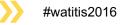
# WCMS DEVELOPMENT 101

# Kevin Paxman & Chris Shantz

watitis.uwaterloo.ca @watitisconf





# WHO WE ARE

### Kevin Paxman

WCMS lead developer

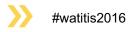
### Chris Shantz WCMS developer





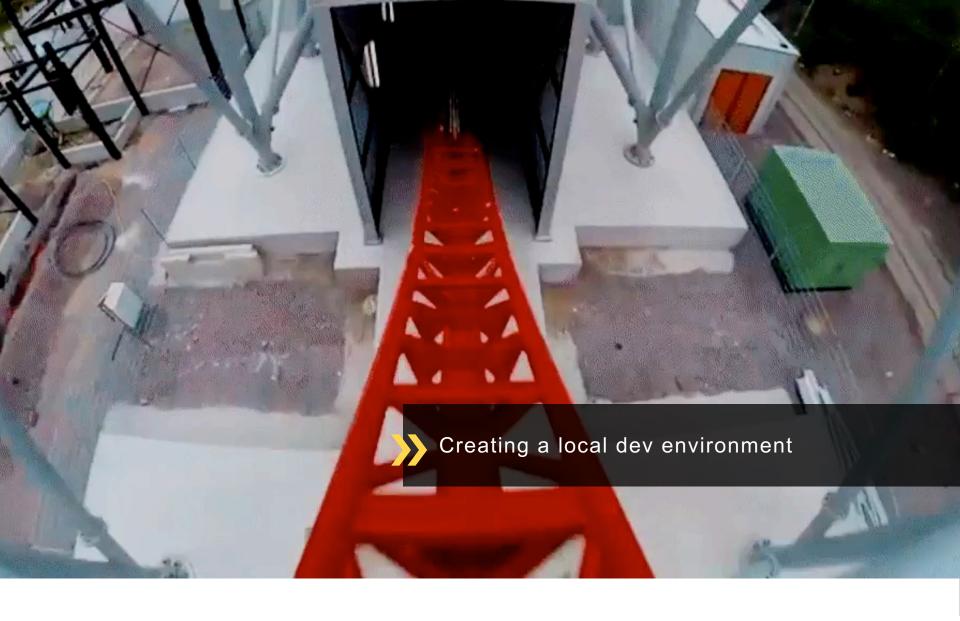


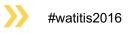
All information will be available at: uwaterloo.ca/web/develop-wcms















# **CREATING YOUR OWN DEV ENVIRONMENT FROM SCRATCH**

### It can be done!

### Setting up a Mac for local web development

current focuses on how I set up my own Mac for local web development. This was first written while I was using so, though things broke when upgrading to Sosemits, and the latent setup was done in El Capitan. I new ed to make the noosessry changes for El Capitan in the documentation block, though, since this was not a "from scratch" process, some steps may be missing or incorrect. It glosses over some things, such as how to save changes to text files in Nano. The order is somewhat "as I thought of it" so it may make sense to rearrange this. The goal is to leverage the "stube" of what's already built into OS X to have a development environment that is available at all times, instead of the MANP/WAMP method where you start and stop your development environment. As Apple updates their OR, there stere may past to be modified

### Set up Xcode

From the App Store, install and launch Xooda. Accept the license agreement. Once this is finished, open 1 type the following to install the command line developer tools: sudo xcode-select --inst sudo xcodebuild -licerse

### Set up Homebrew

Homebrew provides an easy way to install p ev provides an easy way to install packages. Many areas of this documentation assume that the brew comm I by Homebrew, is installed, installation instructions for Homebrew can be found at http://brew.sh/. Follow all Once Homebrew is installed, let's use it to install reget. At the Terminal prompt, type the following brew install wget

### Set up Composer

curl -s\$ https://metcomposer.orm/installer | sudo php -- -install-diru/usr/local/bin --filenam

### Set up some command line defaults and aliases We do this now to make things easier later on. Note that some of the aliases refer to things that we will create later on

Create a .profile file in your home folder (or edit the existing file) nato ~/.profile Add lines to suit your pr

#make Nano the default text editor export EDITORn/usr/bin/nano

#add MySQL to the path export PATH+\$PATH:/usr/local/mysql/bin #make typing "reload" reload the settings from this file (after editing)
alias reload=', ~/.profile'

#set up some helpful aliases for common commands alias like is-d'a alias upakes'-d'accem, tots/makefila-spdste-tags.php? alias upakes'-d'accem, tots/aliasteride/tesendole.sh alias information-decem, tots/aliantes/tesendole.sh alias information-decem, tots/aliantes/tesendole.sh alias encer-less -d' alias encer-less -d' alias december-december/aliantes/tesendole.sh alias december-december/aliantes/tesendole.sh alias december-december/aliantes/tesendole.sh alias december-december/aliantes/tesendole.sh alias december-december/aliantes/tesendole.sh alias december-december/aliantes/tesendole.sh alias december-december/tesendole.sh alias december-december/tesendole.sh alias december-december/tesendole.sh alias december-december/tesendole.sh alias december-december/tesendole.sh alias december-dec

#call ColorDiff when we run the diff command alias diff='colordiff' #set up some helpful aliases to go to specific folders

	we'dd w'	
aties	profilem	'cd ~/Sites/drupal7/profiles/uw_base_profile'
		~/Sites/drupal7/sites/d7.www1'
		~/Sites/drupal7/sites/d7.waw2'
		~/Sites/drupal7/sites/d7.wew3'
		~/Sites/drupal7/sites/d7.wow4'
		~/Sites/drupal7/sites/d7.wow5'
		~/Sites/drupal7/sites/d7.wew6'
		~/Sites/drupal7/sites/d7.www7*
atiss	ww0+1cd	~/Sites/drupal7/sites/d7.wew8'
alias	ww9="cd	~/Sites/drupal7/sites/d7.www9'

# Create a new directory and immediately enter it ction mod() ( mkdir -p "\$0" 66 cd "\$0"

~/.orofile

### Set up host names Internet Arthread Contractor Set up Apache Intel new April-Ap inamously we and in the arrangements of the second adholds rewits polds likews/spaces/rea Lastrodula society, styrth modula liberarcheorchethrod society e line that includes the 55L configuration and uncomment Include /private/etc/apachel/entrachtigstral.com/ -directory /> diladorrride core Require all decied s/Rirectorys -directory Americanity and Alladowride all Require all granted sylinetarys sale new ArthetextLogichetextraction art.com #SS.Notes "Tiller/private/ver/metal\_auto Set up PHP sele co deciverentecidos incideñante deciverentecidos inc. sele nere deciverencidos inci nes\_coccidies\_time = 340 nes\_input\_time = 240 nesery\_limit = 7500 nes\_input\_ners = 500000 Inter Install LINER Inter Install extremt scient the primits. sale nere /private/etc/php.ini

alays -8 Jaw USLIN cheel -8 parts v/50tes Install Drupal ci -/Sites drum di druga)-r.43 --drugal-project-resease-drugal/ drum di druga)-r.43 --drugal-project-resease-drugal/2011 drum di drugal-r.43 --drugal-project-resease-drugal/2011 nd drapall(profiles midir schese.profile of schese.profile git clean http://git.ow .compute.st

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Install MySQL Workbench

Set up MySQL

Install an updated Git

git config --glatat credestiat.helper coal

state -/.confights.

empire diffeoty
 acc diffeoty
 accal diffeoty</li

Set up Drush

Create a Sites folder

Grange the group of the Siles Inicial to Jawa

tals cheligrap -s elli -s anovare -i anor jan

git config --global user.name "Nour Name" git config --global user.email postemample.com

Make the SSL certificate

Configure the hosts

er tool to give better diffs for image file braw install mifted) gat config diff.med.conv mifted) on the example alter, and in their place put the futureing puterbut

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sudo apachectl configtest

Configure phpMyAdmin

ocate the tree that contains \$25g"(Scherfish, Jacow?) and reptace the

//Yance blob data to be displayed b\_REDUSY11000444\_blob11 = true:

Install SASS Compass Node IS and Guin

ore install compose

sude nom install -g gala

Install WCMS tools

This simple the space that incide a manuface of WEMS tools in proc. Incid spaces. The advances are been and up advances on the process of the

d -13. class Mipro/gll.asterios.comecacjosc.jos.

od whawwore\_tools git pull

### Install ColorDiff ColorDiff adds helpful colour coding to your diffs. Install it using Homebrey

brew install colordiff Once ColorDiff is installed, make it the default diff program for Git. Edit the Git config file: sudo nano ~/.subversion/config

> I onate the line that configures the diff command (you may base to uncomment the line) and change it to diff-cmd = colordiff

Save the file and return to the command line

### Set up some history and autocomplete helpers

The following changes the behaviour of the command line history and autocomplete as fol + hitting the 'up arrow' and 'down arrow' keys after characters have been typed will only show commands from Instagram by allow that install - soluti resolution ways are common network the your Holony that match those characters
 Install - Stationerpiele, if there are multiple possible complex when hitting "fab" to autocomplete, upper and lower case letters are tree water a impute in your home folder (or edit the existing file); nano ~/.inputro dd the following lines

"\e[A": history-search-backward "\e[8": history-search-forward set show-all-if-ambiguous on set completion-ignore-case on Save the file and return to the command line. Changes will take effect when you close and reopen the ter

### Set up Drupal sites

For each site that you want to set up, create an empty datal go to that site's setup UPL in your web browser (e.g. https:// instructions.provided onscreen until your site is fully set up.

settings.php

"fpp "/ Server 4-data"; // Server 4-data"; // Path to site real. SADger 4 - varants; // Name of site real. SADger 4 - varants; // Name of site database. Diplass 4 - varants; // Passend to connect to site database. Diplass 4 - varants; presenter; /// Assend to connect to site database. Diplass 4 - varants; presenter; /// passend to connect to site database. Diplass 4 - varants; presenter;

// Path to "global" settings file. Do not edit. require\_snce(DRUPAL\_RDOT . '/profiles/sw\_base\_profile/drupal-settings.php');

//filesystemsettings sconf("filesystemsettings") sconf("filesystemsettings") = 'public'; sconf("filesystemsettin") = 'sitesystem foldersyftles'; sconf("filesystemsetting") = 'sitesystem foldersyftles'; sconf("filesystemsetsystem") = 'sitesystem') sconf("filesystemsetsystem") = SUTDS; sconf("filesystemset

// LDAP settings. \$conf['uw\_ldep\_sser'] = 'wcms-ldep'; \$conf['uw\_ldep\_psd'] = 'splabal LDAP passwords';

// Recaptche settings.
\$confl'recaptche\_public\_key'l = 'eglobal Recaptche public keye'l
\$confl'recaptche\_private\_key'l = 'eglobal Recaptche private keye'

### Install some useful QuickLook plugins

his is optional. Installing QuickLook plugins give you better previews when you hit "space" in finder. This installs plugins or extensionless files. Markdown, JSDN, patches, CSY files, and ZIP files.

brew update brew cask install elstephen brew cask install guarkdown brew cask install guicklock-joon brew cask install guicklock-joon brew cask install guicklock-cow brew cask install betterzippl

# **WatlTis**



As the OS updates, these instructions change. The instructions are updated on the fly whenever I have to set up my

system again. Most recently, I found that something along the way had switched my PHP installation to something

installed by (presumedly) Homebrew - possibly by a step that had to be updated and so is no longer included in these instructions - and I had to edit the new PHP's php.ini file with the same changes I made to the system one. This may not be necessary if installing from scratch, but for the record the new php.ini location was /usr/local/etc/php/5.6/php.ini, I

commented out the ssh2.so line in the new php.ini, at least for now, since the updated PHP only affects the command

protected folders. Hopefully, eventually, this will not be needed. To disable SIP, reboot while holding down command-r

until the Apple logo appears. This launches the recovery console. Select "Terminal" from the "Utilities" menu. Enter "csrut

I found that with El Capitan, I had to disable SIP in order to make some of this work, as some files need to go into



disable". Once the command has executed, reboot the machine normally.

Potential gotchas

line; servers run the PHP provided with the OS.

#watitis2016

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# CREATING YOUR OWN DEV ENVIRONMENT – EASILY

- We have a Vagrant environment available for download from our Git repo.
- Download Vagrant, VirtualBox, and Git (if it's not on your system already).
- Instructions are in the readme in our Git repo and through our URL.
- DEMO TIME!



# **3 EASY STEPS**

### Clone:

!mnshantz@ist250 MINGW64 ~/Vagrant\_source\_files/current-vagrant \$ git clone https://git.uwaterloo.ca/wcms/wcms-vagrant.git Cloning into 'wcms-vagrant'... remote: Counting objects: 44, done. remote: Compressing objects: 100% (33/33), done. remote: Total 44 (delta 18), reused 29 (delta 10) Unpacking objects: 100% (44/44), done.

!mnshantz@ist250 MINGW64 ~/Vagrant\_source\_files/current-vagrant
\$ cd wcms-vagrant

!mnshantz@ist250 MINGW64 ~/Vagrant\_source\_files/current-vagrant/wcms-vagrant (1.x)
\$ git checkout 1.0
Note: checking out '1.0'.

You are in 'detached HEAD' state. You can look around, make experimental changes and commit them, and you can discard any commits you make in this state without impacting any branches by performing another checkout.

If you want to create a new branch to retain commits you create, you may do so (now or later) by using -b with the checkout command again. Example:

git checkout -b <new-branch-name>

HEAD is now at d6eb147... Added a variable for the PHP version and made the apt-get install line multi-line so it's easier to read.

mnshantz@ist250 MINGW64 ~/Vagrant\_source\_files/current-vagrant/wcms-vagrant ((1.0))



# **3 EASY STEPS**

!mnshantz@ist250 MINGW64 ~/Vagrant\_source\_files/current-vagrant/wcms-vagrant ((1.0))
\$ ./setup.sh

### Setup: First we will ask you a few guestions to identify this host. Defaults are enclose

First we will ask you a few questions to identify this host. Defaults are enclosed in single square brackets, pressing enter will choose the default setting.

```
hostname [wcms-vagrant]:
IP address (it has to start 192.168.101.xx) [192.168.101.20]:
server preface such as d or www (make sure it doesn't contain . or $ or *) [d]:
```

Writing Vagrantfile

Writing manifests/ubuntu.sh file

Writing manifests/apache.sh file

Writing manifests/drupal.sh file

You should now be ready to initialize your vagrant instance

This is done via

vagrant up

The default user is vagrant and the default password is vagrant.

mmshantz@ist250 MINGW64 ~/Vagrant\_source\_files/current-vagrant/wcms-vagrant ((1.0))



# **3 EASY STEPS**

### Build:

\$ vagrant up Bringing machine 'default' up with 'virtualbox' provider... ==> default: Importing base box 'ubuntu/trusty64'... ==> default: Matching MAC address for NAT networking... ==> default: Checking if box 'ubuntu/trusty64' is up to date... ==> default: A newer version of the box 'ubuntu/trusty64' is available! You currently
==> default: have version '20161020.0.6'. The latest is version '20161129.0.0'. Run ==> default: 'vagrant box update' to update. ==> default: Setting the name of the VM: wcms-vagrant\_default\_1480963366599\_30108 ==> default: Clearing any previously set forwarded ports...
==> default: Fixed port collision for 22 => 2222. Now on port 2201. ==> default: Clearing any previously set network interfaces... ==> default: Preparing network interfaces based on configuration... default: Adapter 1: nat default: Adapter 2: hostonly ==> default: Forwarding ports... default: 22 (guest) => 2201 (host) (adapter 1) ==> default: Running 'pre-boot' VM customizations... ==> default: Booting VM... ==> default: Waiting for machine to boot. This may take a few minutes... default: SSH address: 127.0.0.1:2201 default: SSH username: vagrant default: SSH auth method: private key default: default: Vagrant insecure key detected. Vagrant will automatically replace default: this with a newly generated keypair for better security. default: default: Inserting generated public key within guest... default: Removing insecure key from the guest if it's present... default: Key inserted! Disconnecting and reconnecting using new SSH key... ==> default: Machine booted and ready! GuestAdditions versions on your host (5.0.26) and quest (4.3.36) do not match. stdin: is not a tty \* Stopping VirtualBox Additions ...done. stdin: is not a tty Reading package lists... Building dependency tree... Reading state information... The following packages were automatically installed and are no longer required: acl at-spi2-core colord dconf-gsettings-backend dconf-service dkms fakeroot fontconfig fontconfig-config fonts-dejavu-core gcc gcc-4.8 hicolor-icon-theme libasan0 libasound2 libasound2-data libatk-bridge2.0-0 libatk1.0-0 libatk1.0-data libatomic1 libatspi2.0-0 libavahi-client3

mnshantz@ist250 MINGW64 ~/Vagrant\_source\_files/current-vagrant/wcms-vagrant ((1.0))





# SERVERS IN THE VAGRANT ENVIRONMENT

•	Drupal 7 (drupal7 folder)	d7
<b>»</b>	WCMS responsive latest dev	
•	Drupal 7 "alt" (drupal7alt folder)	d7alt
<b>»</b>	WCMS responsive latest dev	
•	Drupal 7 release (drupal7rel folder)	d7rel
<b>»</b>	WCMS responsive latest release	
•	Drupal 7 legacy release (drupal7lrel folder)	d7lrel
<b>»</b>	WCMS non-responsive latest release	
•	Drupal 7 Open Scholar (drupal7os folder)	d7os
<b>»</b>	Open Scholar latest dev	
•	Drupal 8 (drupal8 folder)	d8
<b>»</b>	Latest release of Drupal 8 (no WCMS)	



# SITES IN EACH VAGRANT ENVIRONMENT

- Drupal 7 environments have fdsu1 through fdsu5
  - » e.g. https://d7/fdsu1

 Drupal 8 environment uses "default" site » e.g. https://d8



# SETTING UP SITES

 Note that the servers have self-signed certificates, so you'll have to accept/import by choosing advance or Continue to website

### CHROME

### FIREFOX

	Your connection is not secure
Your connection is not private	The owner of wcms-shan1826 has configured their website improperly. To protect your information from being stolen,
Attackers might be trying to steal your information from <b>wcms-shan1826</b> (for example,	Firefox has not connected to this website.
passwords, messages, or credit cards). NET::ERR_CERT_AUTHORITY_INVALID	Go Back Advanced
Automatically report details of possible security incidents to Google. <u>Privacy policy</u>	Report errors like this to help Mozilla identify and block malicious sites
ADVANCED Back to safety	



# SETTING UP SITES

- Good idea to set up a "plain Drupal" site, to compare behaviour and make sure unexpected results aren't from our code.
- QUICK DEMO!



# SETTING UP SITES

- Set up "WCMS Drupal" sites as needed.
- QUICK DEMO!
  - » (hopefully)



# WORKING WITH FILES ON THE VIRTUAL SERVER

- Server files are not mapped to your local file system
- Connect to server to access files (SSH, SFTP software, editor, etc.)
- Through SSH, you can use these shortcuts:
  - » profile = /var/www/drupal7/profiles/uw\_base\_profile
  - » profilealt = /var/www/drupal7alt/profiles/uw\_base\_profile
  - » profilerel = /var/www/drupal7rel/profiles/uw\_base\_profile
  - » profileIrel = /var/www/drupal7Irel/profiles/uw\_base\_profile



# WORKING WITH FILES ON THE VIRTUAL SERVER

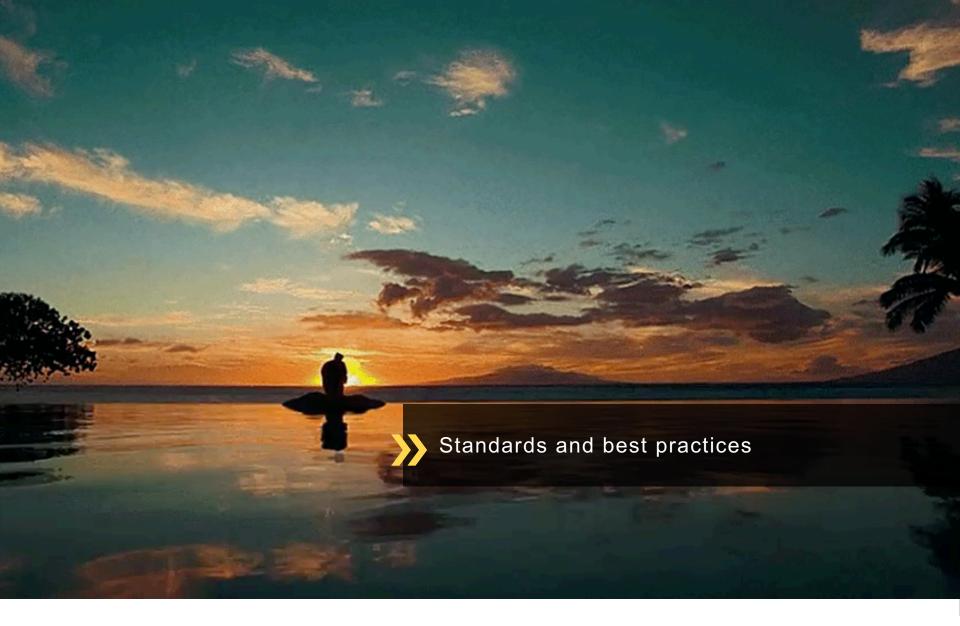
- More shortcuts:
  - » fdsu1 = /var/www/drupal7/sites/d7.fdsu1
  - » fdsu1alt = /var/www/drupal7alt/sites/d7alt.fdsu1
  - » fdsu1rel = /var/www/drupal7rel/sites/d7rel.fdsu1
  - » fdsu1lrel = /var/www/drupal7lrel/sites/d7lrel.fdsu1

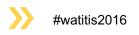


# **KEEPING UP-TO-DATE**

- Profiles must be periodically updated and rebuilt
- You should update sites when you do this
- Drupal should be periodically updated
- The Vagrant "box" itself should be periodically updated
- Vagrant and VirtualBox should be periodically updated – with caution











- Follow Drupal's coding standards from their site
- Follow accessibility guidelines the University legally must meet WCAG level AA
- Custom coding should use version control, preferably the University's own Git server
   » Don't store private information in Git!
  - » Make repo public so we can access your code
  - » See Liam's Git session at 11:15 am in STC 0010!



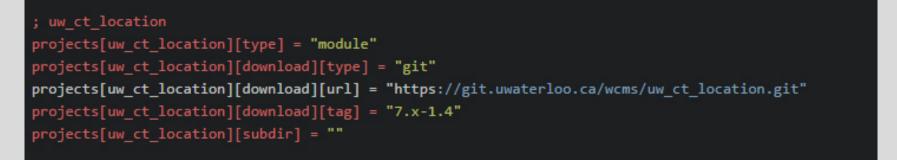
- Follow naming conventions
  - » For machine names of things in the GUI
  - » For module machine names
  - » For module "friendly" names
- Use "context" to place blocks
- Use "features" to export configuration



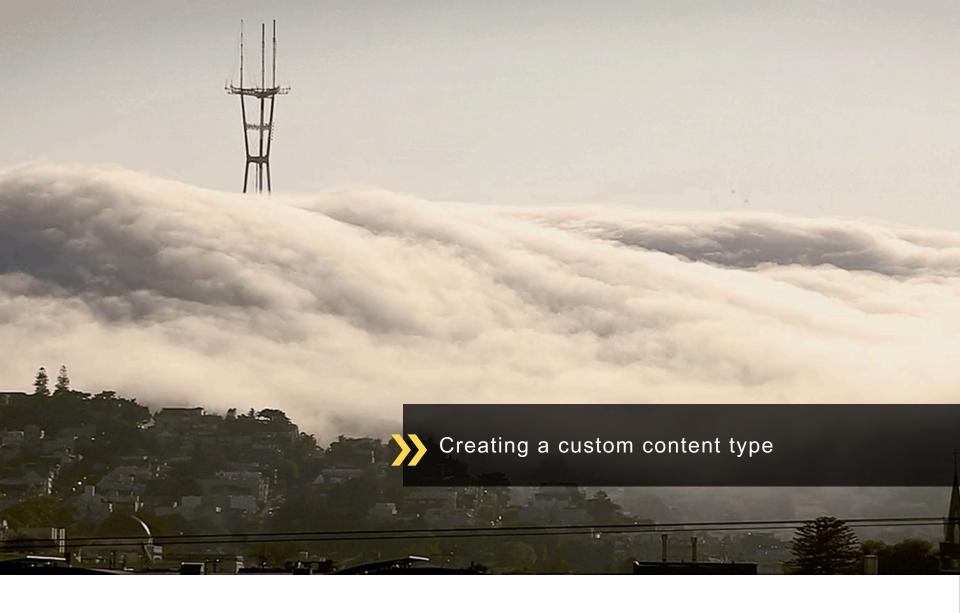
- Run your module through coder review!
- We do a quick review of all 3<sup>rd</sup>-party modules before we release them to sites – first step is coder review
  - » ...and if you fail we won't check any further...until it's fixed.

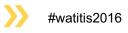


- Use careful consideration when adding contrib modules
- Make sure everything is "multilingual-ready"
- Create a site makefile for any non-stock modules your site requires













# CREATING A CUSTOM CONTENT TYPE

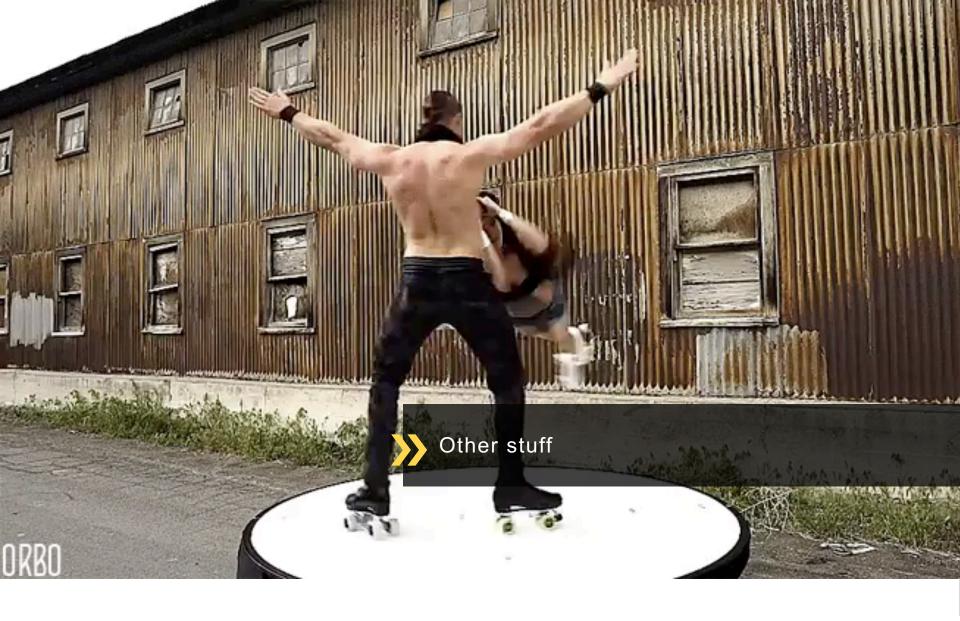
- Watch the PDAG video!
- ...but here's a quick live demo...



# USE VIEWS TO CREATE LISTING PAGES

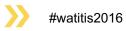
- You don't need to write custom code!
- Views can have "exposed filters" to allow views to be searched.
- Live demo? (how are we for time?)











# WRITE TEST CASES TO MAKE SURE THINGS KEEP WORKING

- Testing helps ensure that you don't break things when you're making changes.
- We recommend that you create test cases for any custom work you do.
- The WCMS uses the SimpleTest format, writing tests in PHP, with the Site Test module to allow tests to run on a prebuilt site.



# WRITE TEST CASES TO MAKE SURE THINGS KEEP WORKING

• Think of what needs to be tested...

"When I log in as a site manager, and I click on the dashboard link, there is a link to my configuration page. When I click on that link, my page title is what I expect and I have all the fields I expect. When I enter invalid information in a field and submit the page, the appropriate error message is displayed. When I enter valid information in all the fields and submit the page, I see a notice that my changes have been saved."

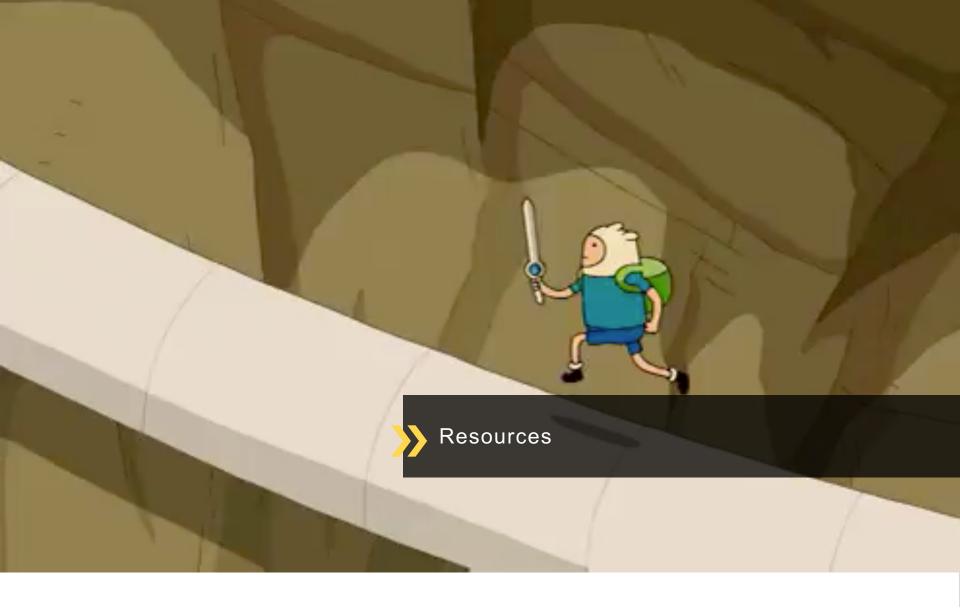
• Then write a test!

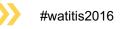


# "DRUSH" IS A HANDY TOOL

- Drush lets you interact with your site from the command line
- Drush can download contrib modules
- Drush can enable/disable any module
- Drush can clear site caches when you can't get to the site
- ...and much more. You will likely use Drush a lot.











# RESOURCES

- Web Dev Rev every Friday in EC2 1021 (Millennium) at 11:00 am
- Developer Drop-In December 10 in MC 2060 at 1:00 pm
- Lynda.com every staff member has access!
- Waterloo Region Drupal User's Group
- Drupal.org
- UW web Slack channel
- Google!



# THAT URL AGAIN

# uwaterloo.ca/web/develop-wcms

- Links to everything mentioned in this presentation
- Links to additional documentation
- ...and more! We will be continually adding to this section.





