

Untangling your code: a git workflow for Noobs

Drupal GovCon 2016

Google Analytics has been moved to the main
Auditorium

Who are we?

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What we're going to cover

The Basics

The Four Rules

Write that code!

Store and Test

Deployment

Now What?

In the beginning ...



Crunch time!



The Basics



The Basics

Who is using git now?

The Basics

Who is using git now?

Who is using a git branching workflow?

The Basics

What is git?

The Basics

What is git?

git is a distributed version control system that "records changes to a file or set of files over time so that you can recall specific versions later."

<https://git-scm.com/book/en/v2/Getting-Started-About-Version-Control>

The Basics

What is git?

git is a security blanket superhero cape!



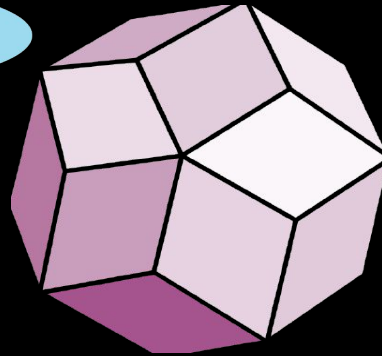
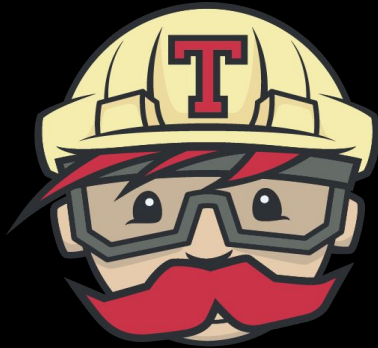
The Basics

Why git?



The Basics

Why git?



The Four Rules

BREAK
THE
RULES

The Four Rules

Rule #1:

All work is done in a branch.

The Four Rules

Rule #2:

Nobody merges their own code.

The Four Rules

Rule #3:

No editing on the server(s).

The Four Rules

Rule #4:

'master' branch is always deployable.



Feature Branches!

Feature branch (n): A set of changes to your site.

2 Defining Aspects:

Don't work forever: Have a discrete goal so everyone knows when it's done and whether the branch actually accomplishes its goal.

Have a base: A feature branch should branch off of another branch (master, development, integration, etc) that you know is safe; this branch should have no buggy code or hacks required to get it running.

Creating a feature branch

```
[laptop]$ git checkout master
```

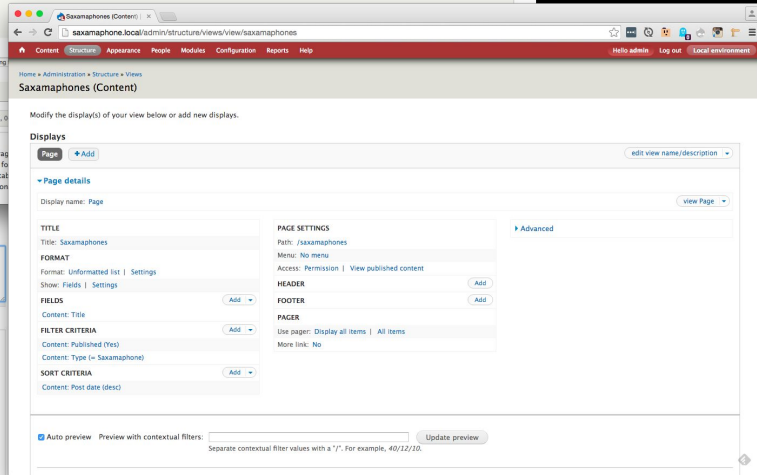
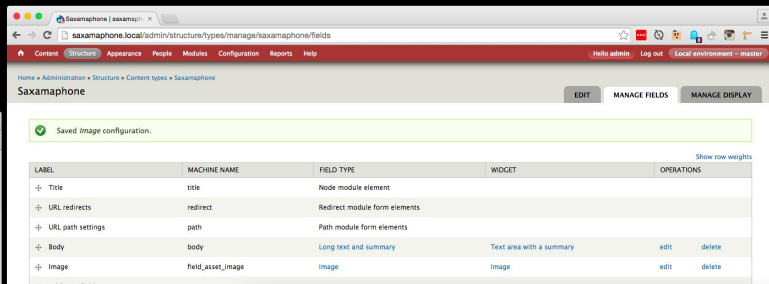
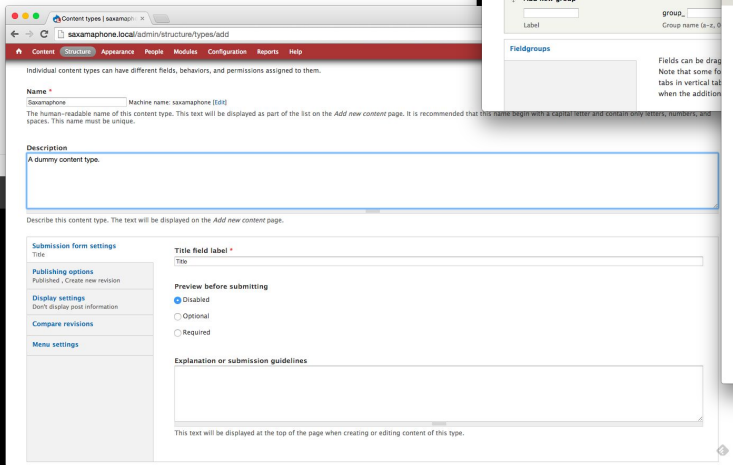
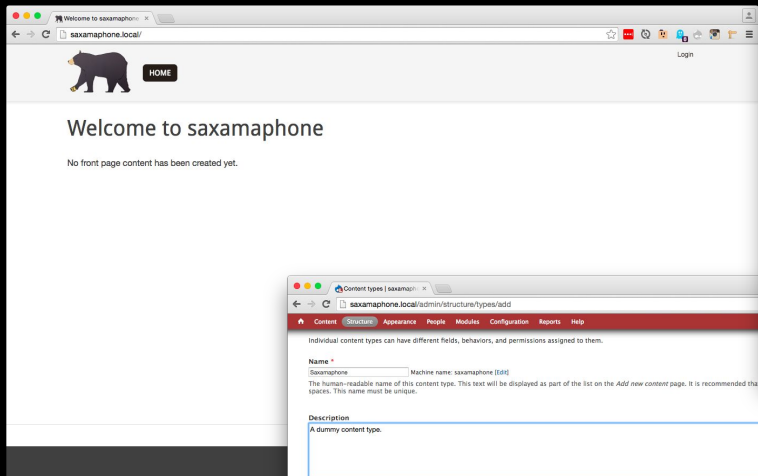
```
[laptop]$ git pull
```

```
[laptop]$ git checkout -b add-date-field-1
```

Write that code!

```
var simple = type  
forward = type.slice(  
  ofType = what === "of-type";  
return first === 1 && last === 0 ?  
  
// Shortcut for :nth-*(n)  
function( elem ) {  
  return !!elem.parentNode;  
} :  
  
function( elem, context, xml ) {  
  var cache, outerCache, node, diff, nodeIndex, start,  
      dir = simple !== forward ? "nextSibling" : "  
      previousSibling",  
      parent = elem.parentNode,  
      name = ofType && elem.nodeName.toLowerCase(),  
      useCache = !xml && !ofType;  
  
  if ( parent ) {  
    (only)-(child|of-type)
```

Site Building



Export those nodes & views!

```
[laptop]$ drush features-components node
```

```
[laptop]$ drush features-components views
```

```
[laptop]$ drush features-export sax_features node:saxamaphone  
views_view:saxamaphones -y
```


Write that code!

```
[laptop]$ git status
```

```
[laptop]$ git diff
```

```
[laptop]$ git add sax_features.views_default.inc
```

```
[laptop]$ git commit
```

Going Public With a Branch

You have been tasked with adding the date to the existing saxamaphones view. Let's go!



Building the new view...

Saxamaphones (Content) | x

saxamaphone.local/admin/structure/Views/view/saxamaphones/edit/page?destination=saxamaphones

Content Structure Appearance People Modules Configuration Reports Help Hello admin Log out Local environment - add-date-field-1

Home » Administration » Structure » Views

Saxamaphones (Content)

Modify the display(s) of your view below or add new displays.

Displays

Page [+ Add](#) [edit view name/description](#)

Page details

Display name: Page [view Page](#)

TITLE Title: Saxamaphones	PAGE SETTINGS Path: /saxamaphones Menu: No menu Access: Permission View published content	Advanced
FORMAT Format: Unformatted list Settings Show: Fields Settings	HEADER Add	
FIELDS Add	FOOTER Add	
Content: Title	PAGER Use pager: Display all items All items More link: No	
FILTER CRITERIA Add		
Content: Published (Yes)		
Content: Type (= Saxamaphone)		
SORT CRITERIA Add		
Content: Post date (desc)		

Auto preview Preview with contextual filters: [Update preview](#)
Separate contextual filter values with a "|". For example, 40/12/10.

Update the feature

```
[laptop]$ drush features-diff sax_features
```

```
[laptop]$ drush features-update sax_features -y
```

```
[laptop]$ git status
```

```
[laptop]$ git add sax_features.views_default.inc -p
```

```
[laptop]$ git commit
```

Pushing a feature branch to the repo

An elephant's head and trunk are shown on the left side of the image. The trunk is curved and spraying a large amount of water towards the right. The water is captured in mid-air, creating a dense, white mist against a solid black background. The elephant's skin is textured and appears dark brown or grey.

```
[laptop]$ git push -u  
origin add-date-field-1
```

Pull Request

A pull request is a feature branch that can be merged back into the base branch.

The image displays three overlapping screenshots from the GitHub interface, illustrating the pull request process:

- Top-left screenshot:** Shows the 'Compare changes' page for the repository `dzink / lisas-saxamophone`. It includes a search bar, repository navigation, and a prominent green button labeled 'Create pull request'.
- Middle-left screenshot:** Shows the 'Comparing changes' page, where two branches are compared. It indicates '1 commit' and '1 file changed'. A diff view shows changes to `sites/all/modules/sax_features/sax_features.views_def`, with 6 additions and 0 deletions.
- Right screenshot:** Shows a completed pull request titled 'Adding date field to sax view. #1'. The status is 'Open', and it shows '1 commit' and '1 file changed'. A comment from 'dzink' is visible. The 'Checks' section shows 'All checks have passed' (4 successful checks), including ProboCI-Dev/Drupal/Setup Drupal site, ProboCI-Dev/Shell/Generate content, ProboCI-Dev/Shell/Generate login link, and ProboCI-Dev/env. A green 'Merge pull request' button is at the bottom.

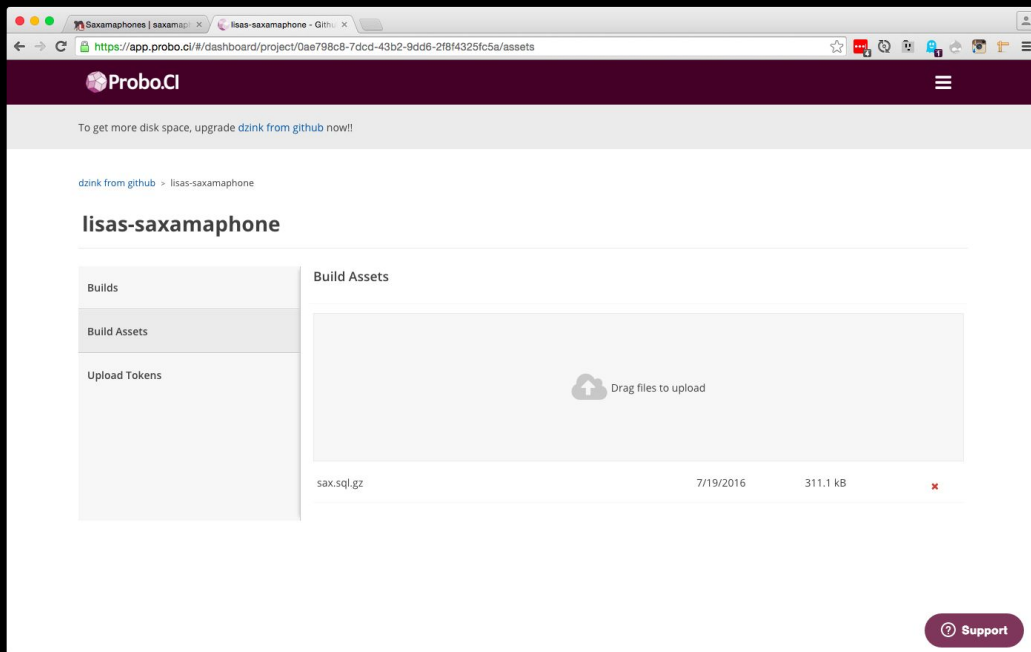
Testing a PR: Setting up Probo.ci

```
[laptop]$ mysqldump  
saxamaphone > sax.sql
```

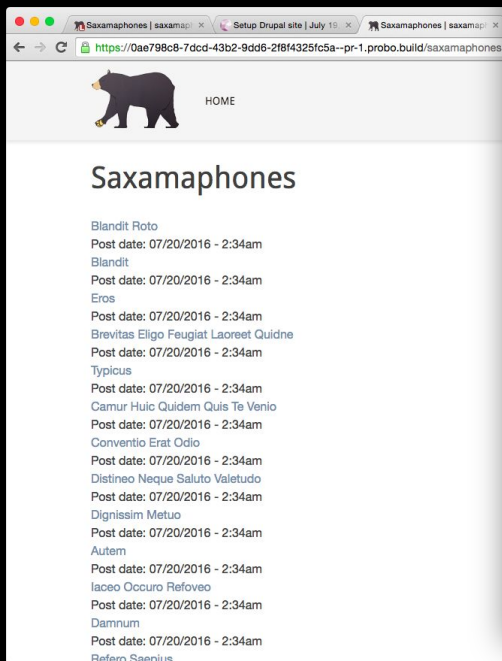
```
[laptop]$ gzip sax.sql
```

```
[laptop]$ git add .probo.yaml
```

```
[laptop]$ git commit
```



Testing the pull request on Probo.ci



HOME

Saxamaphones

Blandit Roto
Post date: 07/20/2016 - 2:34am

Blandit
Post date: 07/20/2016 - 2:34am

Eros
Post date: 07/20/2016 - 2:34am

Brevitas Eligo Feugiat Laoreet Quidne
Post date: 07/20/2016 - 2:34am

Typicus
Post date: 07/20/2016 - 2:34am

Camur Huiic Quidem Quis Te Venio
Post date: 07/20/2016 - 2:34am

Conventio Erat Odio
Post date: 07/20/2016 - 2:34am

Distineo Neque Saluto Valetudo
Post date: 07/20/2016 - 2:34am

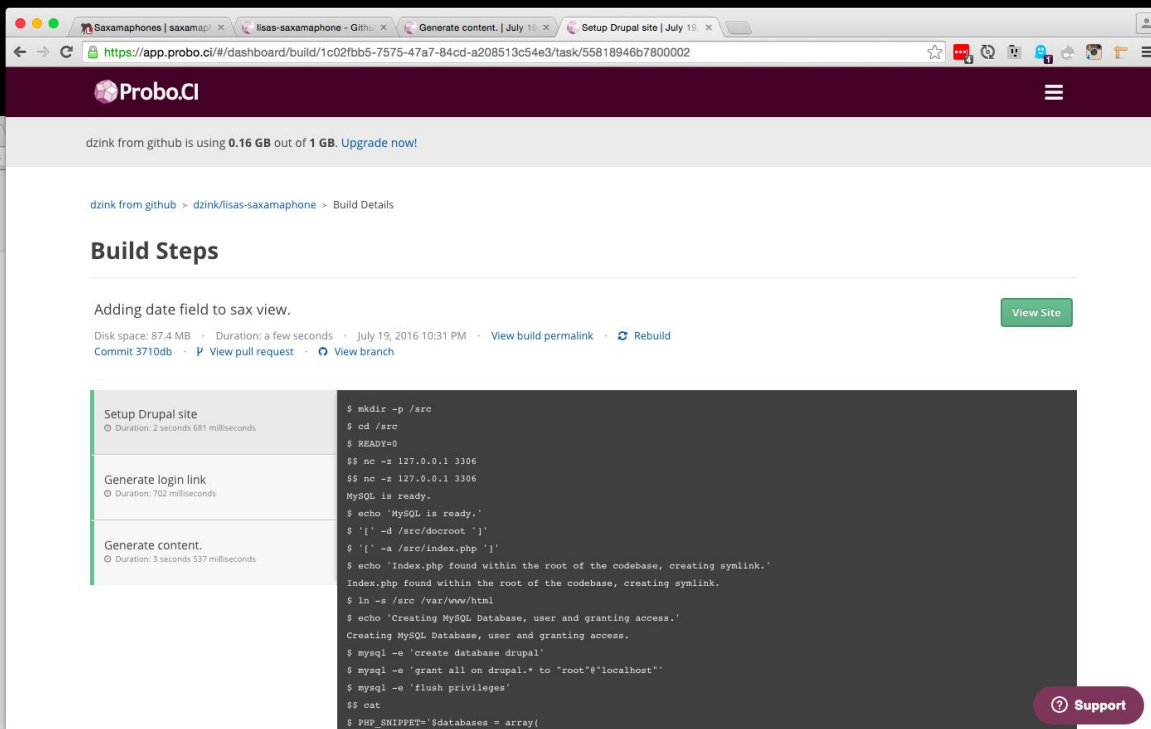
Dignissim Metuo
Post date: 07/20/2016 - 2:34am

Autem
Post date: 07/20/2016 - 2:34am

Iaceo Occuro Refoveo
Post date: 07/20/2016 - 2:34am

Damnum
Post date: 07/20/2016 - 2:34am

Refero Saepius



Probo.CI

dzink from github is using 0.16 GB out of 1 GB. [Upgrade now!](#)

dzink from github > dzink/fisas-saxamaphone > Build Details

Build Steps

Adding date field to sax view. [View Site](#)

Disk space: 87.4 MB · Duration: a few seconds · July 19, 2016 10:31 PM · [View build permalink](#) · [Rebuild](#)
[Commit 3710db](#) · [View pull request](#) · [View branch](#)

Setup Drupal site ⌚ Duration: 2 seconds 681 milliseconds	<pre>\$ mkdir -p /src \$ cd /src \$ READY=0 \$\$ nc -z 127.0.0.1 3306 \$\$ nc -z 127.0.0.1 3306 MySQL is ready. \$ echo 'MySQL is ready.' \$ '[' -d /src/doctype ']' \$ '[' -a /src/index.php ']' \$ echo 'Index.php found within the root of the codebase, creating symlink.' Index.php found within the root of the codebase, creating symlink. \$ ln -s /src /var/www/html \$ echo 'Creating MySQL Database, user and granting access.' Creating MySQL Database, user and granting access. \$ mysql -e 'create database drupal' \$ mysql -e 'grant all on drupal.* to 'root'@'localhost'' \$ mysql -e 'flush privileges' \$ cat \$ PHP_SHIPPET=\$databases = array(</pre>
Generate login link ⌚ Duration: 702 milliseconds	
Generate content. ⌚ Duration: 3 seconds 537 milliseconds	

[Support](#)

Someone else checks the code

Comparing changes

Choose two branches to see what's changed or to start a new pull request. If you need to, you can also [compare across forks](#).

base: **master** ... compare: **add-date-field-1** ✓ **Able to merge**. These branches can be automatically merged.

[Create pull request](#) Discuss and review the changes in this comparison with others.

1 commit 1 file changed 0 commit comments 1 contributor

Commits on Jul 19, 2016

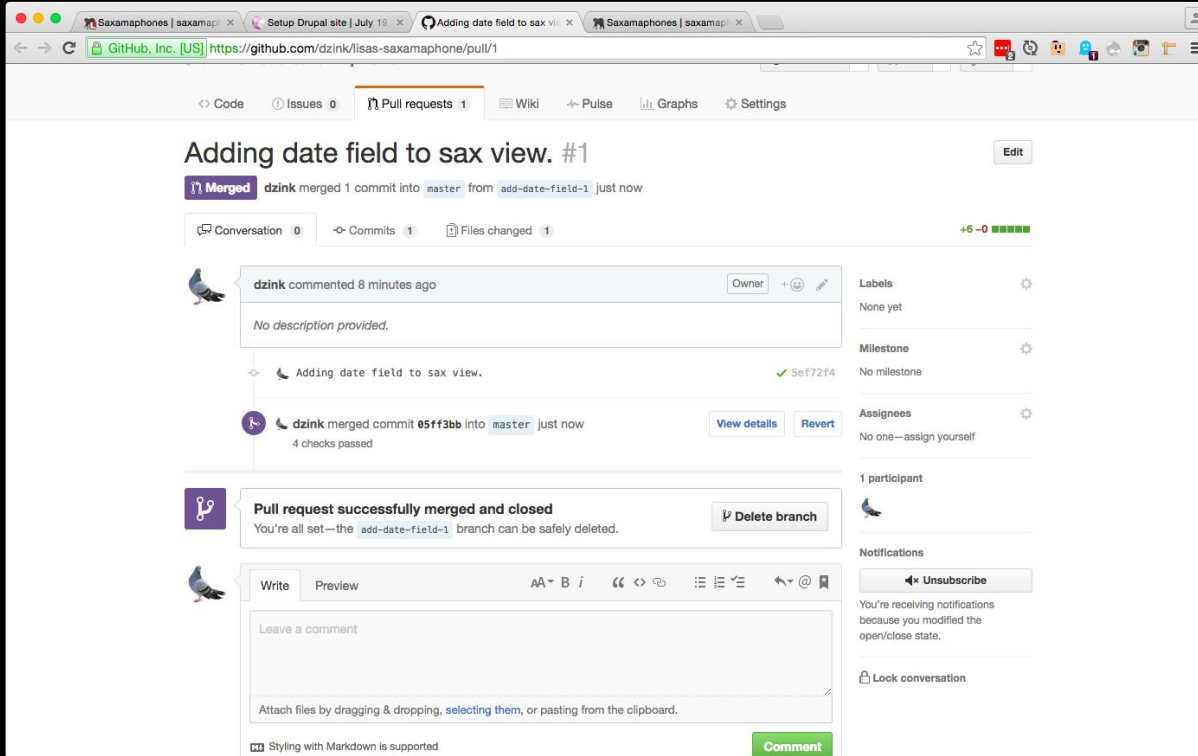
dzink Adding date field to sax view. 64ed697

Showing 1 changed file with 6 additions and 0 deletions. Unified Split

```
6 sites/all/modules/sax_features/sax_features.views_default.inc View
```

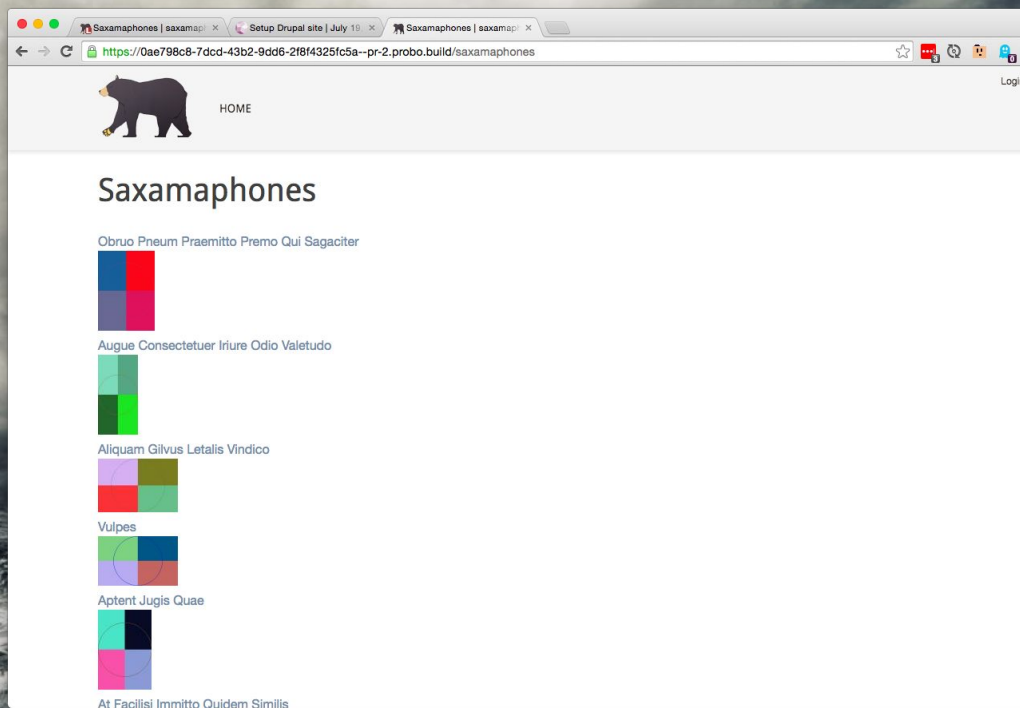
```
@@ -39,6 +39,12 @@ function sax_features_views_default_views() {
39 39   $handler->display->display_options['fields']['title']['label'] = '';
40 40   $handler->display->display_options['fields']['title']['alter']['word_boundary'] = FALSE;
41 41   $handler->display->display_options['fields']['title']['alter']['ellipsis'] = FALSE;
42 42   /* Field: Content: Post date */
43 43   $handler->display->display_options['fields']['created']['id'] = 'created';
44 44   $handler->display->display_options['fields']['created']['table'] = 'node';
45 45   $handler->display->display_options['fields']['created']['field'] = 'created';
46 46   $handler->display->display_options['fields']['created']['date_format'] = 'short';
47 47   $handler->display->display_options['fields']['created']['second_date_format'] = 'long';
42 48   /* Sort criterion: Content: Post date */
43 49   $handler->display->display_options['sorts']['created']['id'] = 'created';
44 50   $handler->display->display_options['sorts']['created']['table'] = 'node';
```

Cool! The Lead Dev Merges



Meanwhile...

While we were working on the date feature branch, our coworker was working on a similar branch that would edit the same view to add images.



Making the second feature branch

```
[laptop]$ git checkout master
```

```
[laptop]$ git pull
```

```
[laptop]$ git checkout -b add-image-field-2
```

```
[laptop]$ drush features-diff sax_features
```

```
[laptop]$ drush features-update sax_features -y
```

```
[laptop]$ git status
```

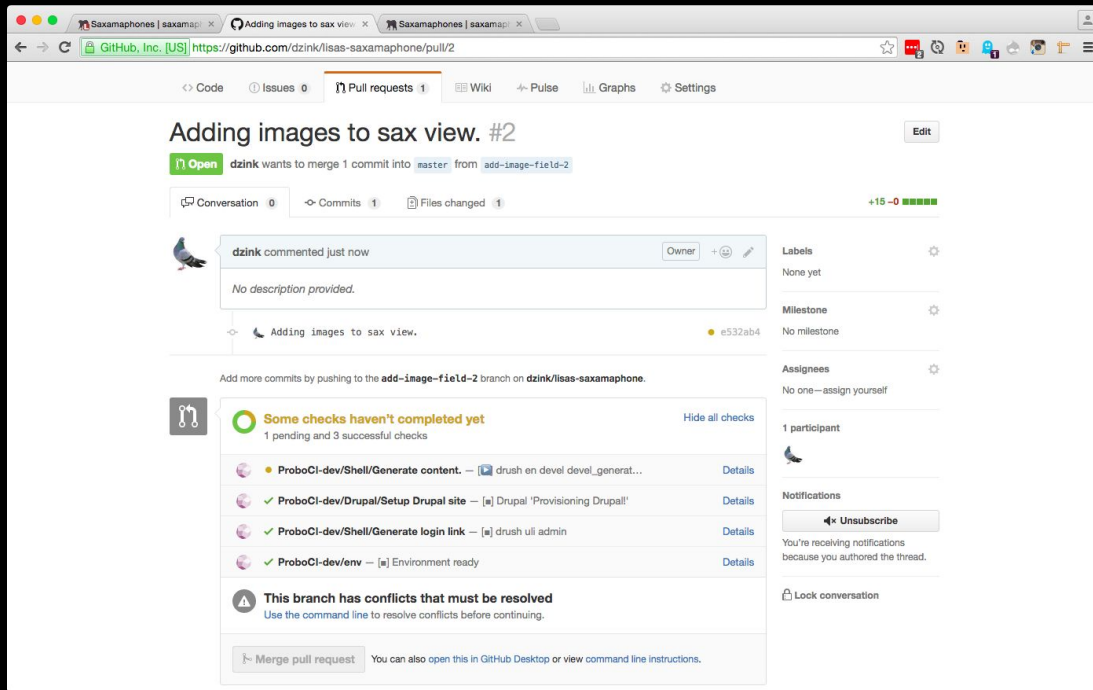
```
[laptop]$ git add sax_features.views_default.inc -p
```

```
[laptop]$ git commit
```

CONFLICT!

Github won't let us automatically merge the code because we both edited the same file in the same place.

Our coworker needs to rebase their branch off the latest in master.



The screenshot shows a GitHub pull request titled "Adding images to sax view. #2". The pull request is from the "add-image-field-2" branch to the "master" branch. It shows a conflict message: "Some checks haven't completed yet" with 1 pending and 3 successful checks. The checks listed are:

- ProboCI-dev/Shell/Generate content. — [a] drush en devel devel_generat... (Details)
- ProboCI-dev/Drupal/Setup Drupal site — [a] Drupal 'Provisioning Drupal!' (Details)
- ProboCI-dev/Shell/Generate login link — [a] drush ull admin (Details)
- ProboCI-dev/env — [a] Environment ready (Details)

Below the checks, there is a warning message: "This branch has conflicts that must be resolved. Use the command line to resolve conflicts before continuing." At the bottom, there is a "Merge pull request" button and a note: "You can also open this in GitHub Desktop or view command line instructions."

COULD THIS END WELL?

WILL THINGS EVER BE OK AGAIN???



Yes! Rebase!

```
[laptop]$ git checkout master
```

```
[laptop]$ git pull
```

```
[laptop]$ git checkout add-image-field-2
```

```
[laptop]$ git rebase master
```

```
[laptop]$ git add sax_features.views_default.inc
```

```
[laptop]$ git rebase --continue
```

```
[laptop]$ git add sax_features.views_default.inc  
-p
```

```
[laptop]$ git commit
```

```
1. vagrant@local: /var/www/saxamaphone/code (ssh)
vagrant@local:/var/www/saxamaphone/code$ git rebase master
First, rewinding head to replay your work on top of it...
Applying: Adding images to sax view.
Using index info to reconstruct a base tree...
M       sites/all/modules/sax_features/sax_features.views_default.inc
Falling back to patching base and 3-way merge...
Auto-merging sites/all/modules/sax_features/sax_features.views_default
.inc
CONFLICT (content): Merge conflict in sites/all/modules/sax_features/s
ax_features.views_default.inc
Failed to merge in the changes.
Patch failed at 0001 Adding images to sax view.
The copy of the patch that failed is found in:
    /var/www/saxamaphone/code/.git/rebase-apply/patch

When you have resolved this problem, run "git rebase --continue".
If you prefer to skip this patch, run "git rebase --skip" instead.
To check out the original branch and stop rebasing, run "git rebase --
abort".

vagrant@local:/var/www/saxamaphone/code$ git st
rebase in progress; onto 05ff3bb
You are currently rebasing branch 'add-image-field-2' on '05ff3bb'.
(fix conflicts and then run "git rebase --continue")
(use "git rebase --skip" to skip this patch)
(use "git rebase --abort" to check out the original branch)


Unmerged paths:
  (use "git reset HEAD <file>..." to unstage)
  (use "git add <file>..." to mark resolution)

        both modified:    sites/all/modules/sax_features/sax_feature
s.views_default.inc
```

HARMONY RESTORED


Saxamaphones | saxamap | x | lissas-saxamaphone - Githu | x | Saxamaphones | saxamap | x

← → ↻ <https://0ae798c8-7dcd-43b2-9dd6-2f8f4325fca--pr-2.probo.build/saxamaphones> ☆ 🔔 🔄 📱 🏠 ☰


 HOME Login

Saxamaphones


Laoreet Nobis Quadrum Venio Vero
Post date: 07/20/2016 - 2:48am




Ille
Post date: 07/20/2016 - 2:48am




At Gemino Quibus Tation Uliciscor Valde
Post date: 07/20/2016 - 2:48am



Dolore Volutpat
Post date: 07/20/2016 - 2:48am



Natu Praemitto
Post date: 07/20/2016 - 2:48am



HARMONY RESTORED





Deployment

Uh oh!

Deployment



AKA: Hack the Gibson!

Deployment

AKA: YeeeeHAW Cowboy!



Deployment



Deployment

```
[laptop]$ git tag -a "3.0.3" -m "3.0.3 release"
```

```
[laptop]$ git push --tags
```

Deployment

```
[server]$ drush variable-set maintenance_mode 1
```

```
[server]$ drush sql-dump > /var/backup/my_db-`date +%Y%m%d`.sql
```

```
[server]$ git checkout master && git fetch --all
```

```
[server]$ git status
```

```
[server]$ git pull
```

```
[server]$ git checkout -b v3.0.3 3.0.3
```

```
[server]$ drush updatedb && drush features-revert-all -y
```

```
[server]$ drush variable-set maintenance_mode 0
```


Deployment



Jenkins

Wow! You all look convinced!!

But what about your boss?

Your supervisor?

Your CTO?



Git saves time, money, and rep

Multiple people working on the same site, finish on time

Ease the pain of adding new people to a project

Confidence in your product

Client buy-in

No more buggy code on production

Rolling back code (EMERGENCY ONLY)



**HOW MANY MARBLES WERE
THERE?**





Resources

- GitHub Flow - a lot of this presentation is a simplified version of GitHub Flow
<https://guides.github.com/introduction/flow/>
<http://scottchacon.com/2011/08/31/github-flow.html>
- Tig - view git commit and log information, see what hasn't been pushed to upstream
<https://github.com/jonas/tig>
- Git prompt & completion - see the branch and git status on your command line
<https://git-scm.com/book/en/v2/Git-in-Other-Environments-Git-in-Bash>
- Git GUIs - visual thinker? Use a GUI!
<https://git-scm.com/downloads/guis>

Questions?

Feel free to ping @gchaix (IRC/Twitter/Drupal.org/just about everywhere) or greg@tag1consulting.com