phase:II
TECHNOLOGY

THE LEADER IN DRUPAL PLATFORM DESIGN AND DEVELOPMENT

BUILDING AND DEPLOYING SITES USING FEATURES 2.0

BAD CAMP

BAY AREA DRUPAL CAMP

2012

NOVEMBER • 1ST-4TH

phase:II TECHNOLOGY

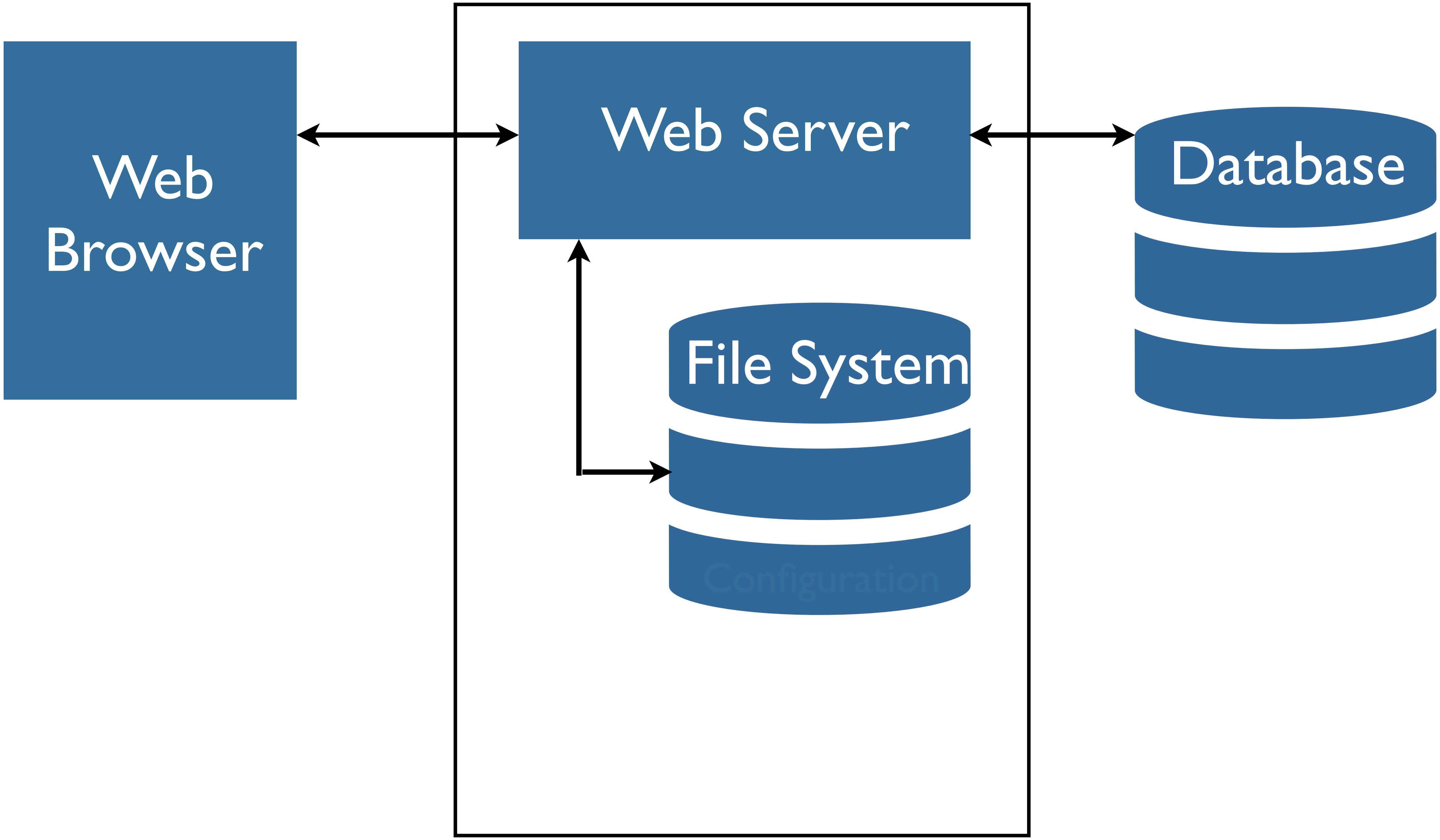
BUILDING AND DEPLOYING SITES USING FEATURES

- Mike Potter
  Phase2 Technology
- Maintainer of Features and Features Override modules
- mpotter on Drupal.org
  mpotter@phase2technology.com
- #drupal-features IRC channel

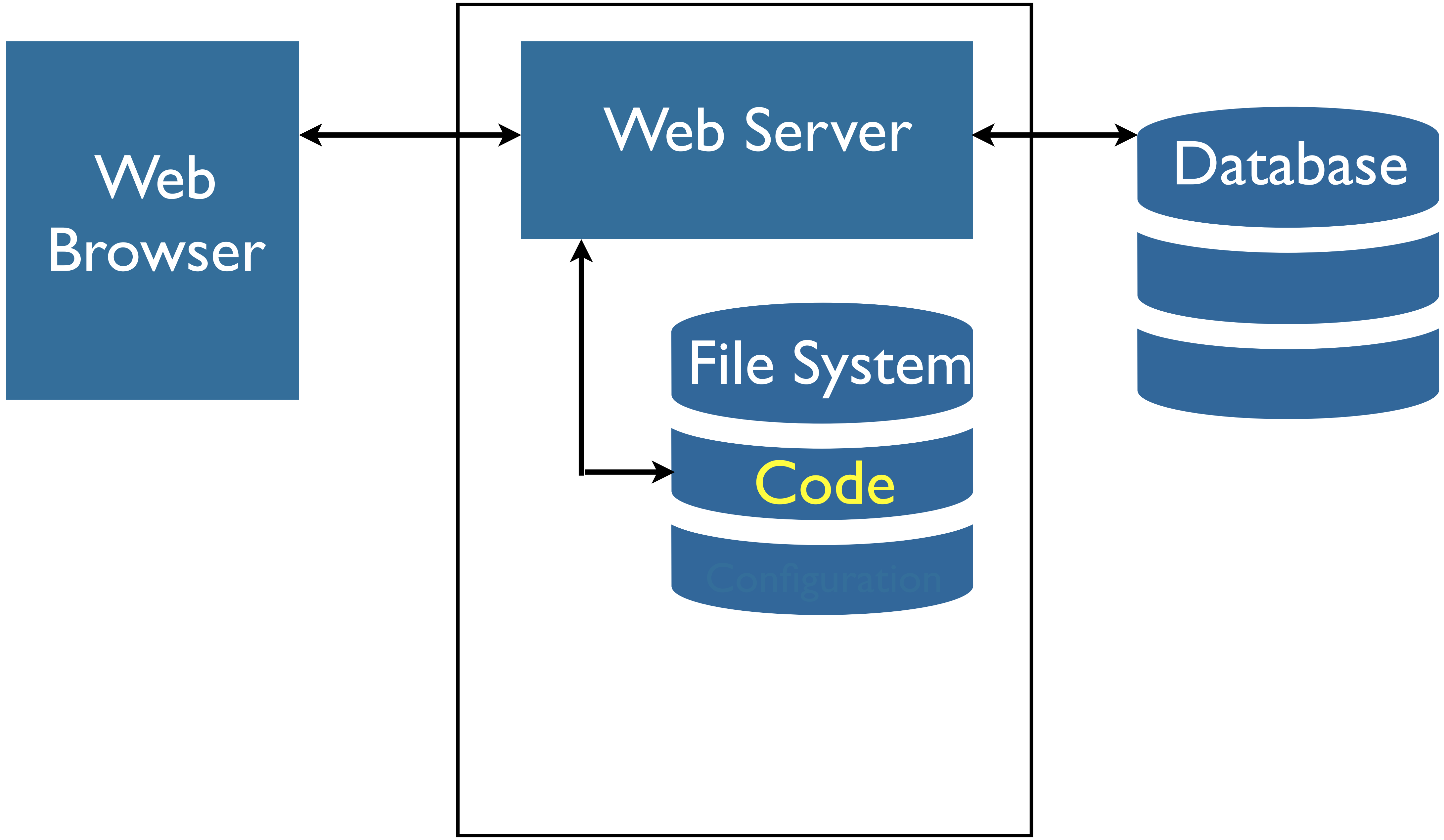
OVERVIEW

- What is Features?
- What's new in Features 2.0?
- Features Override

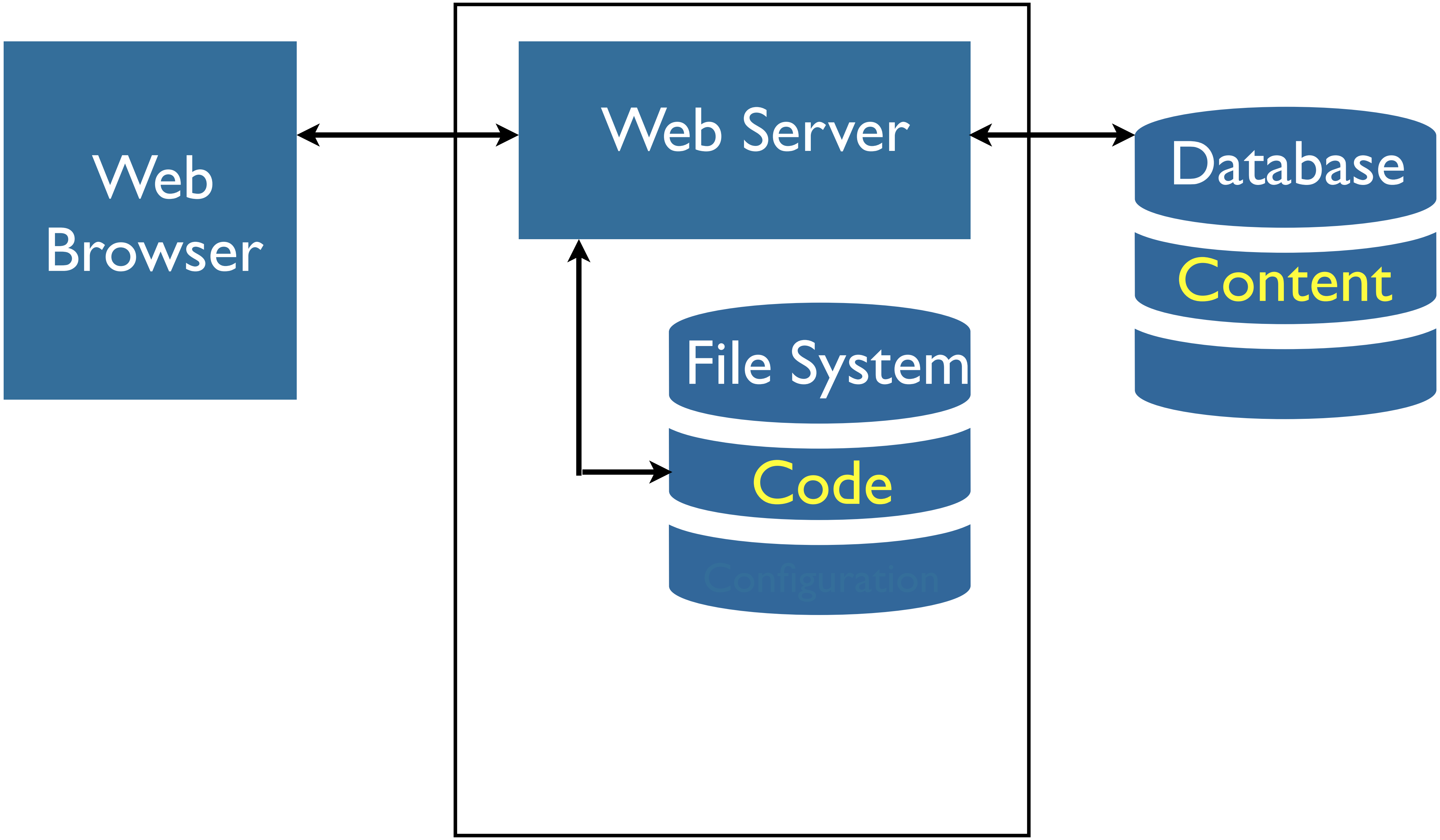
DRUPAL ARCHITECTURE



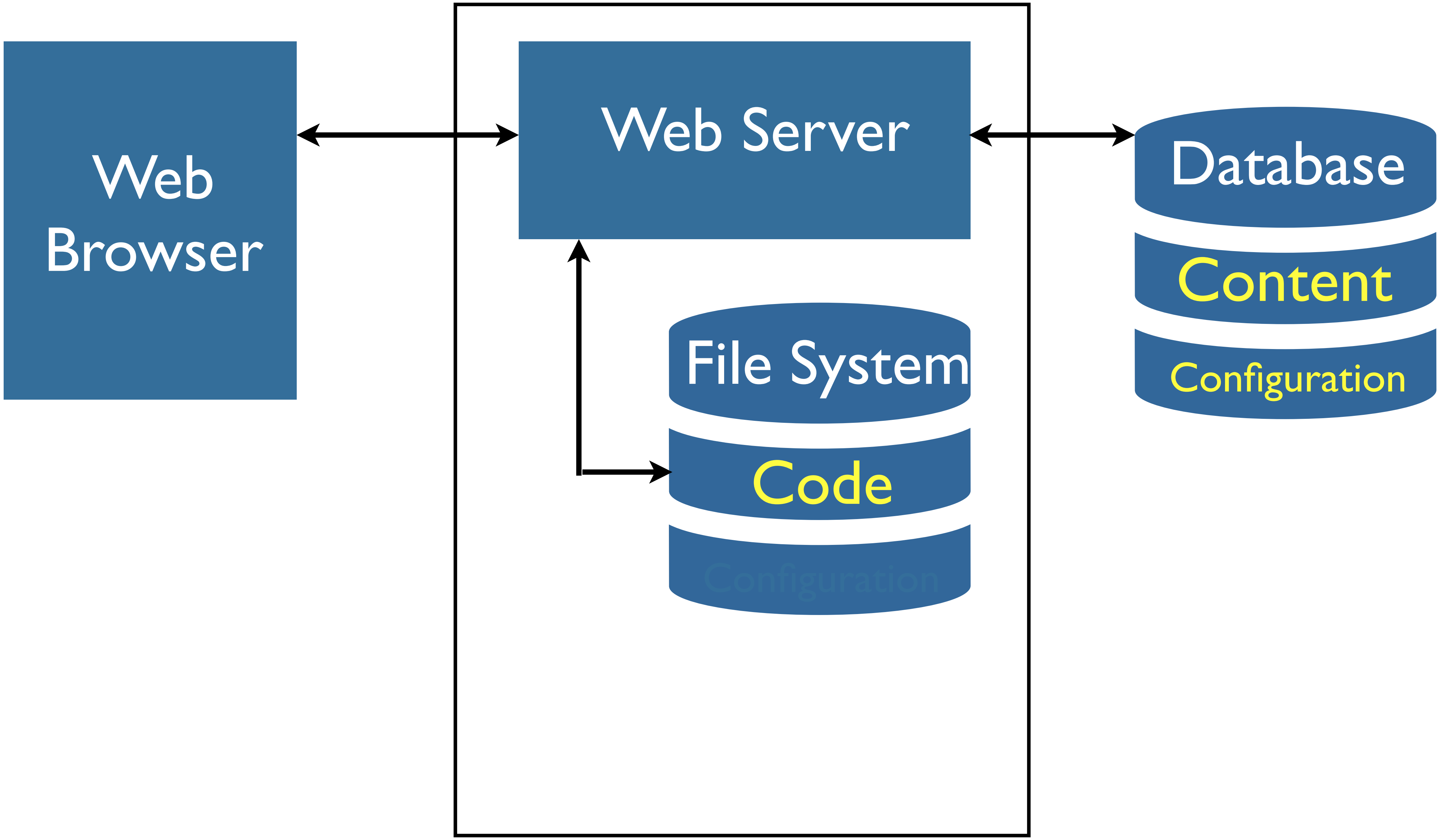
DRUPAL ARCHITECTURE



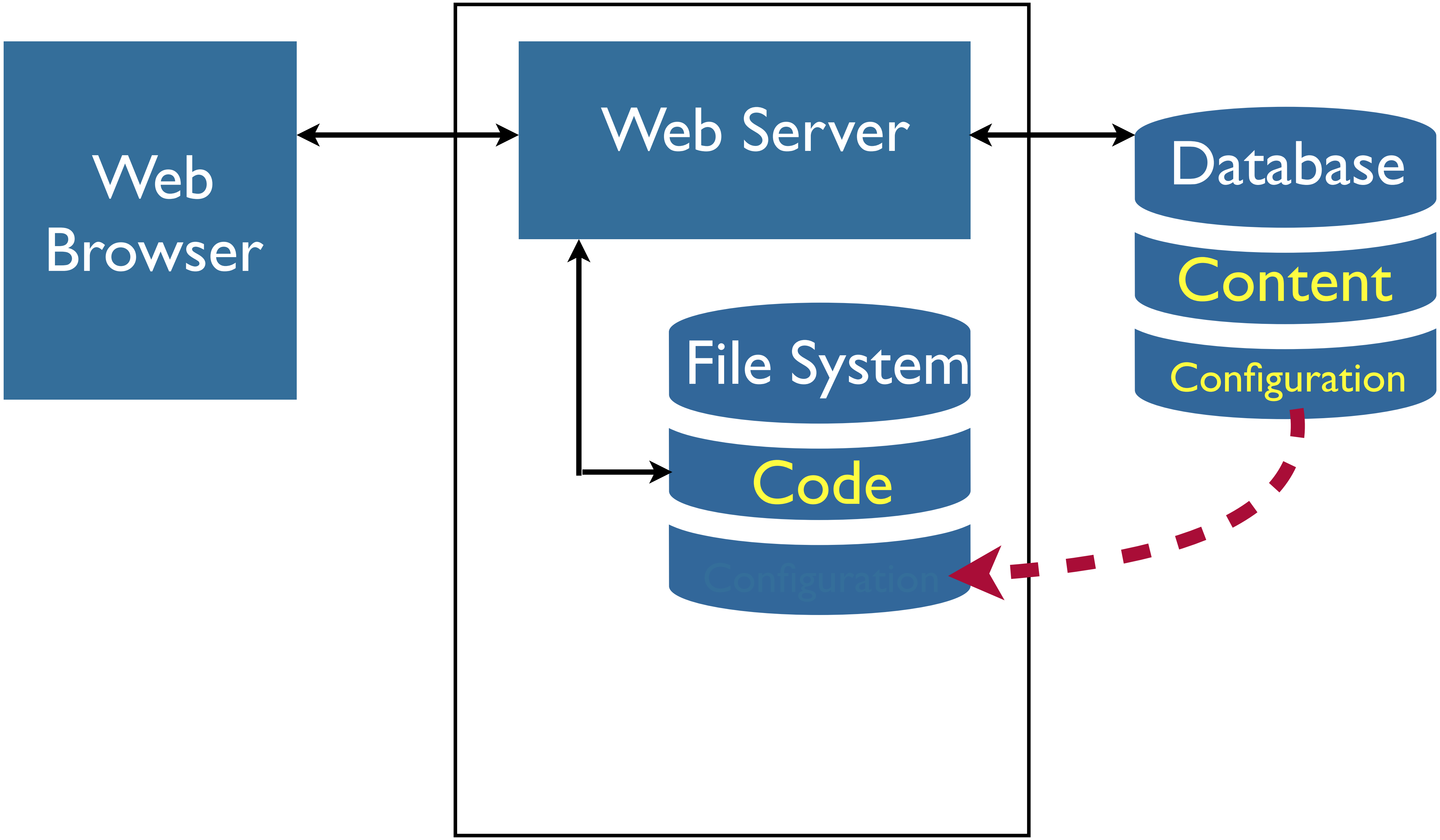
DRUPAL ARCHITECTURE



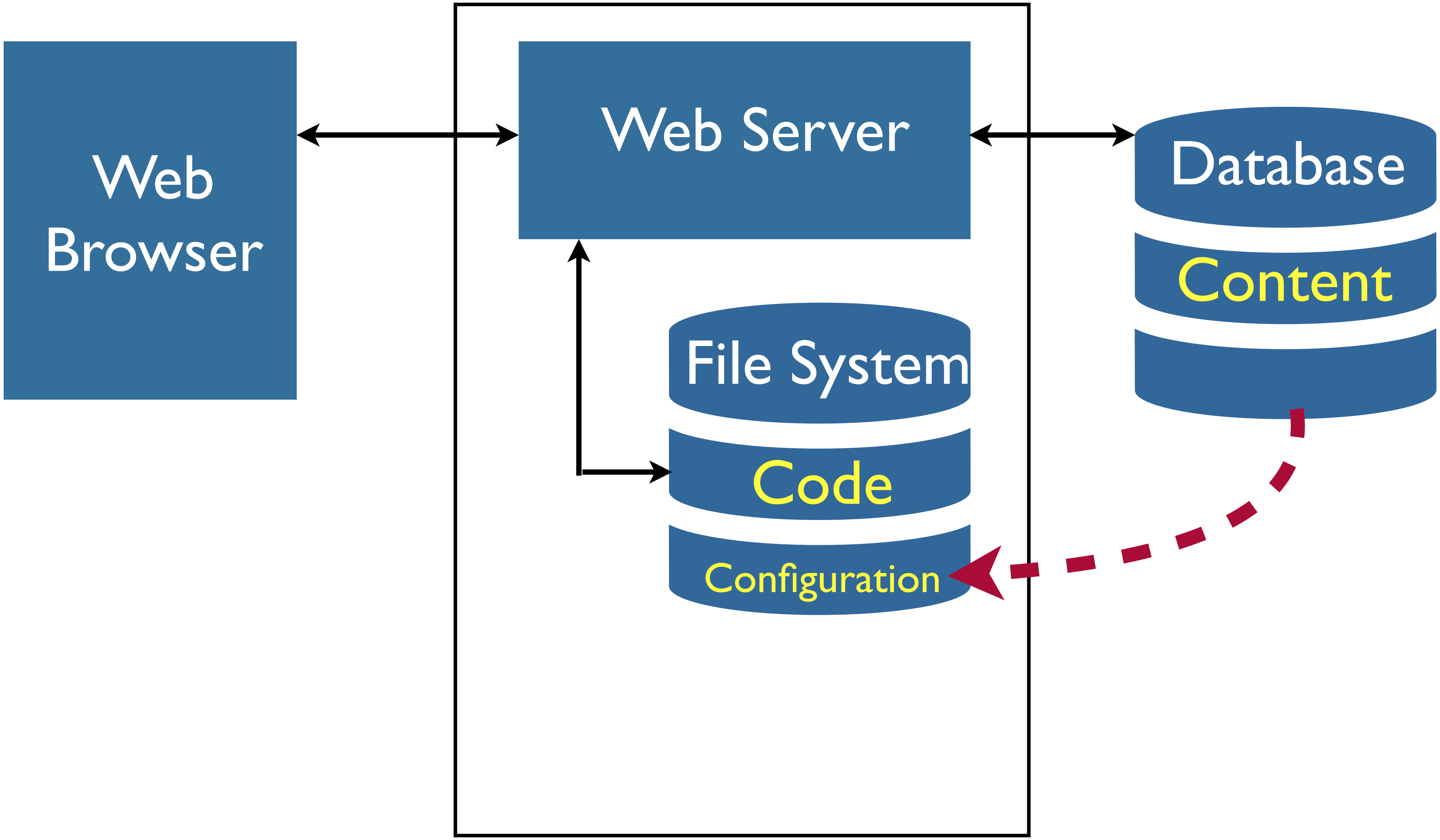
DRUPAL ARCHITECTURE



DRUPAL ARCHITECTURE

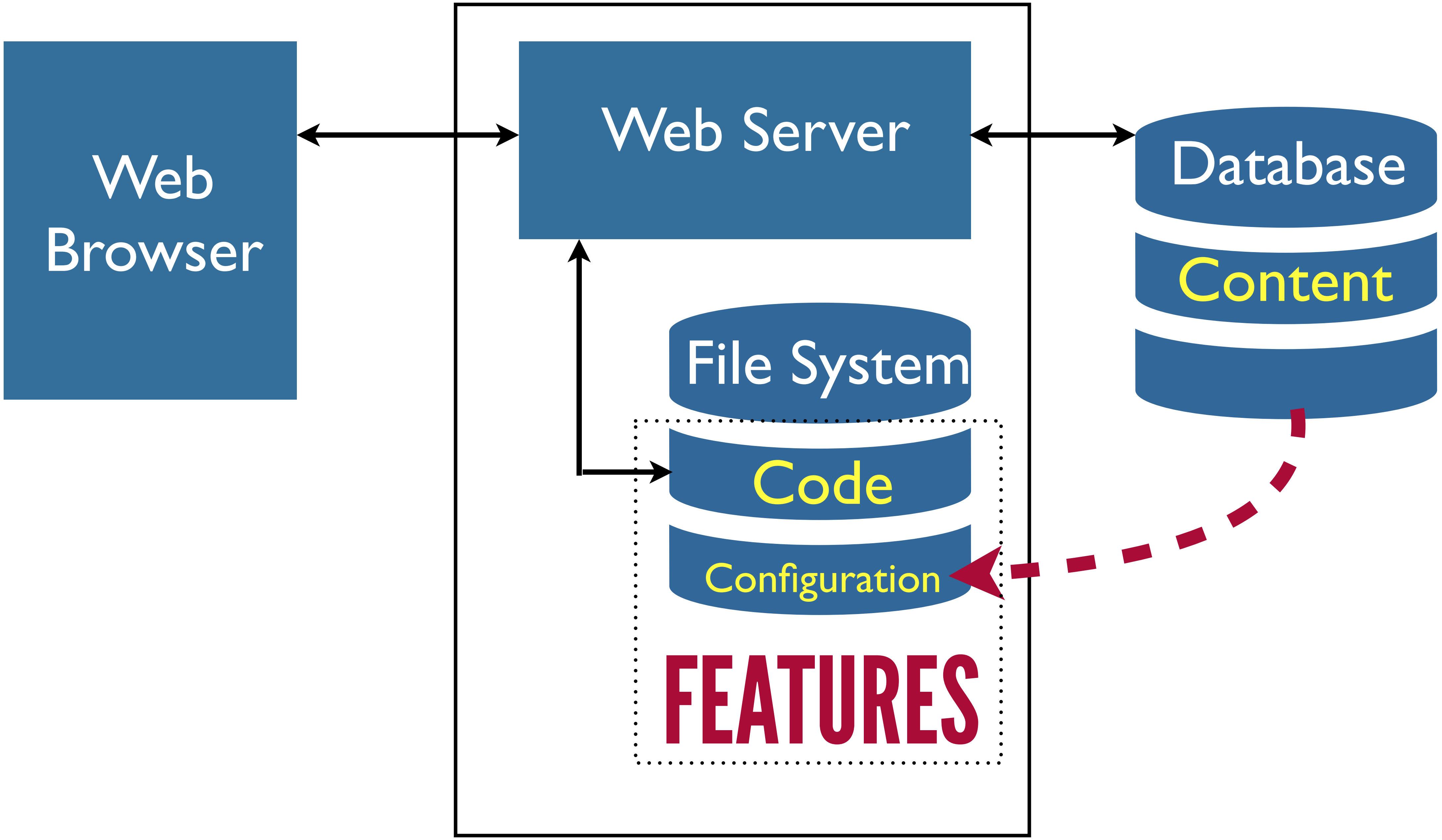


DRUPAL ARCHITECTURE



phase:II TECHNOLOGY

DRUPAL ARCHITECTURE



phase:II TECHNOLOGY

FEATURES

- Brings configuration from the Database into Code.

(called an exportable)

- A Feature is a Drupal Module.
- The Features Module provides a User Interface for manipulating features.

WHY?

- Separates Site configuration from Site content.
- Encapsulates functionality into a package that can be used on multiple sites.
- Allows version control (track changes, revert, etc).
- Easier deployment.
- Saves development time!!

EXPORTABLE TYPES

- Content Types, Fields, Menus, Taxonomies, Text formats, Image styles, User roles and permissions, Views, CTools, Context CORE
- System variables (Strongarm)
- Node queues, Boxes (blocks), Nodes (content), Panels, Commerce products, many more.
- Any module can support exporting as Feature.

phase:// TECHNOLOGY

USAGE CASES

- Bundle some functionality into a Feature
  e.g. Photo Gallery
  contains Content Type, Fields, Views

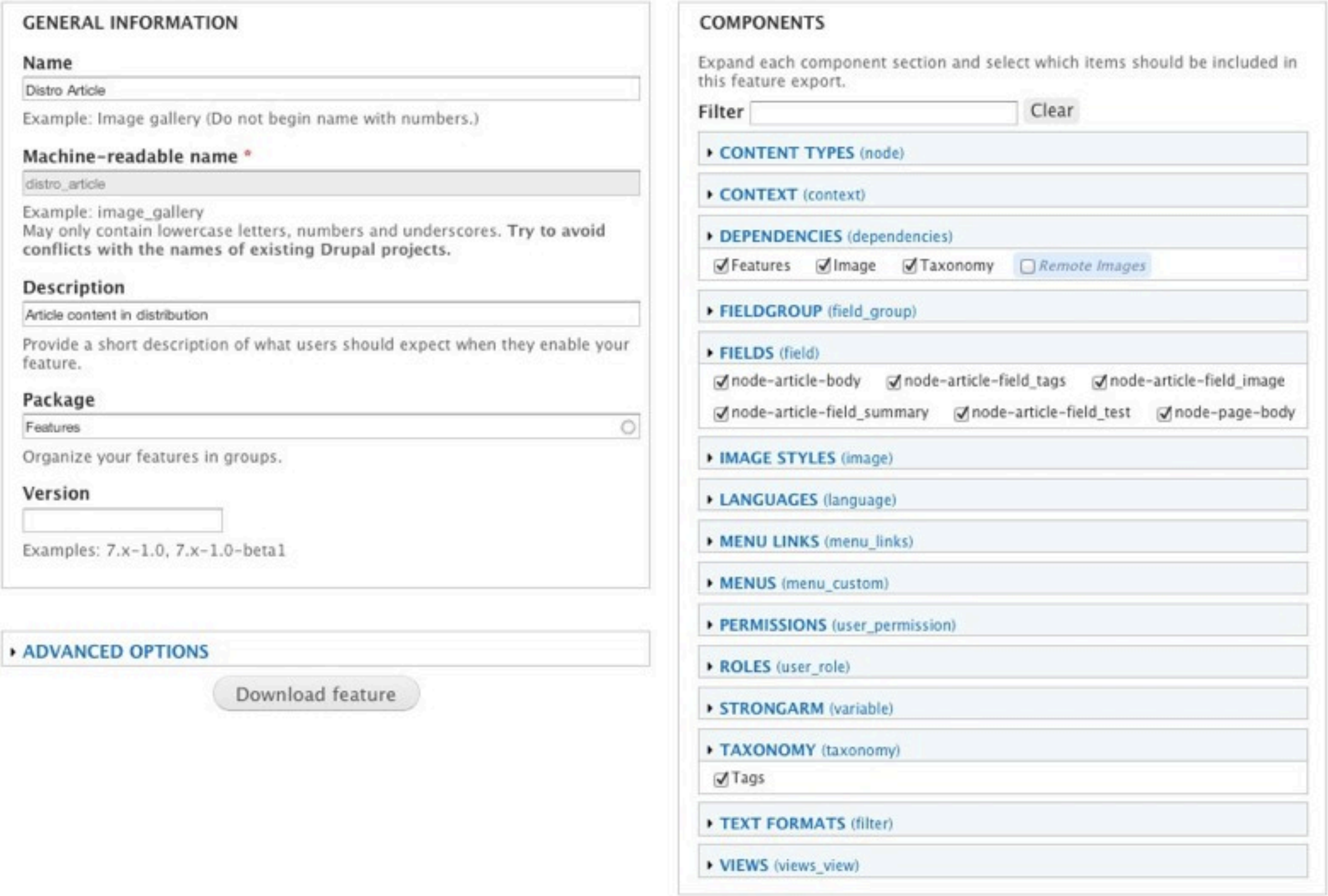
- Deploy configuration data using a Feature
  e.g. Transfer user permissions from
  Dev server to Production.

DEMO TIME !

phase:II TECHNOLOGY

MAKE A NEW FEATURE

/admin/structure/features/create



GENERAL INFORMATION

Name

Distro Article

Example: Image gallery (Do not begin name with numbers.)

Machine-readable name *

distro_article

Example: image_gallery
May only contain lowercase letters, numbers and underscores. **Try to avoid conflicts with the names of existing Drupal projects.**

Description

Article content in distribution

Provide a short description of what users should expect when they enable your feature.

Package

Features

Organize your features in groups.

Version

Examples: 7.x-1.0, 7.x-1.0-beta1

ADVANCED OPTIONS

Download feature

COMPONENTS

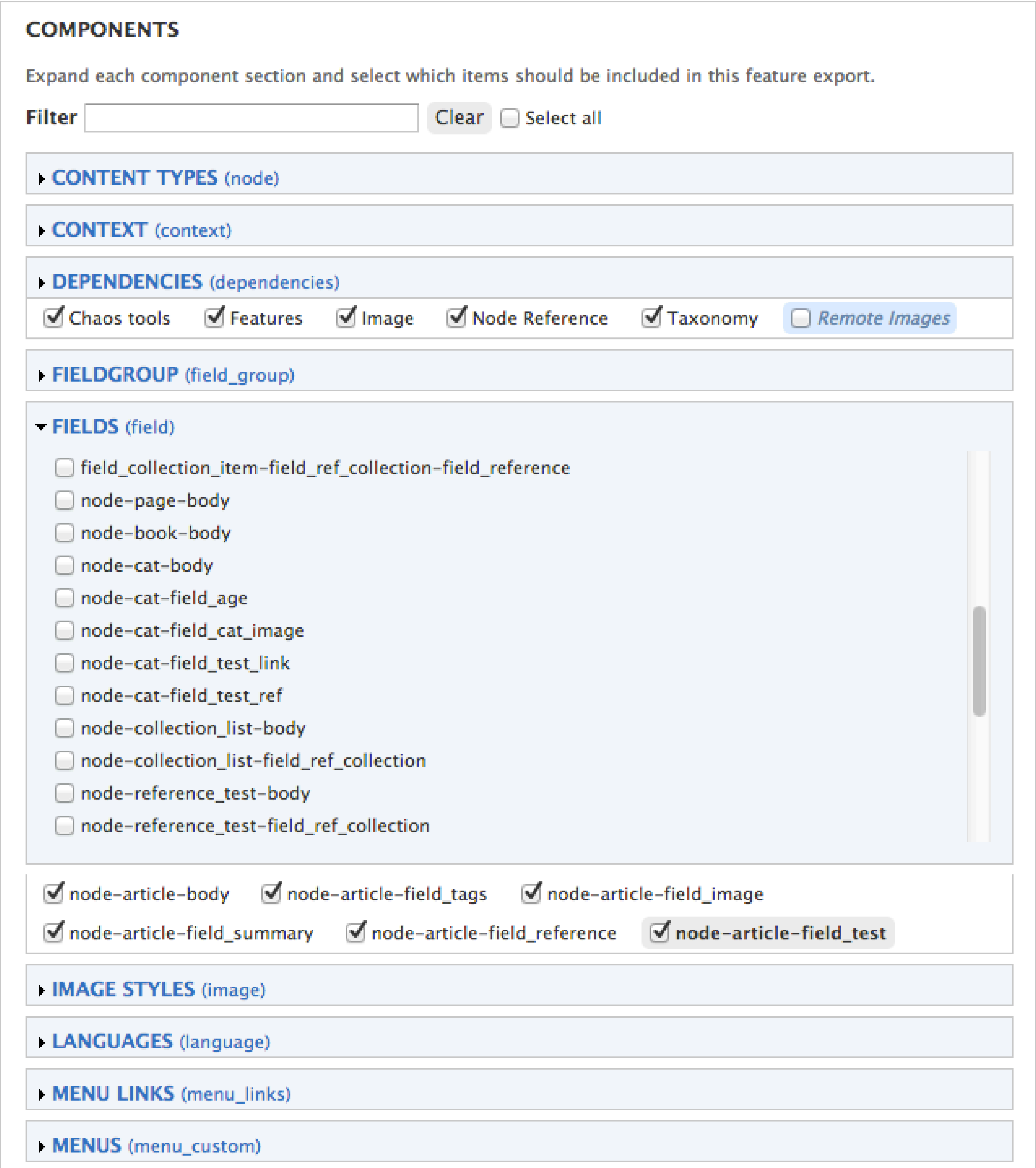
Expand each component section and select which items should be included in this feature export.

Filter   Clear

- CONTENT TYPES (node)
- CONTEXT (context)
- DEPENDENCIES (dependencies)
  ☑ Features ☑ Image ☑ Taxonomy ☐ *Remote Images*
- FIELDGROUP (field_group)
- FIELDS (field)
  ☑ node-article-body ☑ node-article-field_tags ☑ node-article-field_image
  ☑ node-article-field_summary ☑ node-article-field_test ☑ node-page-body
- IMAGE STYLES (image)
- LANGUAGES (language)
- MENU LINKS (menu_links)
- MENUS (menu_custom)
- PERMISSIONS (user_permission)
- ROLES (user_role)
- STRONGARM (variable)
- TAXONOMY (taxonomy)
  ☑ Tags
- TEXT FORMATS (filter)
- VIEWS (views_view)

FEATURES 2.0 UI

- User Interface redesign
- Removed Ajax
- Expand fieldset you wish to add to export



COMPONENTS

Expand each component section and select which items should be included in this feature export.

Filter ______ Clear □ Select all

- ▸ CONTENT TYPES (node)
- ▸ CONTEXT (context)
- ▸ DEPENDENCIES (dependencies)

☑ Chaos tools ☑ Features ☑ Image ☑ Node Reference ☑ Taxonomy □ *Remote Images*

- ▸ FIELDGROUP (field_group)
- ▾ FIELDS (field)

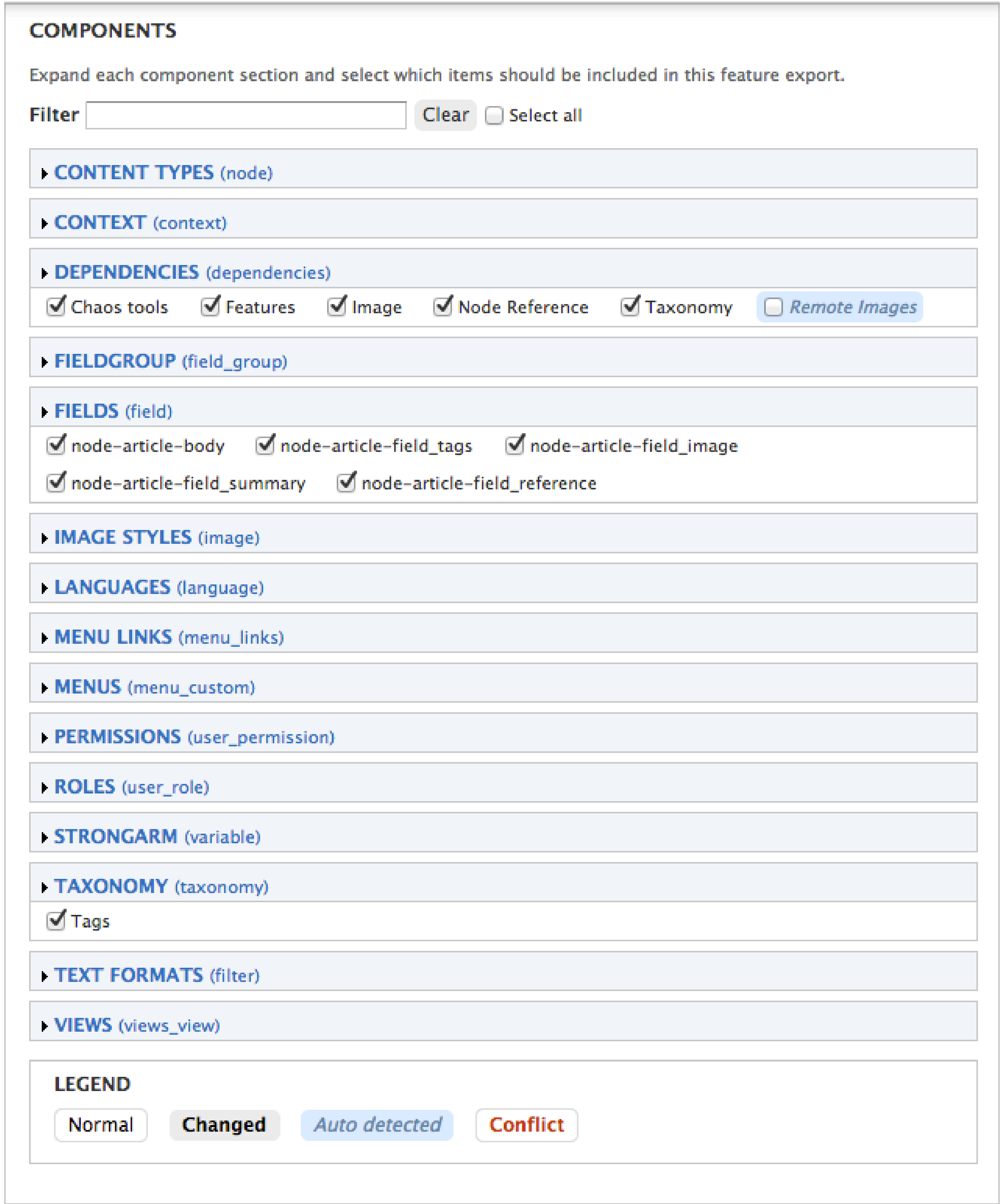
□ field_collection_item-field_ref_collection-field_reference
□ node-page-body
□ node-book-body
□ node-cat-body
□ node-cat-field_age
□ node-cat-field_cat_image
□ node-cat-field_test_link
□ node-cat-field_test_ref
□ node-collection_list-body
□ node-collection_list-field_ref_collection
□ node-reference_test-body
□ node-reference_test-field_ref_collection

☑ node-article-body ☑ node-article-field_tags ☑ node-article-field_image
☑ node-article-field_summary ☑ node-article-field_reference ☑ **node-article-field_test**

- ▸ IMAGE STYLES (image)
- ▸ LANGUAGES (language)
- ▸ MENU LINKS (menu_links)
- ▸ MENUS (menu_custom)

NEW FEATURES

- Searching
- Select-All
- Can remove auto-detected items from export



COMPONENTS

Expand each component section and select which items should be included in this feature export.

Filter [ ] Clear □ Select all

▸ CONTENT TYPES (node)

▸ CONTEXT (context)

▸ DEPENDENCIES (dependencies)

☑ Chaos tools ☑ Features ☑ Image ☑ Node Reference ☑ Taxonomy □ *Remote Images*

▸ FIELDGROUP (field_group)

▸ FIELDS (field)

☑ node-article-body ☑ node-article-field_tags ☑ node-article-field_image

☑ node-article-field_summary ☑ node-article-field_reference

▸ IMAGE STYLES (image)

▸ LANGUAGES (language)

▸ MENU LINKS (menu_links)

▸ MENUS (menu_custom)

▸ PERMISSIONS (user_permission)

▸ ROLES (user_role)

▸ STRONGARM (variable)

▸ TAXONOMY (taxonomy)

☑ Tags

▸ TEXT FORMATS (filter)

▸ VIEWS (views_view)

LEGEND

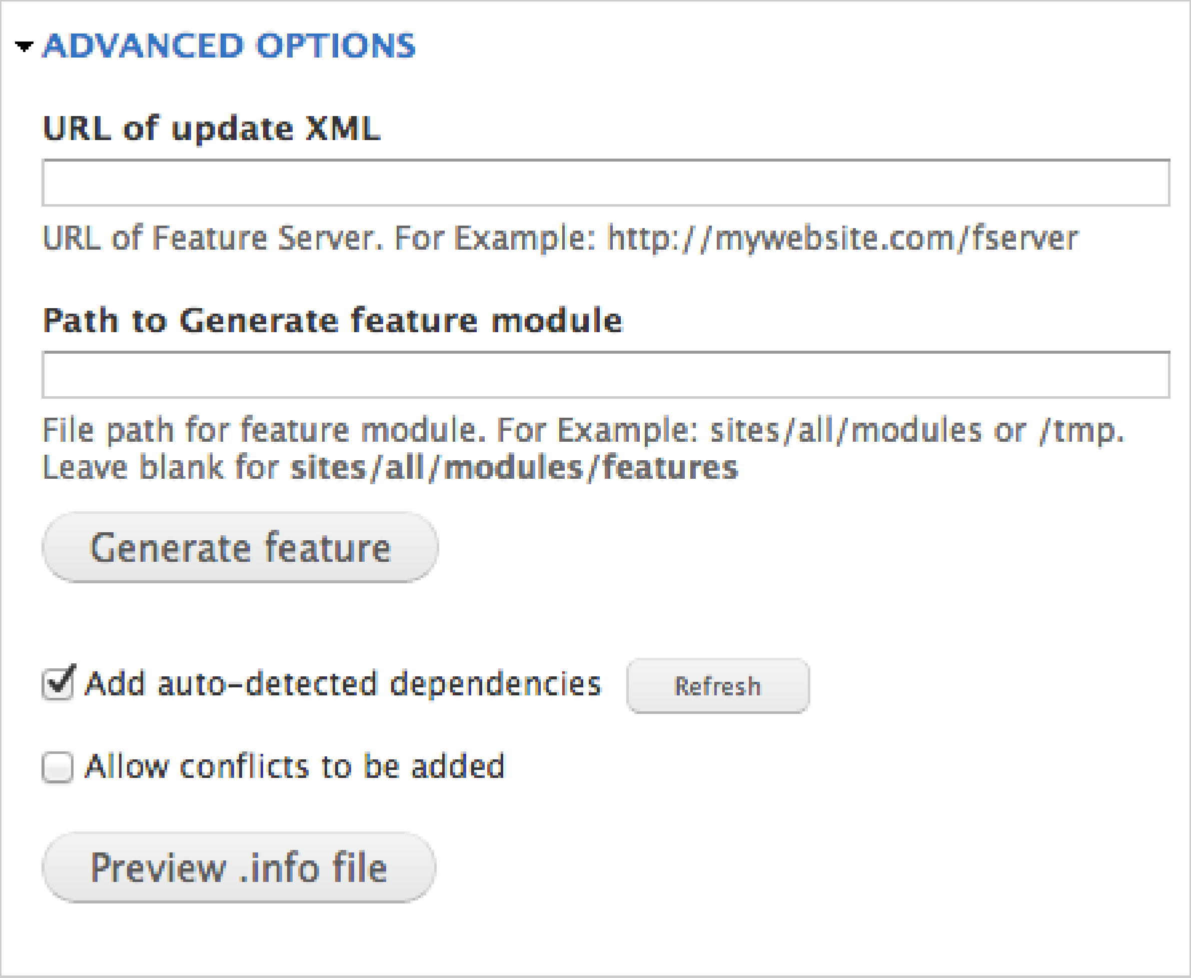
Normal **Changed** *Auto detected* Conflict

AS SEEN ON
TV
BADCAMP

BUT WAIT
THERE'S MORE...
memegenerator.net

NEW ADVANCED OPTIONS

- Export code directly to site (drush fu)
- Control dependancies
- Better item conflict handling
- Preview info file
- New tar file format



▾ ADVANCED OPTIONS

URL of update XML

URL of Feature Server. For Example: http://mywebsite.com/fserver

Path to Generate feature module

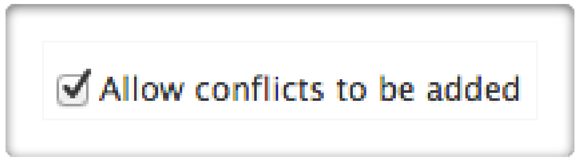
File path for feature module. For Example: sites/all/modules or /tmp. Leave blank for **sites/all/modules/features**

☑ Add auto-detected dependencies

□ Allow conflicts to be added

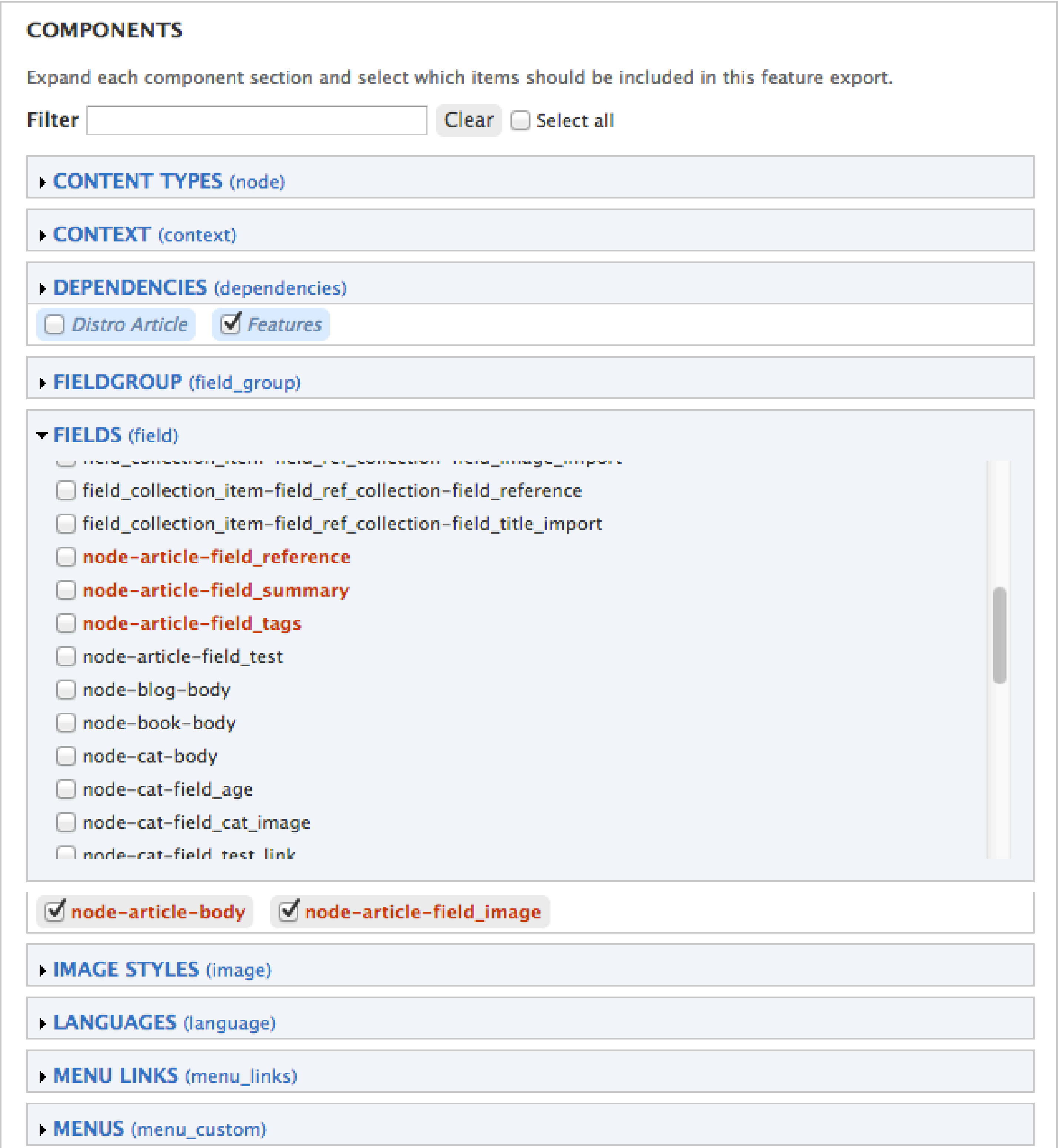
phase:II TECHNOLOGY

CONFLICTS



☑ Allow conflicts to be added

- Shows ALL components
- Shows used items in red
- Can export what you want
- Remove dependancies you don't want



COMPONENTS

Expand each component section and select which items should be included in this feature export.

Filter [ ] Clear □ Select all

▸ CONTENT TYPES (node)

▸ CONTEXT (context)

▸ DEPENDENCIES (dependencies)

□ *Distro Article* ☑ *Features*

▸ FIELDGROUP (field_group)

▾ FIELDS (field)

□ field_collection_item-field_ref_collection-field_image_import
□ field_collection_item-field_ref_collection-field_reference
□ field_collection_item-field_ref_collection-field_title_import
□ node-article-field_reference
□ node-article-field_summary
□ node-article-field_tags
□ node-article-field_test
□ node-blog-body
□ node-book-body
□ node-cat-body
□ node-cat-field_age
□ node-cat-field_cat_image
□ node-cat-field_test_link

☑ node-article-body ☑ node-article-field_image

▸ IMAGE STYLES (image)

▸ LANGUAGES (language)

▸ MENU LINKS (menu_links)

▸ MENUS (menu_custom)

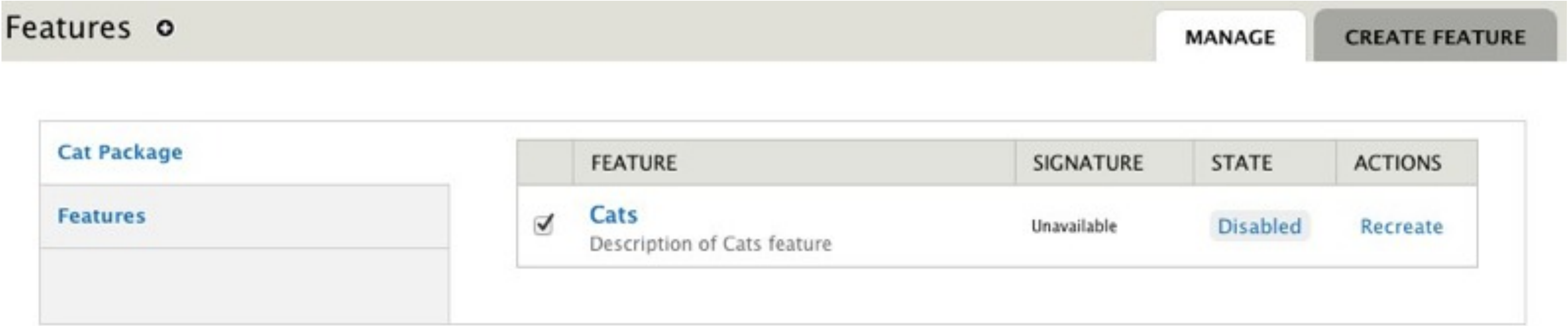
NEW HOOKS

- Added hooks for:
  - `hook_pre_features_revert($component)`
  - `hook_post_features_revert($component)`
  - `hook_pre_features_rebuild($component)`
  - `hook_post_features_rebuild($component)`
  - `hook_pre_features_disable_feature($component)`
  - `hook_post_features_disable_feature($component)`
  - `hook_pre_features_enable_feature($component)`
  - `hook_post_features_enable_feature($component)`
- Implemented within a Feature module file

FEATURE IS A MODULE

- Downloading a Feature creates .tar package
- Install just like any normal module
- Enable the module

/sites/all/modules/features

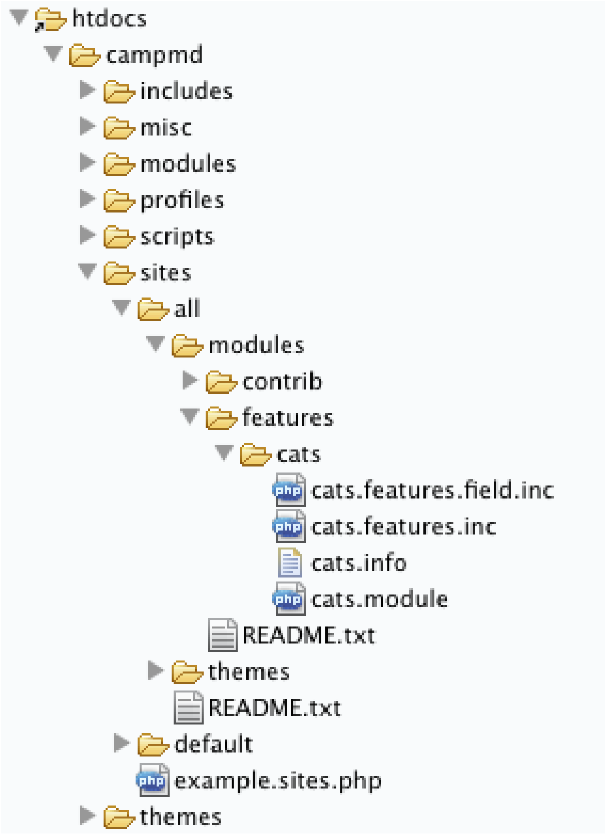


Features ⊕

	FEATURE	SIGNATURE	STATE	ACTIONS
☑	Cats Description of Cats feature	Unavailable	Disabled	Recreate

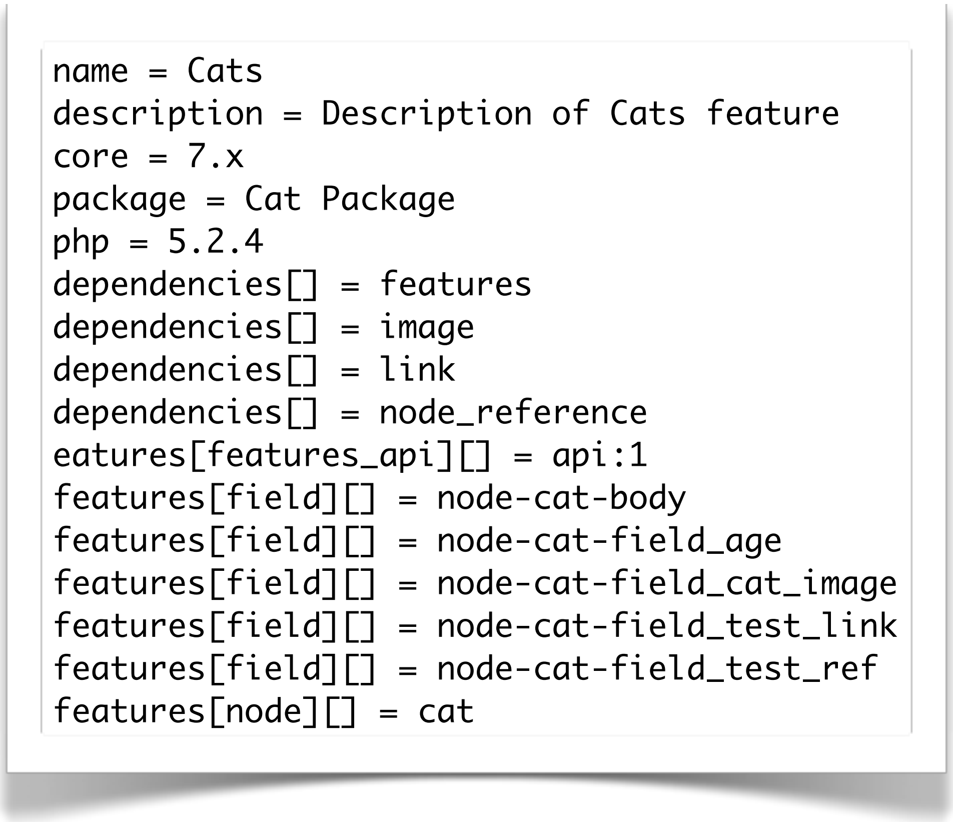
IT'S ALL IN THE CODE!

the "default hook"



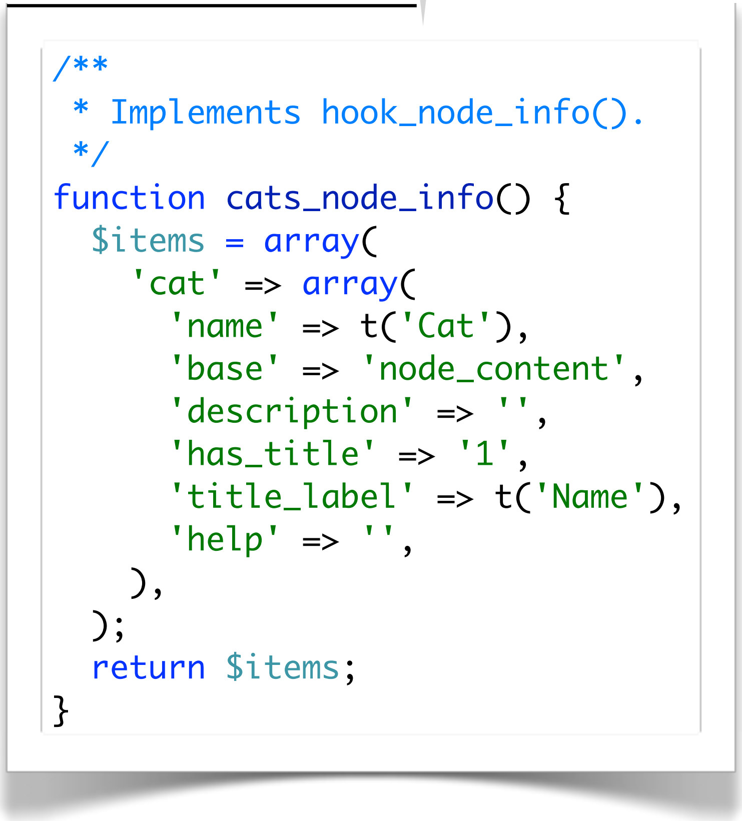
```
▼ htdocs
  ▼ campmd
    ▶ includes
    ▶ misc
    ▶ modules
    ▶ profiles
    ▶ scripts
    ▼ sites
      ▼ all
        ▼ modules
          ▶ contrib
          ▼ features
            ▼ cats
                cats.features.field.inc
                cats.features.inc
                cats.info
                cats.module
            README.txt
        ▶ themes
          README.txt
      ▶ default
        example.sites.php
    ▶ themes
```

cats.info



```
name = Cats
description = Description of Cats feature
core = 7.x
package = Cat Package
php = 5.2.4
dependencies[] = features
dependencies[] = image
dependencies[] = link
dependencies[] = node_reference
eatures[features_api][] = api:1
features[field][] = node-cat-body
features[field][] = node-cat-field_age
features[field][] = node-cat-field_cat_image
features[field][] = node-cat-field_test_link
features[field][] = node-cat-field_test_ref
features[node][] = cat
```

cats.features.inc



```
/**
 * Implements hook_node_info().
 */
function cats_node_info() {
  $items = array(
    'cat' => array(
      'name' => t('Cat'),
      'base' => 'node_content',
      'description' => '',
      'has_title' => '1',
      'title_label' => t('Name'),
      'help' => '',
    ),
  );
  return $items;
}
```

Features will keep your changes to *.module and any other files you add

IT'S ALL (MOSTLY) IN THE CODE!

- "Pure" Exportables
  - all in code
  - nothing in DB
- Views, CTools, etc

  uses existing module hooks

  don't need Features

- "Faux" exportables
  - some code
  - some config in DB
- Fields

  requires Features

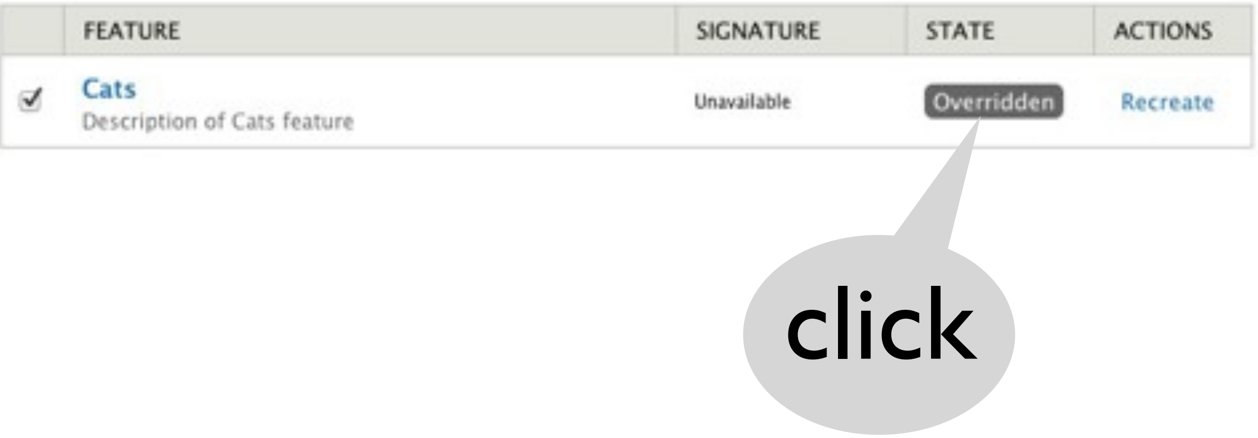
UPDATING A FEATURE

- Make a manual change to the database configuration
- Feature exportable is marked as “Overridden”

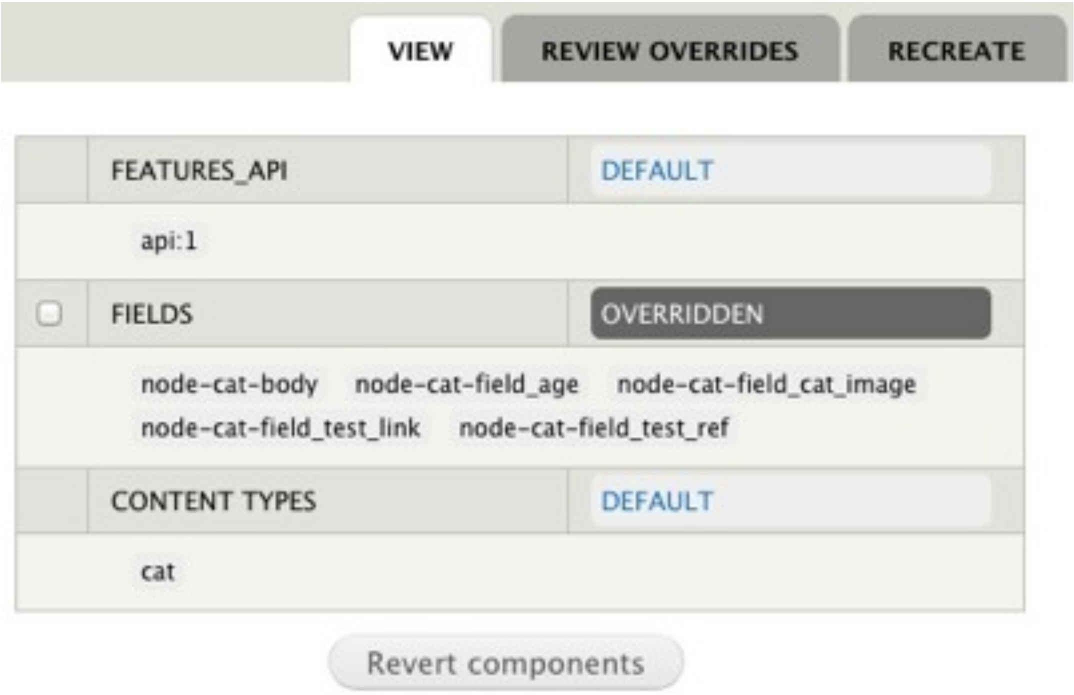
- “Recreate” the feature to add new data to code

or

- “Revert” the feature to restore original config

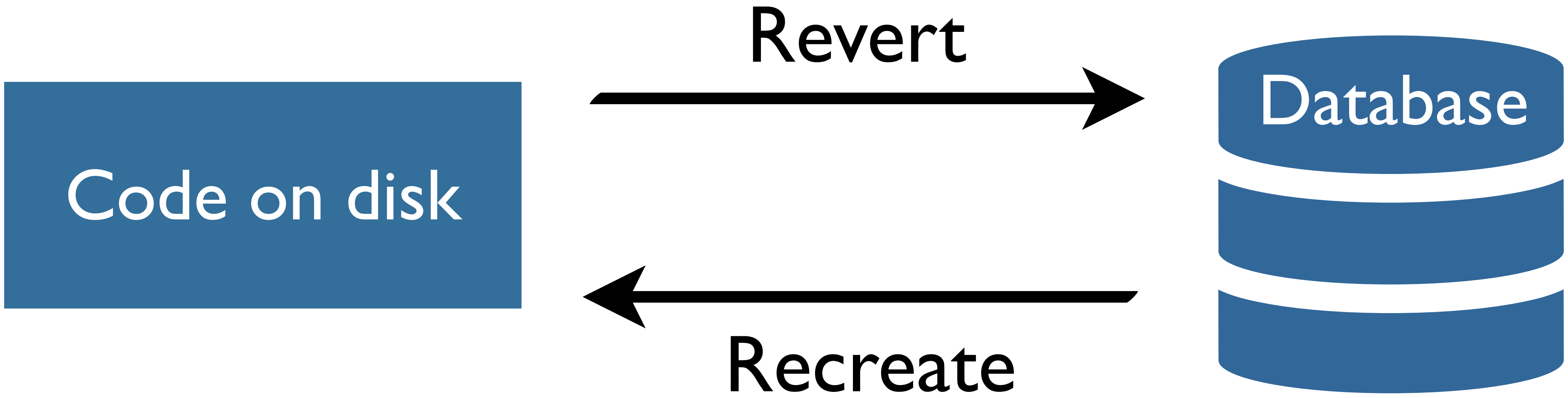


	FEATURE	SIGNATURE	STATE	ACTIONS
☑	Cats Description of Cats feature	Unavailable	Overridden	Recreate



	FEATURES_API	DEFAULT
	api:1	
□	FIELDS	OVERRIDDEN
	node-cat-body node-cat-field_age node-cat-field_cat_image node-cat-field_test_link node-cat-field_test_ref	
	CONTENT TYPES	DEFAULT
	cat	

REVERT VS RECREATE



phase:II TECHNOLOGY

USING DRUSH WITH FEATURES

- If anybody doesn't know about Drush then time for a quick DEMO!

drupal.org/projects/drush

```
All commands in features: (features)
 features-add (fa)     Add a component to a feature module.
 features-diff (fd)    Show the difference between the default and overridden state of a feature.
 features-export (fe)  Export a feature from your site into a module.
 features-list (fl,    List all the available features for your site.
 features)
 features-revert (fr)  Revert a feature module on your site.
 features-revert-all   Revert all enabled feature module on your site.
 (fr-all, fra)
 features-update (fu)  Update a feature module on your site.
 features-update-all   Update all feature modules on your site.
 (fu-all, fua)
```

REVERTING FEATURES USING DRUSH

```
$ drush fl
 Name              Feature            Status    State
 Distro Article    distro_article     Enabled
 Distro User       distro_user        Disabled
 Distro View       distro_view        Enabled   Overridden


$ drush fd distro_view
Legend:
Code:       drush features-revert will remove the overrides.
Overrides:  drush features-update will update the exported feature with the displayed overrides


Component: views_view
    /* Display: Master */
    $handler = $view->new_display('default', 'Master', 'default');
<   $handler->display->display_options['title'] = 'My Cat List';
---
>   $handler->display->display_options['title'] = 'My Cat List New';
    $handler->display->display_options['access']['type'] = 'perm';
    $handler->display->display_options['cache']['type'] = 'none';
```

RED is Code

GREEN is Database

REVERTING FEATURES USING DRUSH - 2

Keep RED Code (Code→Database)

```
$ drush fr distro_view
Do you really want to revert views_view? (y/n): y
Reverted views_view.
```

Keep GREEN Database (Database→Code)

```
$ drush fu distro_view
Module appears to already exist in sites/all/modules/features/distro_view
Do you really want to continue? (y/n): y
Created module: distro_view in sites/all/modules/features/distro_view
```

DEBUGGING OVERRIDDEN FEATURES

When Reverting fails to remove Overridden

- Use “drush fd” to see what is different
- Make sure difference isn’t provided by a disabled module.
- If a View, try Reverting from the Views UI
- Ensure there isn’t a left-over file in the feature directory
- Last resort: try editing code manually, or making database change manually to match code.

FEATURES SERVER drupal.org/project/fserver

- Allows features to be shared, distributed and updated.
- No longer in wide use because of alternatives: drupal.org sandboxes, github, and Apps

phase:II TECHNOLOGY

APPS

drupal.org/project/apps

- An App is a Feature(s) along with a manifest that allows it to be distributed via an App Server.
- An App is a clean, polished, modular piece of functionality.
- Apps are currently used mostly by Distributions to supply optional functionality.

phase:II TECHNOLOGY

OVERRIDES

- Using a Feature that you don’t want to change?
  (e.g. comes from a base Distribution like OpenPublish)
- Client made site-specific configuration changes?

➡ Capture those changes into a NEW feature called an “Override”

phase:II TECHNOLOGY

FEATURES OVERRIDE MODULE

- Rewritten for D7 to be easier to use
- Generates simple code for overrides
- Allows line-level inspection of overrides
- Uses existing “alter” hooks

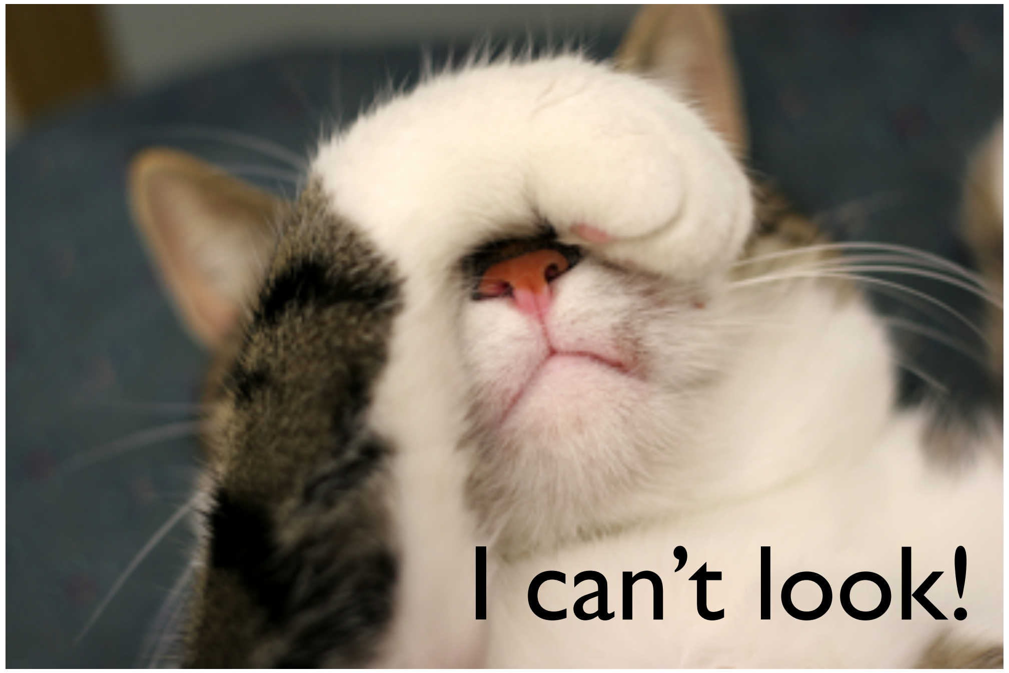
```
drupal_alter(‘default_hook’, $data);
```

Called by Drupal

```
function override_feature_views_default_views_alter(&$data) {
  if (isset($data['cat_fields'])) {
    $data['cat_fields']->display['default']->display_options['title'] = 'New Cat View title'; /* WAS: 'My Cat List' */
  }
}
```

Code in Override feature

FEATURES OVERRIDE DEMO



phase:// TECHNOLOGY

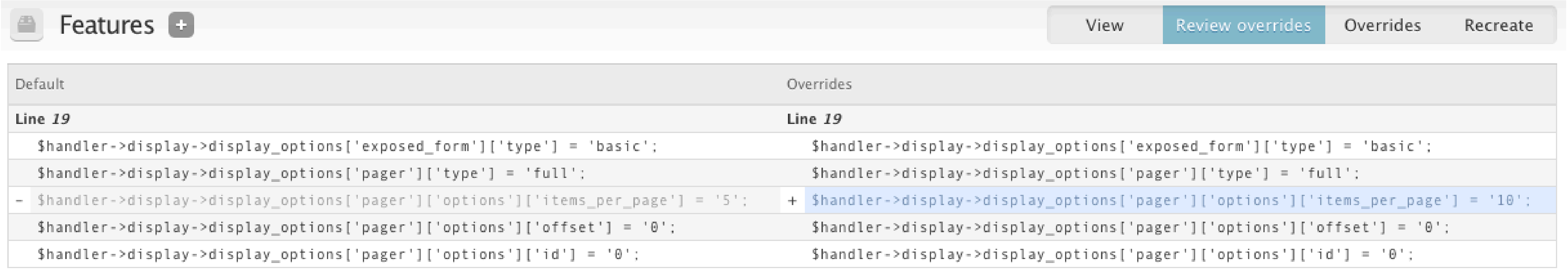
EXTRA DOUBLE-SECRET PROBATION DEMO

- Change a View
- Add a field to a View
- Remove a field from a View
- All in ONE Override!

phase:II TECHNOLOGY

INSPECTING OVERRIDES

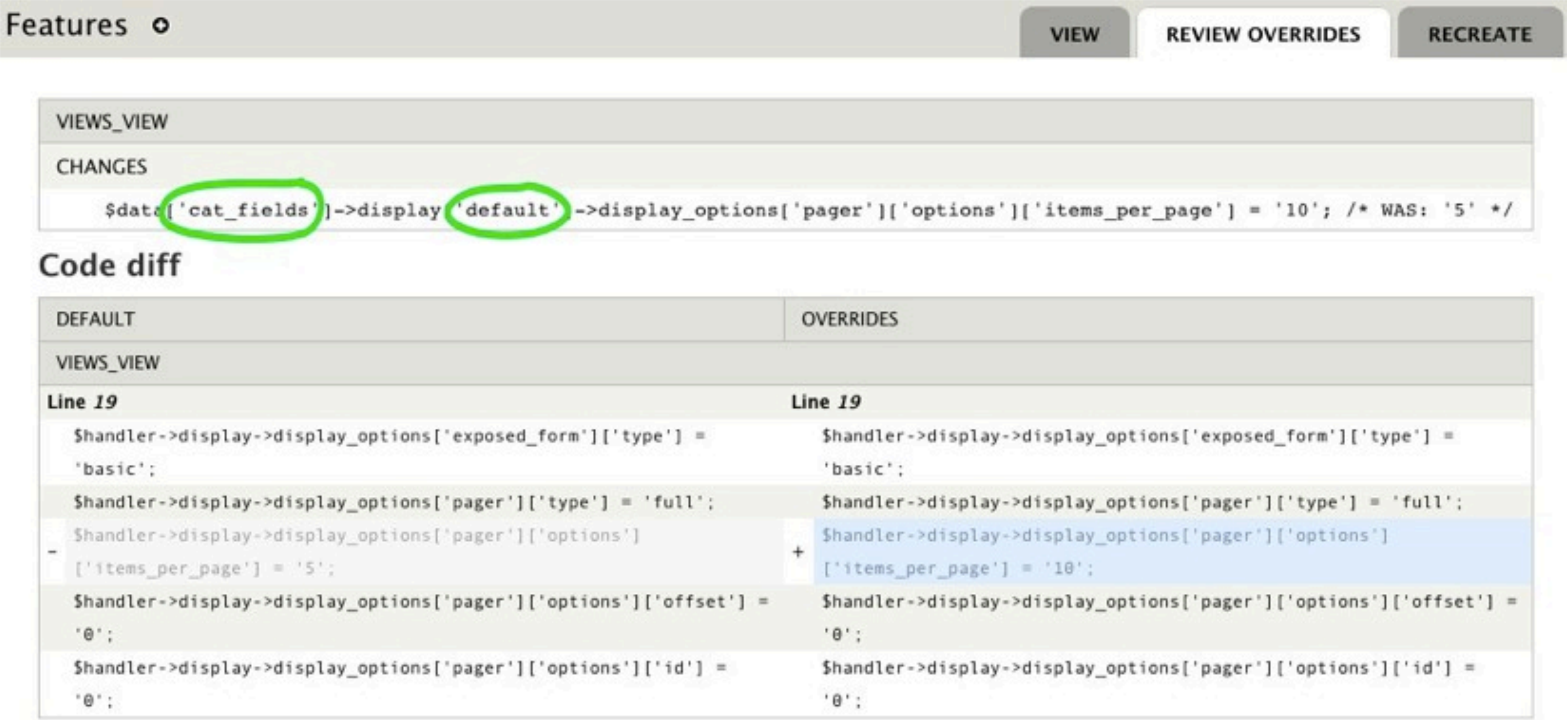
- Old method (Review Overrides using diff module)



	Default		Overrides
	Line *19*		**Line *19***
	`$handler->display->display_options['exposed_form']['type'] = 'basic';`		`$handler->display->display_options['exposed_form']['type'] = 'basic';`
	`$handler->display->display_options['pager']['type'] = 'full';`		`$handler->display->display_options['pager']['type'] = 'full';`
-	`$handler->display->display_options['pager']['options']['items_per_page'] = '5';`	+	`$handler->display->display_options['pager']['options']['items_per_page'] = '10';`
	`$handler->display->display_options['pager']['options']['offset'] = '0';`		`$handler->display->display_options['pager']['options']['offset'] = '0';`
	`$handler->display->display_options['pager']['options']['id'] = '0';`		`$handler->display->display_options['pager']['options']['id'] = '0';`

INSPECTING OVERRIDES

- New method (Overrides using Features Override)



VIEWS_VIEW

CHANGES

```
$data['cat_fields']->display['default']->display_options['pager']['options']['items_per_page'] = '10'; /* WAS: '5' */
```

Code diff

DEFAULT		OVERRIDES
VIEWS_VIEW		
Line *19*		**Line** *19*
`$handler->display->display_options['exposed_form']['type'] = 'basic';`		`$handler->display->display_options['exposed_form']['type'] = 'basic';`
`$handler->display->display_options['pager']['type'] = 'full';`		`$handler->display->display_options['pager']['type'] = 'full';`
- `$handler->display->display_options['pager']['options']['items_per_page'] = '5';`	+	`$handler->display->display_options['pager']['options']['items_per_page'] = '10';`
`$handler->display->display_options['pager']['options']['offset'] = '0';`		`$handler->display->display_options['pager']['options']['offset'] = '0';`
`$handler->display->display_options['pager']['options']['id'] = '0';`		`$handler->display->display_options['pager']['options']['id'] = '0';`

FEATURES IN D8

- Features will still need to exist in D8
- Will coordinate with CMI (Configuration Management Initiative)
- Use CMI API as much as possible.
- Still need to be able bundle functionality and deploy it to a site

phase:II TECHNOLOGY

WHAT DOES THIS ALL MEAN? (CASE 1)

- Use a Distribution containing features.
- Customize site for specific Client needs.
- Capture changes to a Features Override.
- New version of Distribution released?
  - Just install new features
  - Site-specific changes are maintained in Override.

WHAT DOES THIS ALL MEAN? (CASE 2)

- Build site for client using Features.
- Deploy from your Dev server to Staging.
- Deploy from Staging to Production.
- Client makes emergency changes to live Production.
- Capture those changes into Features Override
  - Keep separate or roll back into Dev features

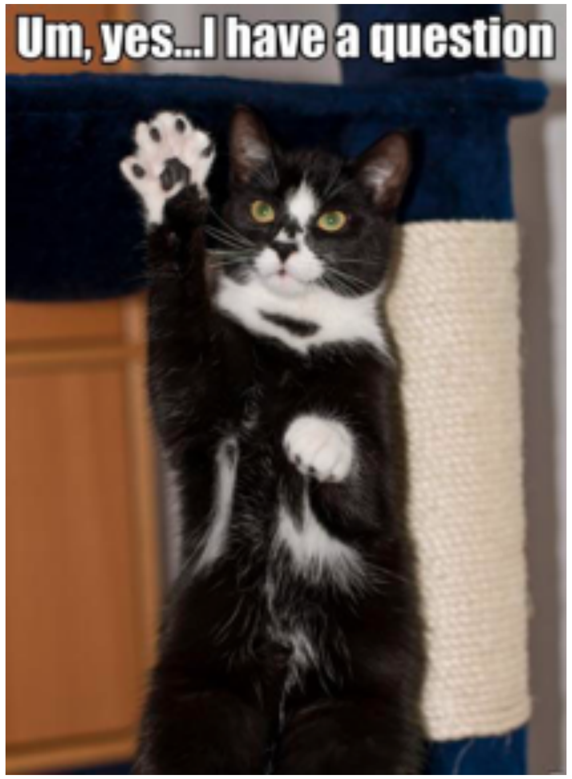
BOTTOM LINE

- Use Features. They will save you.
- Use Overrides. They will make you a star!

QUESTIONS?

#drupal-features

mpotter@phase2technology.com



phase:II TECHNOLOGY