

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!



Image credit: https://commons.wikimedia.org/wiki/File:%27Shiiittttttt!!%27-Rangitata_Valley_NZ-White_Water_Rafting.jpg

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!



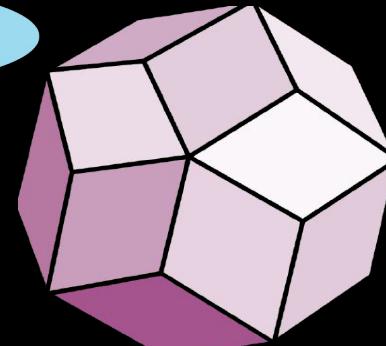
The Basics

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!

```
function( elem ) {
    var cache, outerCache, node, diff, nodeIndex, start,
        previousSibling, parent = elem.parentNode,
        name = ofType && elem.nodeName.toLowerCase(),
        useCache = !xml && !ofType;
    if ( parent ) {
        if ( ofType ) {
            if ( !useCache || !outerCache[ name ] ) {
                outerCache[ name ] = {};
                if ( ofType === 'child' ) {
                    var child = elem.firstChild;
                    while ( child ) {
                        outerCache[ name ][ child.nodeType ] =
                            child;
                        child = child.nextSibling;
                    }
                } else {
                    var child = elem.lastChild;
                    while ( child ) {
                        outerCache[ name ][ child.nodeType ] =
                            child;
                        child = child.previousSibling;
                    }
                }
            }
            return outerCache[ name ][ elem.nodeType ];
        }
    }
}
```

Site Building

Welcome to saxamaphone

No front page content has been created yet.

Saxamaphone

Content types | saxamaphone

Name *
Saxamaphone Machine name: saxamaphone [edit]
The human-readable name of this content type. This text will be displayed as part of the list on the Add new content page. It is recommended that this name begin with a capital letter and contain only letters, numbers, and spaces. This name must be unique.

Description
A dummy content type.

Describe this content type. The text will be displayed on the Add new content page.

Submission form settings
Title
Title field label *
This

Publishing options
Published , Create new revision

Display settings
Don't display post information

Compare revisions

Menu settings

This text will be displayed at the top of the page when creating or editing content of this type.

Saved Image configuration.

LABEL	MACHINE NAME	FIELD TYPE	WIDGET	OPERATIONS
Title	title	Node module element		
URL redirects	redirect	Redirect module form elements		
URL path settings	path	Path module form elements		
Body	body	Long text and summary	Text area with a summary	edit delete
Image	field_asset_image	Image	Image	edit delete

Add new field

+ Label

+ Add existing field

+ Select an existing field to share

+ Add new group

+ Label

Group name (a-z, 0-9)

Fieldgroups

Fields can be drag and drop. Note that some fields have tabs in vertical tabs when the addition

Saxamaphones (Content)

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

Displays

Page + Add

Page details

Display name: Page

TITLE: Title: Saxamaphones

FORMAT: Format: Unformatted list | Settings

Show: Fields | Settings

FIELDS

Content: Title

FOOTER

PAGER

Use pager: Display all items | All items

More link: No

FILTER CRITERIA

Content: Type (= Saxamaphone)

SORT CRITERIA

Content: Post date (desc)

Auto preview Preview with contextual filters: Separate contextual filter values with a '/'. For example, 40/12/10. Update preview

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
```

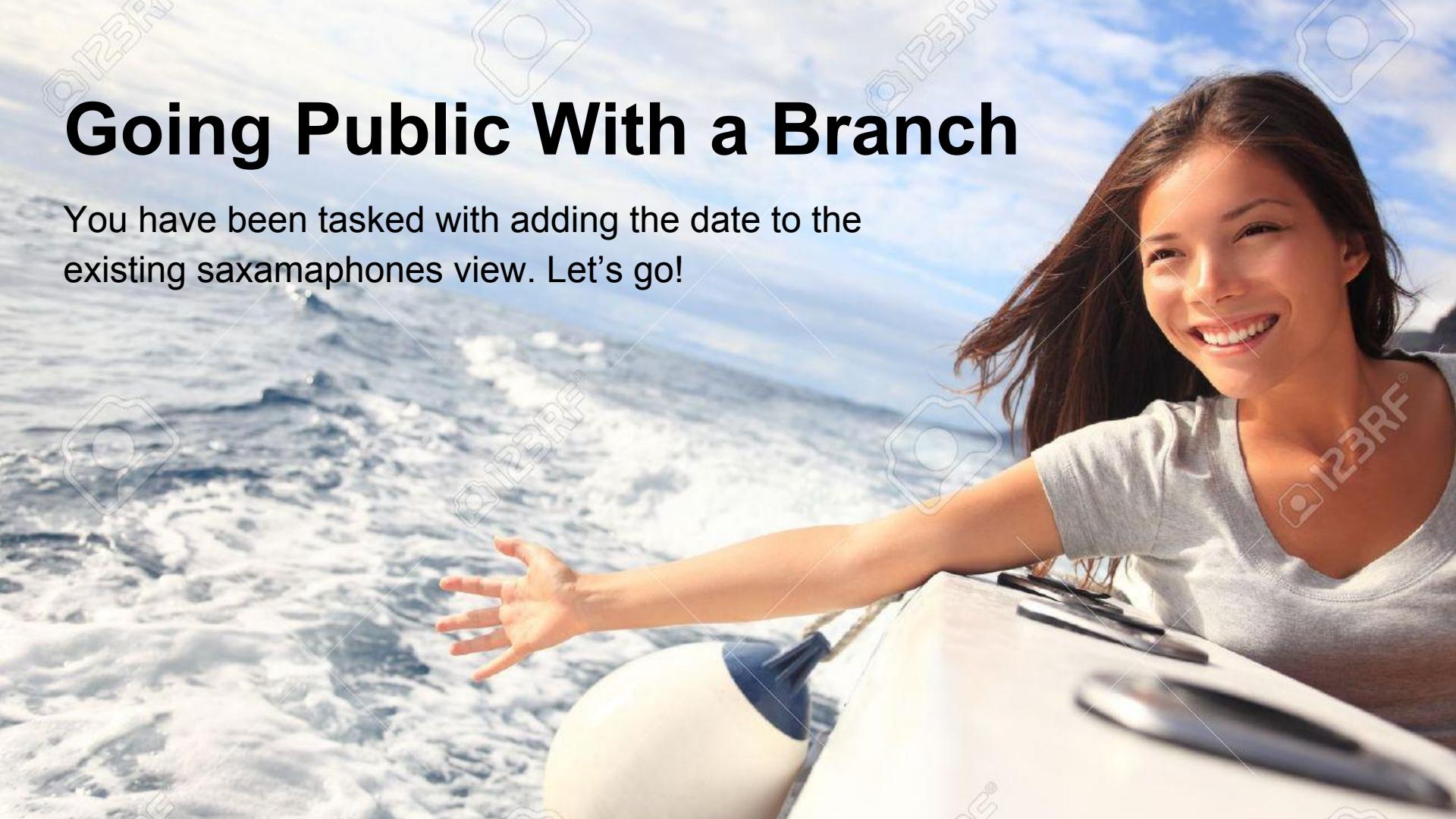
```
[laptop]$ git diff
```

```
[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...

The screenshot shows the Drupal administration interface for managing views. The title bar indicates the current page is 'saxamaphone.local/admin/structure/views/view/saxamaphones/edit/page?destination=saxamaphones'. The top navigation bar includes links for Content, Structure, Appearance, People, Modules, Configuration, Reports, and Help. The user is logged in as 'Hello admin'.

The main content area is titled 'Saxamaphones (Content)'. It displays the configuration for a 'Page' display. The 'Display name' is set to 'Page'. The 'PAGE SETTINGS' section shows the path as '/saxamaphones', no menu assigned, and access permission set to 'View published content'. The 'HEADER' and 'FOOTER' sections are currently empty. The 'PAGER' section allows for displaying all items or using a more link.

The left sidebar contains several configuration sections:

- TITLE**: Title is set to 'Saxamaphones'.
- FORMAT**: Format is set to 'Unformatted list' with 'Settings' available.
- FIELDS**: Fields include 'Content: Title' (with an 'Add' button), 'Content: Published (Yes)', 'Content: Type (= Saxamaphone)', and 'Content: Post date (desc)'.
- FILTER CRITERIA**: Criteria include 'Content: Published (Yes)' and 'Content: Type (= Saxamaphone)'.
- SORT CRITERIA**: Sort criteria is set to 'Content: Post date (desc)'.

At the bottom, there is an 'Auto preview' checkbox, a preview input field, and a 'Update preview' button. A note below the preview field states: '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



```
[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 consists of two side-by-side screenshots of a GitHub repository interface. On the left, a 'Compare changes' page shows a diff between 'base: master' and 'compare: add-date-field-1'. It highlights one commit from 'dzink' titled 'Adding date field to sax view.' On the right, a 'Pull requests' page shows a new pull request titled '#1 Adding date field to sax view.' by 'dzink'. The pull request details page includes a conversation with a single comment from 'dzink' about the commit, and a sidebar with merge status and notifications.

Compare changes

base: master ... compare: add-date-field-1

Comparing changes

Choose two branches to see what's changed or to start a new pull request.

base: master ... compare: add-date-field-1 Able to merge

Create pull request Discuss and review the changes in this comparison

1 commit 1 file changed

Commits on Jul 19, 2016

dzink Adding date field to sax view.

Showing 1 changed file with 6 additions and 0 deletions.

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

```
@@ -39,6 +39,12 @@ function sax_features_views_default() {
 39 39     $handler->display->display_options['fields'][1];
 40 40     $handler->display->display_options['fields'][1];
 41 41     $handler->display->display_options['fields'][1];
 42 + '/> Field: Content: Post date />
 43 + $handler->display->display_options['fields'][1];
 44 $handler->display->display_options['fields'][1];
 45 $handler->display->display_options['fields'][1];
 46 $handler->display->display_options['fields'][1]['created']['date_format'] = 'short';
 47 $handler->display->display_options['fields'][1]['second_date_format'] = 'long';
```

Adding date field to sax view. #1

dzink commented 4 minutes ago

No description provided.

Adding date field to sax view. 373.0db7

Add more commits by pushing to the **add-date-field-1** branch on **dzink/lisas-saxamaphone**.

All checks have passed 4 successful checks

ProboCI-dev/Drupal/Setup Drupal site — [a] Drupal 'Provisioning Drupal' Details

ProboCI-dev/Shell/Generate content. — [a] drush en devl_generate.. Details

ProboCI-dev/Shell/Generate login link — [a] drush ul admin Details

ProboCI-dev/env — [a] Environment ready Details

This branch has no conflicts with the base branch Merging can be performed automatically.

Merge pull request You can also open this in GitHub Desktop or view command line instructions.

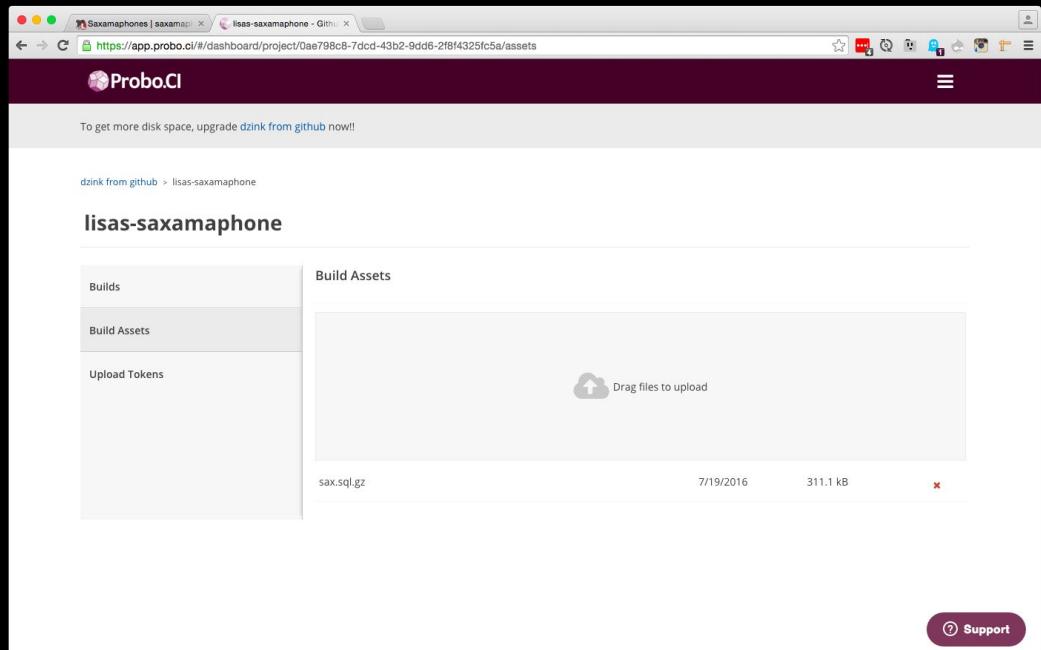
Testing a PR: Setting up Probo.ci

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

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

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

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



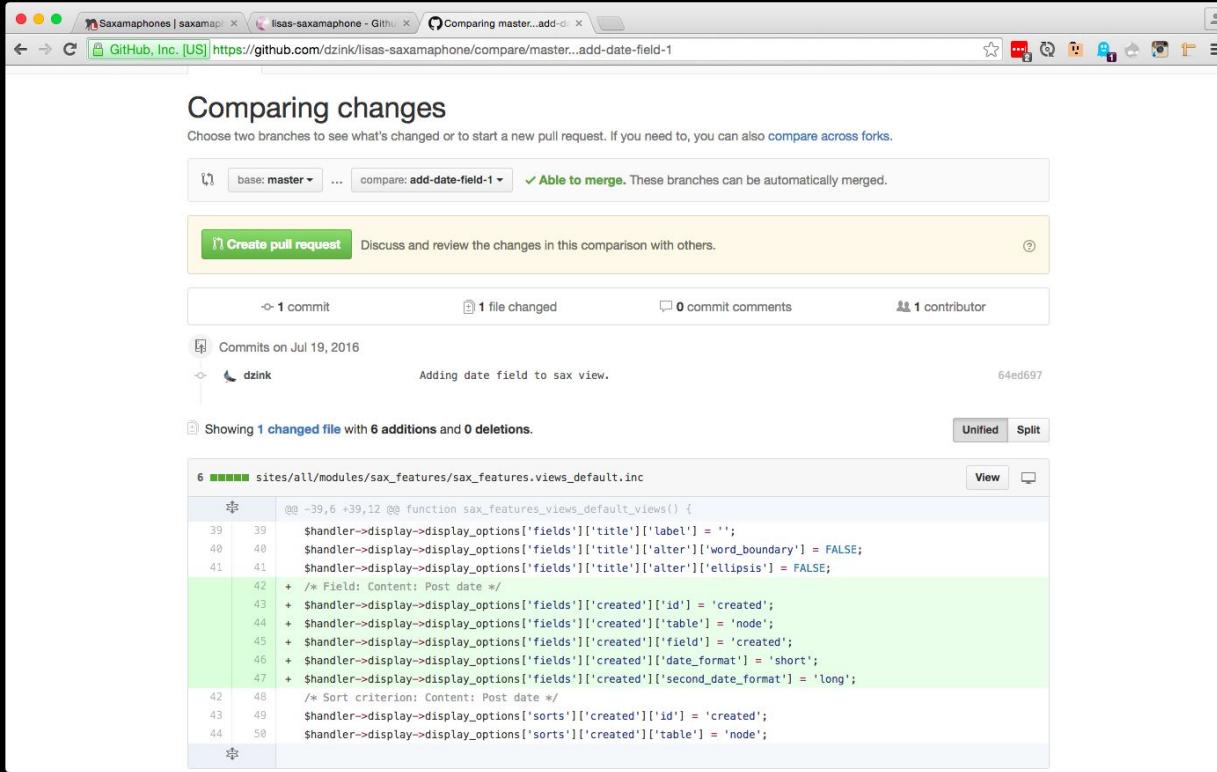
Testing the pull request on Probo.ci

The screenshot shows a browser window with two tabs open. The left tab displays the 'Saxamaphones' website, featuring a bear icon and a list of names: 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 Laoret Quidne, Post date: 07/20/2016 - 2:34am; Typicus, Post date: 07/20/2016 - 2:34am; Camur Huic 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.

The right tab is the 'Probo.Cl' build dashboard for a pull request. It shows the commit 'dzink from github' (commit 3710db) and the build details for 'dzink/dzink/lisas-saxamaphone'. The 'Build Steps' section lists three steps: 'Setup Drupal site', 'Generate login link', and 'Generate content.' Each step has its duration and the corresponding command-line output. A 'View Site' button is located on the right side of the dashboard.

Step	Duration	Command
Setup Drupal site	2 seconds 681 milliseconds	\$ 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/docroot ']' \$ '[' -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
Generate login link	702 milliseconds	\$ PHP_SNIPPET=\$databases = array(
Generate content.	3 seconds 537 milliseconds	

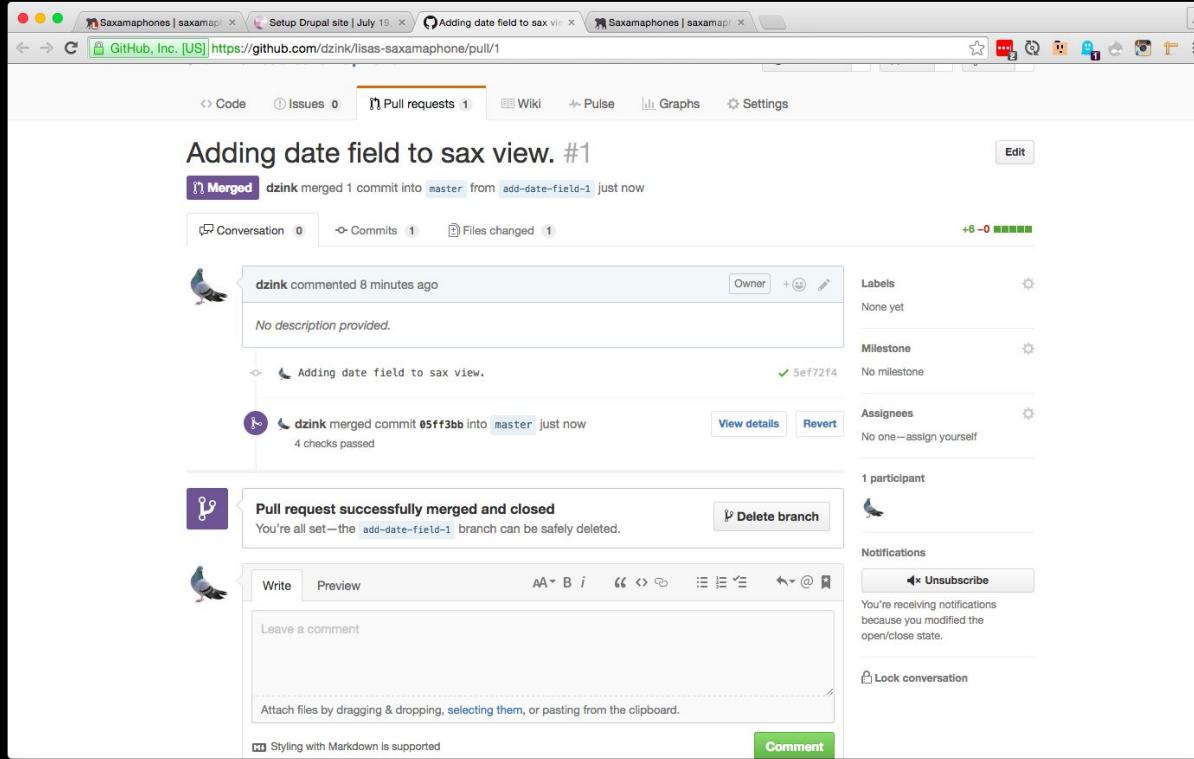
Someone else checks the code



The screenshot shows a GitHub pull request comparison between the 'master' branch and a branch named 'add-date-field-1'. The comparison highlights 1 commit, 1 file changed, and 0 commit comments. The file 'sites/all/modules/sax_features/sax_features.views_default.inc' has 6 additions and 0 deletions. The changes are as follows:

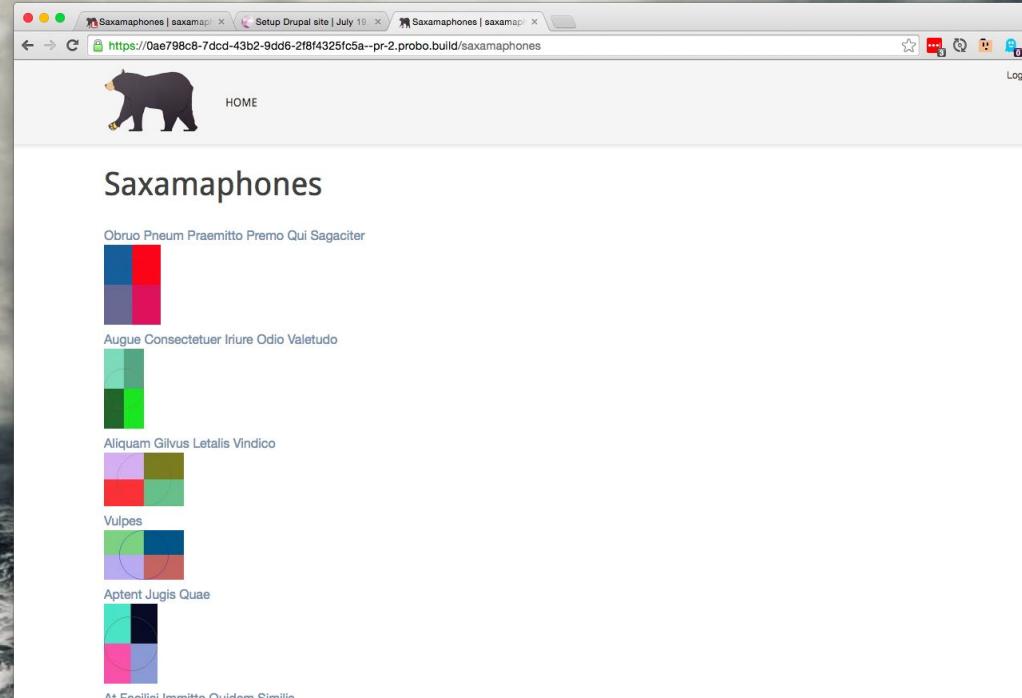
```
6 sites/all/modules/sax_features/sax_features.views_default.inc
@@ -39,6 +39,12 @@
 39 $handler->display->display_options['fields']['title']['label'] = '';
 40 $handler->display->display_options['fields']['title']['alter']['word_boundary'] = FALSE;
 41 $handler->display->display_options['fields']['title']['alter']['ellipsis']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

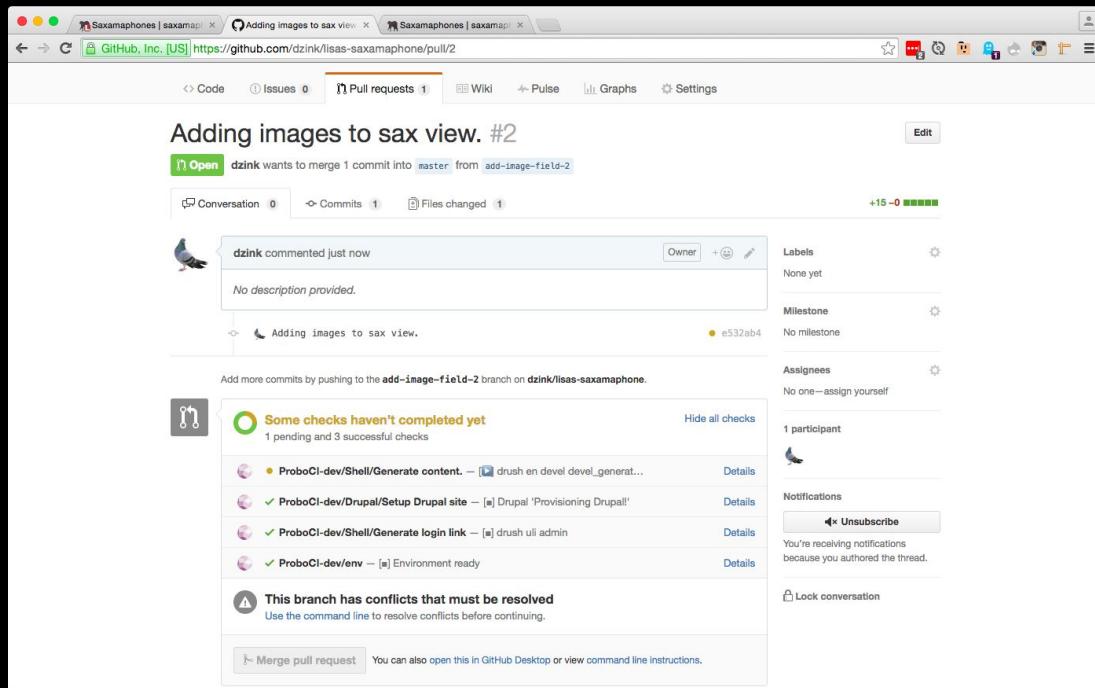
```
[laptop]$ git add sax_features.views_default.inc -p
```

```
[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.



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
```

```
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/sax_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

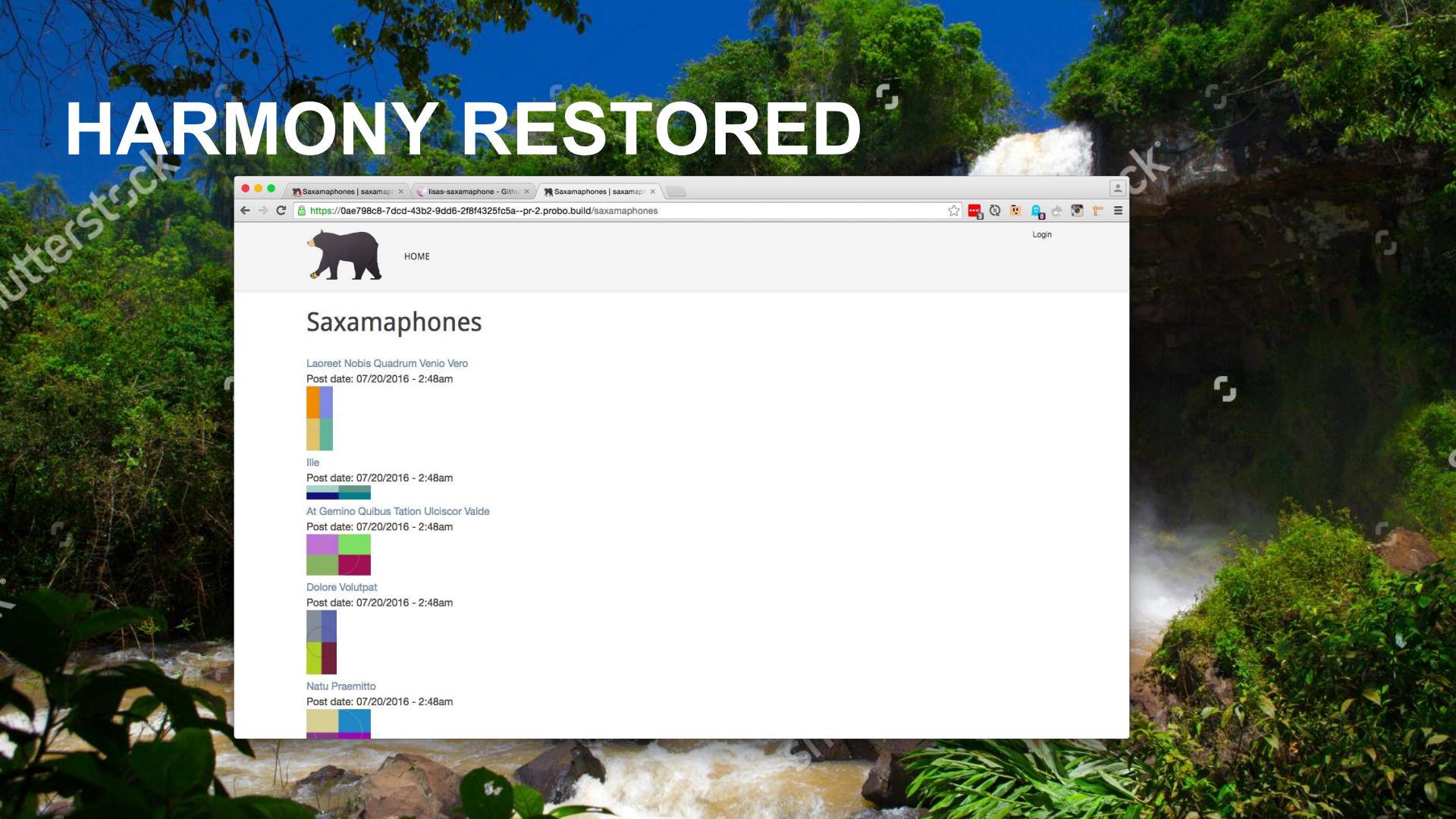
When you have resolved this problem, run "git rebase --continue".
If you prefer to skip this patch, run "git rebase --skip" instead.
To check out the original branch and stop rebasing, run "git rebase --abort".

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

A large, semi-transparent watermark of a waterfall cascading down a rocky cliff, surrounded by dense green foliage, serves as the background for the entire image.

Saxamaphones | saxamapi · Sas-saxamphone - GitHub · Saxamaphones | saxamapi · https://0ae798c8-7ddc-43b2-9dd6-2f8f4325fc5a--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 Gemini Quibus Tation Ulciscor Valde

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

Dolore Voluptat

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

Natu Praemitto

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


HARMONY RESTORED





Deployment

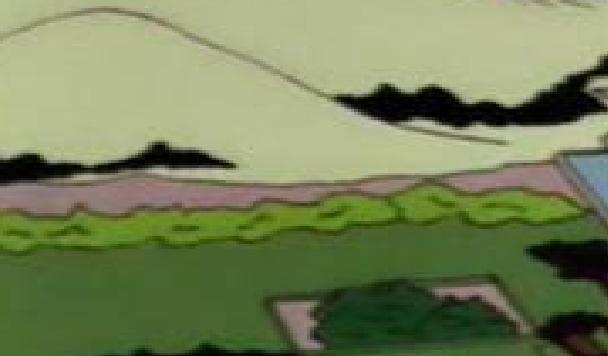
Uh oh!

Deployment



AKA: Hack the Gibson!

Deployment



AKA: YeeeeeeHAW 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