdweide		be211e3 ↗	3 days ago
✓ PR #565	Feature hom	#2333 passed	9 hrs 30 min 44 sec
(+) vdweide		c37f4d9 ↗	3 days ago
✗ PR #570	Feature sst uq	#2332 failed	8 hrs 4 min 19 sec
(+) Jayant Mukhopadhyaya		1348d87 ↗	3 days ago
✓ PR #565	Feature hom	#2331 passed	11 hrs 27 min 48 sec
(+) vdweide		7029bc1 ↗	4 days ago
✓ PR #574	Feature error message	#2330 passed	8 hrs 8 min 38 sec
(+) vdweide		2d4bd6f ↗	4 days ago

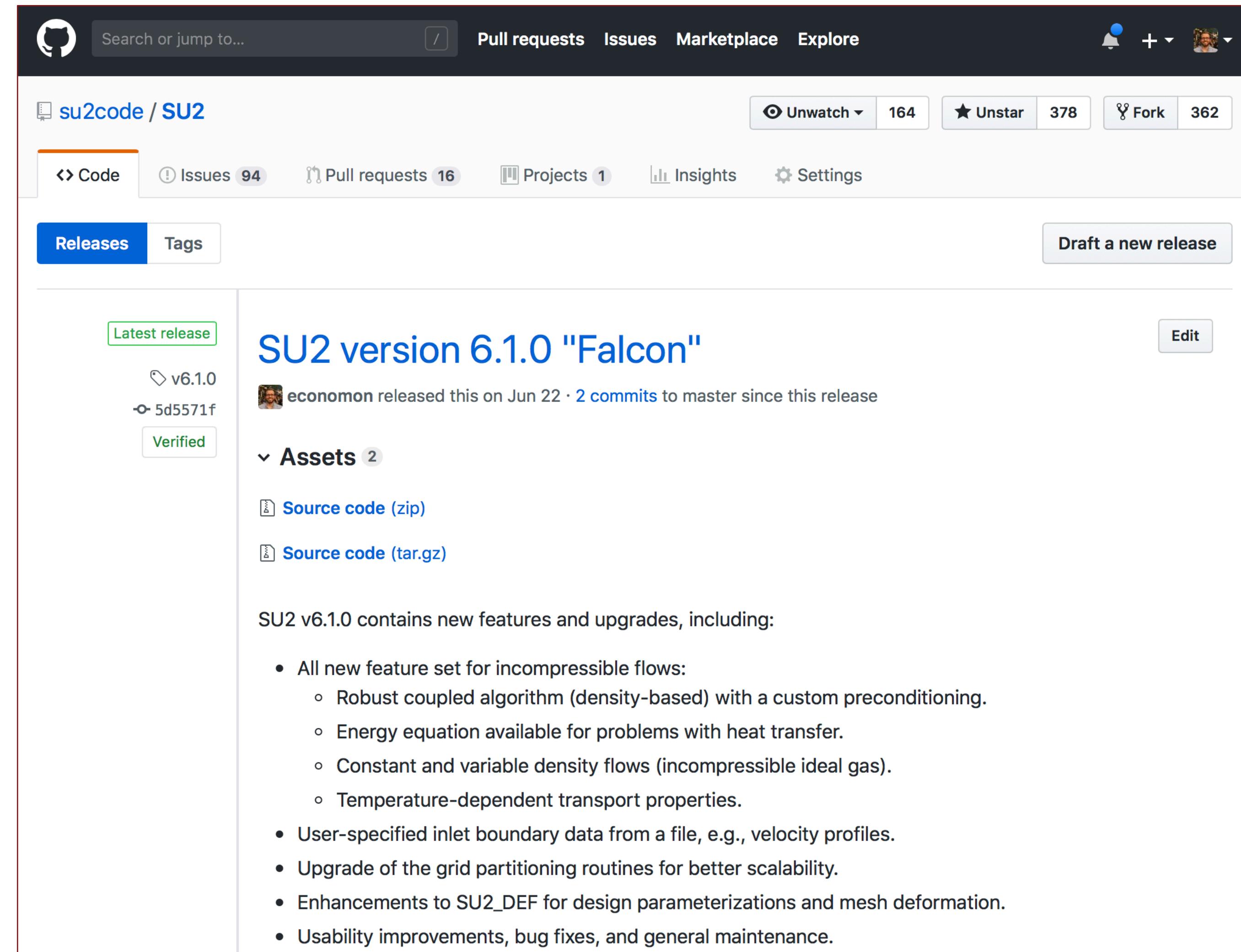
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Releases: we move develop to master, create tags, binaries, and advertise. Your awesome feature is released!

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The diagram illustrates the SU2 project workflow across five stages: Git/Branching, Development, Regressions, Pull Request, and Release. Below each stage is a screenshot of the SU2 website and GitHub repository.

Git/Branching: Shows the SU2 website homepage with a sidebar containing links like 'Introduction to SU2', 'SU2, the Open-Source CFD Code' (highlighted with a green oval), 'Contribute', 'Quick Start', 'Installation', 'Input Files', 'Running SU2', 'Developer Docs', 'FAQ', and 'Contact'. The GitHub repository page shows the file `su2code / su2code.github.io / _docs / index.md`.

Development: Shows the SU2 website homepage with the 'Docs' and 'Tutorials' menu items highlighted with a green oval. The GitHub repository page shows the file `su2code / su2code.github.io / _docs / index.md`.

Regressions: Shows the SU2 website homepage with a large 'SU2' logo and the text 'The Open-Source CFD'. The GitHub repository page shows the file `su2code / su2code.github.io / _docs / index.md`.

Pull Request: Shows the SU2 website homepage with a large 'SU2' logo and the text 'The Open-Source CFD'. The GitHub repository page shows the file `su2code / su2code.github.io / _docs / index.md`.

Release: Shows the SU2 website homepage with a large 'SU2' logo and the text 'The Open-Source CFD'. The GitHub repository page shows the file `su2code / su2code.github.io / _docs / index.md`.

Website Footer: Shows the 'Improve this page' button highlighted with an orange oval.

Documentation and tutorials are critical for amplifying the impact of your work. Good news: it's the same process to create it.

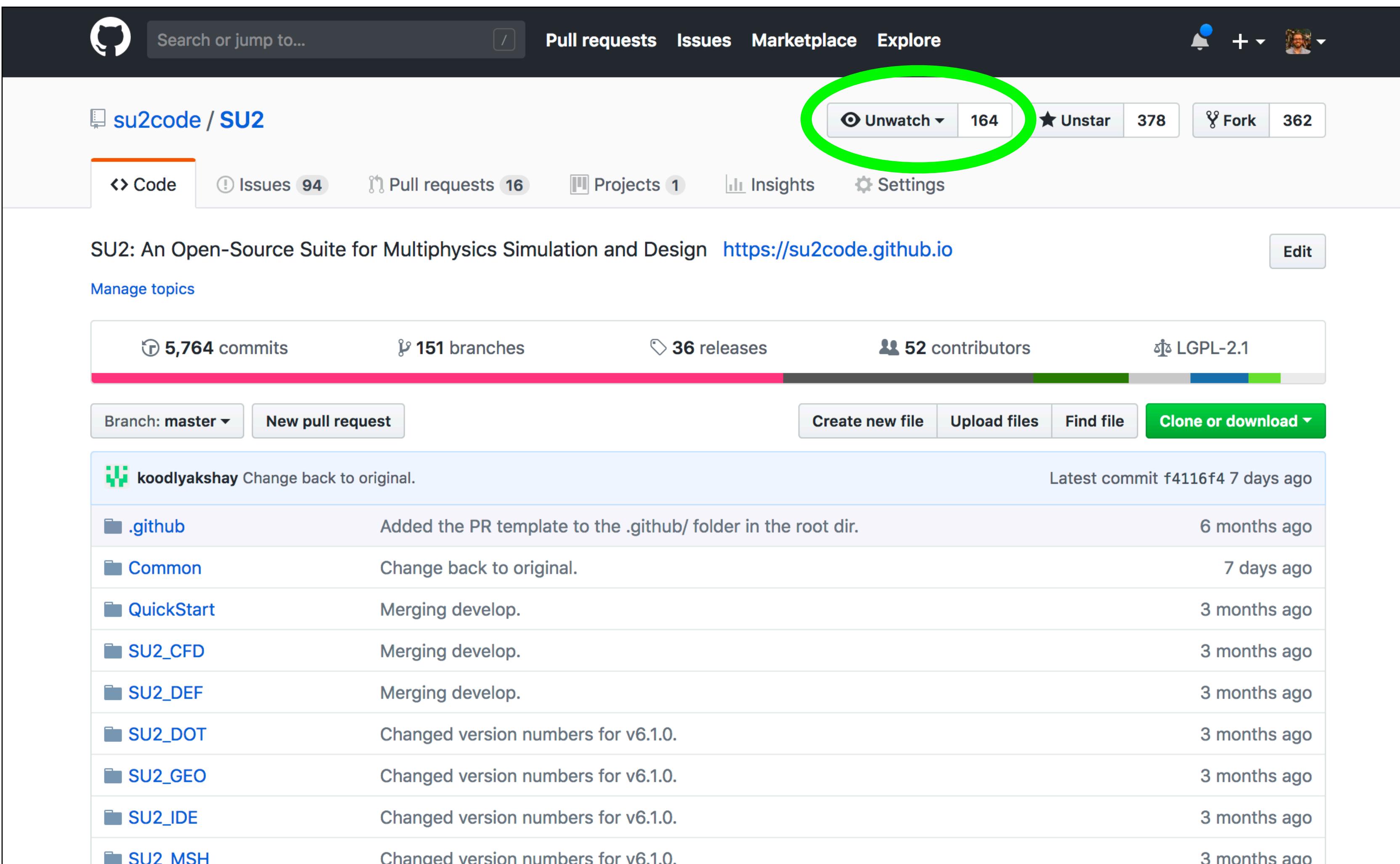
Git/Branching

Development

Regressions

Pull Request

Release



The screenshot shows the GitHub repository page for `su2code/SU2`. The top navigation bar includes links for Pull requests, Issues, Marketplace, and Explore. The repository name `su2code / SU2` is displayed, along with statistics: 164 stars, 378 forks, and 362 open issues. A green circle highlights the "Unwatch" button in the top right corner of the header. Below the header, there are tabs for Code, Issues (94), Pull requests (16), Projects (1), Insights, and Settings. A summary section shows 5,764 commits, 151 branches, 36 releases, 52 contributors, and the license LGPL-2.1. The main content area displays a list of recent commits from user `koodlyakshay`, including changes to `.github`, `Common`, `QuickStart`, `SU2_CFD`, `SU2_DEF`, `SU2_DOT`, `SU2_GEO`, `SU2_IDE`, and `SU2_MSH`. The commits were made 7 days ago, 6 months ago, and 3 months ago.

Commit Details	Date
koodlyakshay Change back to original.	Latest commit f4116f4 7 days ago
.github Added the PR template to the .github/ folder in the root dir.	6 months ago
Common Change back to original.	7 days ago
QuickStart Merging develop.	3 months ago
SU2_CFD Merging develop.	3 months ago
SU2_DEF Merging develop.	3 months ago
SU2_DOT Changed version numbers for v6.1.0.	3 months ago
SU2_GEO Changed version numbers for v6.1.0.	3 months ago
SU2_IDE Changed version numbers for v6.1.0.	3 months ago
SU2_MSH Changed version numbers for v6.1.0.	3 months ago

Keep up-to-date via email with all of the activity in the repo by “watching”

SU2 Development Survival Guide

A Best Practice Workflow

1. Clone main repository: \$ git clone <https://github.com/su2code/SU2.git>
2. Create new feature branch (in remote and locally) for your development work. Work on this branch in the repo.
3. Activate the regressions for your branch by changing to your branch name and email in .travis.yml. Use this to guide development and correct any failures along the way that you will be informed of by email.
4. Work on your feature! Please mind white space issues, compiler warnings, and match the SU2 style.
5. If you are working on a single branch for an extended amount of time, merge the remote develop branch into your own branch at regular, frequent intervals. This ensures that, when the time comes, it will be easy to merge your contribution into develop, as you will have solved any conflicts on your side before a PR.
6. Once you feel your feature is finished, submit a PR. Fill out the PR template that is provided for you.
7. Get reviews and engage with the community concerning your contribution. Fix problems in your branch or address any feedback on the message boards. Note that any new commits will appear right there in the open PR and will kick-off the regressions again.
8. Once the reviewers approve and the regressions pass, the community will merge in your work.
9. Celebrate your contribution and proudly introduce yourself as an SU2 developer at your social engagements.

Pretty easy to be a developer, huh?

We have set up safety nets and removed overhead wherever possible.

So, try crazy ideas in your branches. Don't be afraid to make big changes that push the boundaries of the code. The community and infrastructure will be there to help you. This is how we make progress.

3rd Annual SU2 Developers Meeting

September 16th-18th, 2018

University of Strathclyde, Scottish Universities Insight Institute (SUII)
Glasgow, Scotland, UK

Meeting Agenda for Sunday September 16th



0900 – 0915: Welcome & Agenda

0915 – 1045: Introduction to developing in SU2: Covering high level class design, how to modify the code, working with GitHub (branching, PRs, regressions), etc.

1045 – 1615: Hack session: Separate groups working on various problems (lunch and snacks/coffee offered in the room while working)

1615 – 1700: Wrap-up Presentations: Two-slide presentations on major progress for the day, including discussion

1730 – open: Social at “The Counting House”, 2 St Vincent Place, G1 2DH

Meeting Agenda for Monday September 17th

0800 – 0830: Welcome & Year in review, T. Economou (Bosch), J.J. Alonso (Stanford)

0830 – 0900: SU2-NEMO - Thermochemistry and high-Mach aerothermodynamics, M. Fossati (U. of Strathclyde), T. Magin, J.B. Scoggins, M. Pini, P. Colonna, R. Sanchez, T. Economou, D. Mayer, N. Beishuizen, C. Garbacz-Gomes, W.T. Meier, J.J. Alonso, T. van der Stelt

0900 – 0930: Toward optimization for reactive flows in SU2, N. Beishuizen (Bosch), D. Mayer, T. Economou

0930 – 1000: Conjugate heat transfer problems and computing coupled discrete adjoints using AD, O. Burghardt (TU Kaiserslautern), T. Albring, N. Gauger

1000 – 1030: Coffee break

1030 – 1100: Physics-based RANS model-form UQ in SU2, J. Mukhopadhyaya (Stanford), A. Mishra, J.J. Alonso, G. Iaccarino

1100 – 1130: Aeroacoustics prediction and optimization capabilities in SU2, B. Zhou (NIA/NASA-Langley), T. Albring, N. Gauger, C. Ilario, T. Economou, J.J. Alonso, L. V. Lopes, H. Yao, S. Peng, L. Davidson

1130 – 1200: Higher-order SU2: DG-FEM solver and WENO-FV solver with LES/ILES/WMLES applications, E. van der Weide (U. of Twente), J.J. Alonso, D. Drikakis, K. Singh, P. Urbanczik, E. Molina, J.H. Choi

1200 – 1300: Lunch

1300 – 1330: Unsteady optimization with SU2: application to turbomachinery design, A. Rubino (TU Delft), M. Pini, N. Anand, P. Colonna

1330 – 1400: Preliminary results on rotor-fuselage aerodynamics using SU2: status and challenges, M. Morelli (Politecnico di Milano), G. Gori, A. Guardone

1400 – 1430: Anisotropic mesh adaptation with the INRIA AMG library, A. Loseille (INRIA), V. Menier, B. Munguia, J.J. Alonso

1430 – 1500: Coffee break

1500 – 1530: Simulation and adjoint-based design for variable density incompressible flows with heat transfer, T. Economou (Bosch)

1530 – 1600: Implementation of pressure-based Navier-Stokes for wind energy applications, A. Ravishankara (ECN part of TNO), H. Ozdemir, E. van der Weide

1600 – 1630: SU2-IDS: International Developers Society, T. Albring, R. Sanchez (TU Kaiserslautern), T. Economou, F. Palacios

1630 – 1700: Wrap up, J.J. Alonso (Stanford)

In order to participate (in-person or virtually), please register for the meeting by following the link on the SU2 home page (<https://su2code.github.io>).

*Please note that all stated times are British Summer Time (BST). **The presenter author is underlined

Stanford



TU Delft

Imperial College
London



UNIVERSITY OF TWENTE.



BOSCH