Introducing Zend Framework 2

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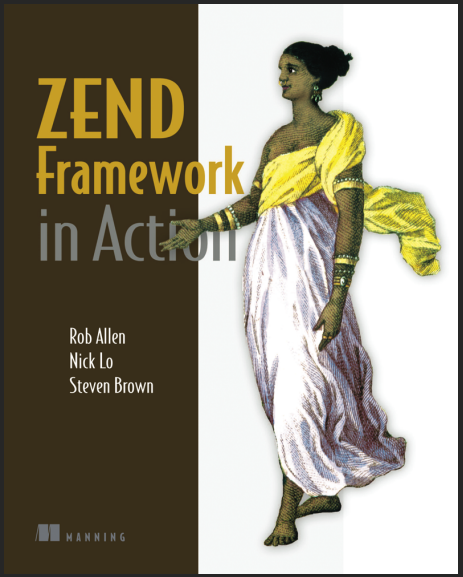
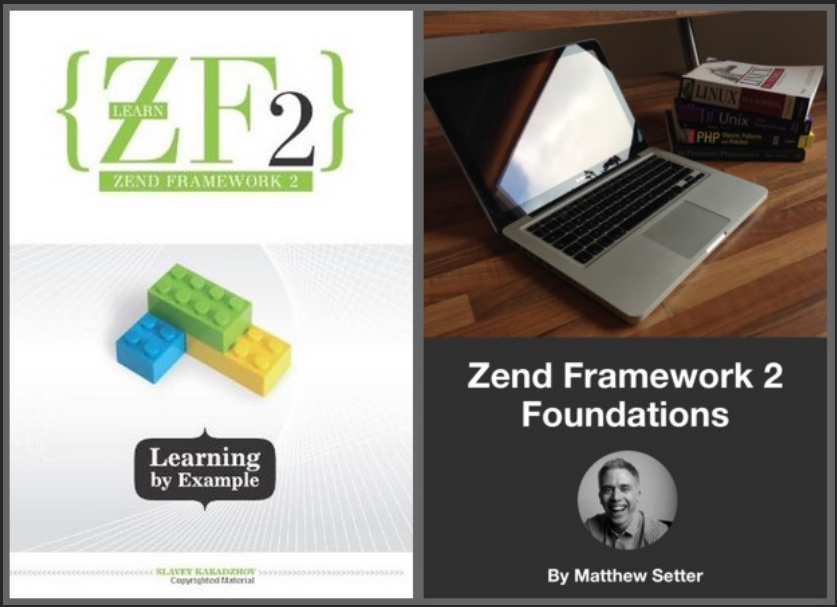


ZF2 books


{ZF2}
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Foundations
By Matthew Setter

What are we going to do?

Look at these key ZF2 features:

- MVC
- Modules
- ServiceManager
- EventManager

… with lots of code!

Getting started

ZFTool

ZFTool is a utility module for maintaining modular ZF2 applications

- Get https://packages.zendframework.com/zftool.phar
- Place in `/usr/local/bin`
- `chmod a+x /usr/loca/bin/zftool.phar`

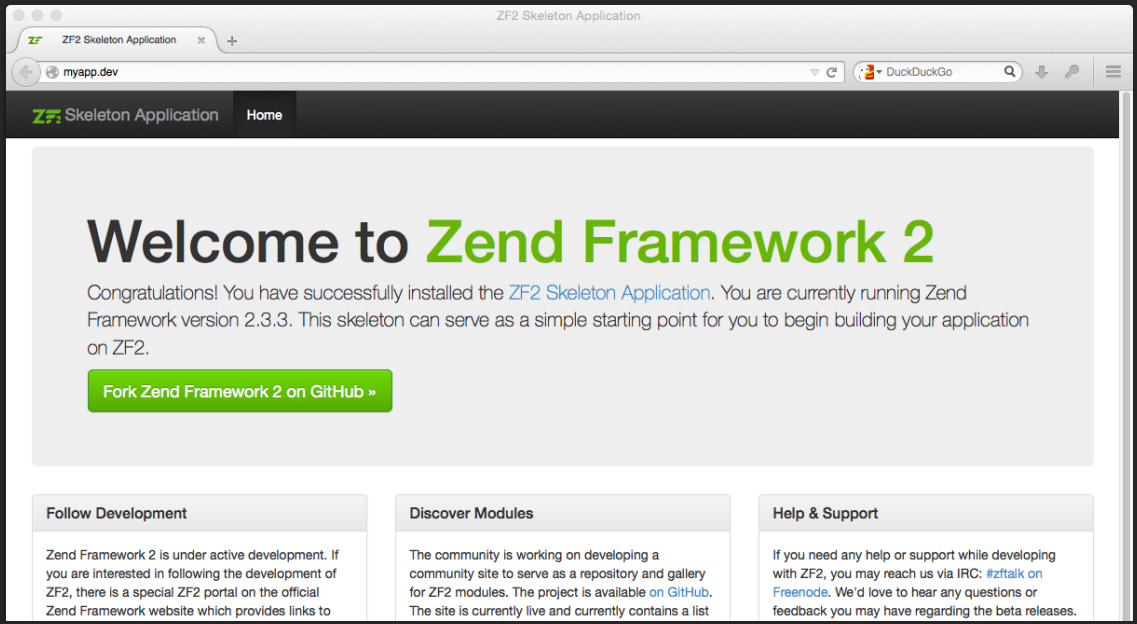
Create a project

```
$ zftool.phar create project myapp
ZF2 skeleton application installed in myapp.
In order to execute the skeleton application you
    need to install the ZF2 library.
Execute: "composer.phar install" in myapp
For more info in myapp/README.md
```

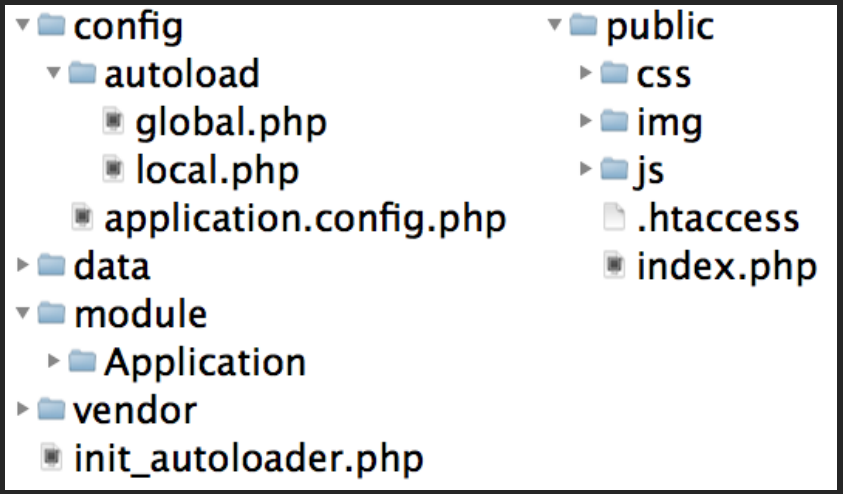
Composer

```
$ cd myapp
$ ./composer.phar install
Loading composer repositories with package inform…
Installing dependencies
  - Installing zendframework/zendframework (2.2.0)
    Downloading: 100%

  …

Writing lock file
Generating autoload files
```

Skeleton application



Directories & files



application.config.php

```
return array(
  'modules' => array(                  // MODULES TO LOAD
    'Application',
  ),

  'module_listener_options' => array(
    'module_paths' => array(           // WHERE TO FIND THEM
      './module',
      './vendor',
    ),

    'config_glob_paths' => array(      // GLOBAL CONFIG
      'config/autoload/{,*.}{global,local}.php',
    ),
```

Modules

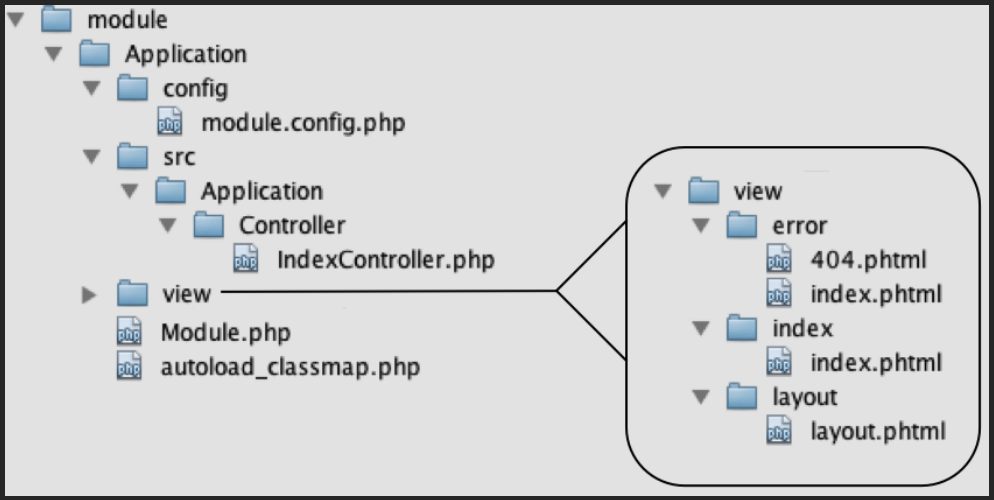
Modules

- Contain all code for the application
  - App-specific in `modules/`
  - 3rd party in `vendor/`
- Reusable between applications
  - http://modules.zendframework.com

A module...

- is a PHP namespace
- is a class called `Module` within that namespace
    - which provides features to the application
        - autoloading
        - event registration
        - service location
- has no required structure (but there is convention)

Module directory structure



The Module class

```php
namespace Application;

use Zend\Mvc\MvcEvent;

class Module
{
    public function getAutoloaderConfig() { /**/ }
    public function init() { /**/ }
    public function getConfig() { /**/ }
    public function onBootstrap(MvcEvent $e) { /**/ }

    public function getServiceConfig() { /**/ }
    public function getControllerConfig() { /**/ }
    public function getViewHelperConfig() { /**/ }
    // etc…
}
```

ModuleManager

- Loads all modules
- Triggers events which call specific methods within `Module`:
    - Autoloading: `getAutoloaderConfig()`
    - Initialisation: `init()`
    - Configuration: `getConfig()`
    - Services: `getServiceConfig()` & friends…
    - Event listener registration: `onBootstrap()`
- Merges all configuration from all modules

Autoloading

```
public function getAutoloaderConfig()
{
  return array(
    'Zend\Loader\ClassMapAutoloader' => array(
      __DIR__ . '/autoload_classmap.php',
    ),
    'Zend\Loader\StandardAutoloader' => array(
      'namespaces' => array(
        __NAMESPACE__ => __DIR__.'/src/'.__NAMESPACE__
      ),
    ),
  );
}
```

(Or just use composer)

Configuration

```
// Application::Module
public function getConfig() {
  return include __DIR__ .'/config/module.config.php';
}

// config/module.config.php:
return array(
  'router' => array( /* … */ ),
  'translator' => array( /* … */ ),
  'service_manager' => array( /* … */ ),
  'controllers' => array( /* … */ ),
  'view_manager' => array( /* … */ ),
  // etc…
);
```

Configuration

- Examples use arrays, but can use INI/JSON/etc.
- Configuration is stored in multiple places:
    - A module's `module.config.php` (i.e. result of `getConfig()`)
    - `config/autoload/*.php`
    - Output of `ServiceManager` related module methods

Configuration merging

Configuration is merged in order:

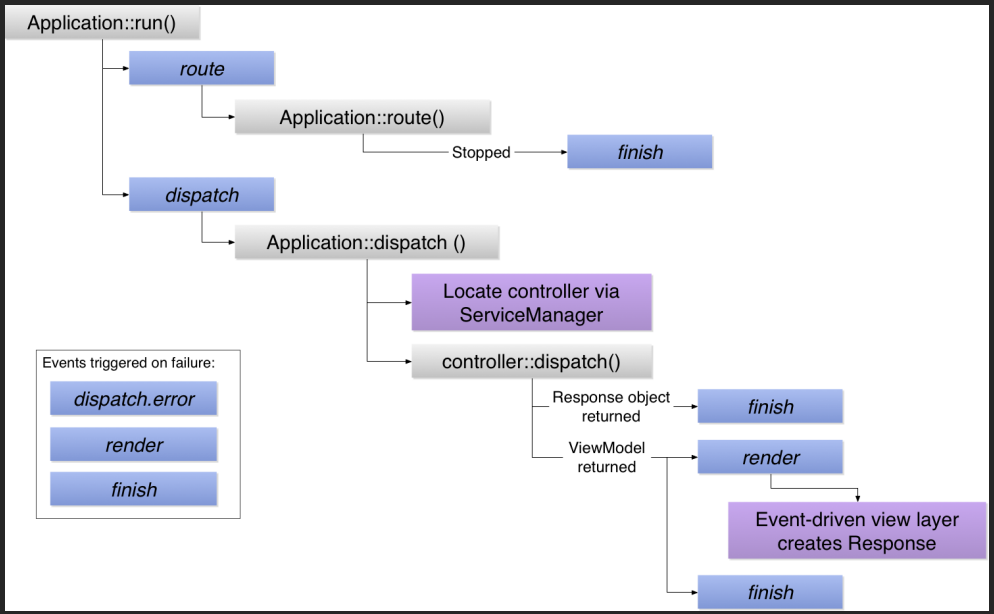
1. All returned arrays from module `getConfig()`
2. All `config/autoload/global.*.php` files
3. All `config/autoload/local.*.php` files
4. All module SM configs: `getServiceConfig()`, etc.

ModuleManager provides caching for steps 1-3.

MVC is event-driven

- All MVC actions are performed by listeners triggered on events:
  - *route*
  - *dispatch*
  - *render*
- You can add your own before or after the MVC ones

MVC event process



Registering events

```
// Application::Module
public function onBootstrap($e)
{
  $app    = $e->getApplication();
  $events = $app->getEventManager();

  $events->attach('dispatch', function($e) {
      // do something before dispatch
  }, 100);

  $events->attach('dispatch', function($e) {
      // do something after dispatch
  }, -100);
}
```

Zend\ServiceManager

- Dependency Injection Container
- Clean and simple way to configure dependencies.
- Explicit and easy to understand - no magic!
- Used *extensively* by MVC
- More information: http://bitly.com/bundles/akrabat/1

Registering services

```
// Application/config/module.config.php:
return array(
  'db' => array( /* config */ ),

  'service_manager' => array(
    'factories' => array(
      'Zend\Db\Adapter\Adapter'
          => 'Zend\Db\Adapter\AdapterServiceFactory',
    ),
    'invokables' => array(
      'zfcuser_user_service' => 'User\Service\User',
    ),
    'aliases' => array(
      'my_db' => 'Zend\Db\Adapter\Adapter',
    ),
  ),
```

Registering services

```
// Application::Module
public function getServiceConfig()
{
  return array(
    'factories' => array(
      'ErrorHandling' => function($sm) {
          $log = $sm->get('Zend\Log');
          $service = new ErrorHandlingService($log);
          return $service;
      },
    ),
  );
}
```

Routing

Routing

- Inspects URL and matches segments
- Basic unit of routing is the `Route`
- `TreeRouteStack` for nested routes
- If matches, returns a `RouteMatch` object

Types of routes

Name	Example	config key
Hostname	:sub.example.com	route
Literal	/hello	route
Method	post	verb
Regex	/news/(?<year>[0-9]{4})	regex
Scheme	https	scheme
Segment	/news/:year	route
Wildcard	/*	n/a

Configure your routes

```
// Gallery/config/module.config.php:
return array(
  //…

  'Zend\Mvc\Router\RouteStack' => array(
    'parameters' => array(
      'routes' => array(
          // info about routes go here
      ),
    ),
  ),

  //…
```

Route for photo list

```
// Gallery/config/module.config.php, within "routes":

'gallery' => array(                    // ROUTE NAME
  'type' => 'Literal',
  'options' => array(
    'route' => '/photos',              // URL SEGMENT
    'defaults' => array(
      'controller' => 'Gallery\Controller\Photo',
      'action'     => 'list',
    ),
  ),
  'may_terminate' => true,
```

Name: `gallery`, matches: `/photos`

Nested route for a photo

```
// continuing 'gallery' route…
'child_routes' => array(
  'photo' => array(                 // ROUTE NAME
    'type' => 'Segment',
    'options' => array(
      'route' => '/:id',            // NEXT URL SEGMENT
      'constraints' => array(
          'id' => '[0-9]+',
      ),
      'defaults' => array(
        'action' => 'image'
      ),
    ),
    'may_terminate' => true,
```

Name: `gallery/photo`, matches: `/photos/45`

Generating URLs

```
// in a controller
return $this->redirect()->toRoute('gallery');

// in a view script
<?= $this->url('gallery/photo', array('id' => 45)); ?>
```

Note:

- Use route's name, not URL segment
- Use / for nested route names

Controllers

A controller

```
namespace Gallery;

use Zend\Mvc\Controller\AbstractActionController;
use Zend\View\Model\ViewModel;

class PhotoController extends AbstractActionController
{
  public function listAction()
  {

  }
}
```

Retrieve parameters

```
public function listAction()
{
  // retrieve param from route match
  $a = $this->params('a');

  // retrieve param from get
  $b = $this->params()->fromQuery('b');

  // retrieve param from post
  $c = $this->params()->fromPost('c');

  // Request object
  $request = $this->getRequest();
}
```

Controller dependencies

```
class PhotoController extends AbstractActionController
{
    protected $mapper;

    public function __construct($mapper) {
        $this->mapper = $mapper;
    }

    public function listAction() {
      $photos = $this->mapper->fetchAll();
      return new ViewModel(array(
          'photos' => $photos,
      ));
    }
}
```

Inject dependencies

```
// module/Gallery/Module.php
public function getControllerConfig()
{
  return array(
    'factories' => array(
      'Gallery\Controller\Photo' => function($csm) {
        $sm     = $csm->getServiceLocator();
        $mapper = $sm->get('PhotoMapper');

        return new PhotoController($mapper);
      },
   ));
}
```

(This should look familiar)

Controller response

Action methods can return:

- `Response` object which is returned immediately
- `ViewModel` to pass to the view (that returns a `Response`)

Return a Response

```
public function goneAction()
{
    $response = $this->getResponse();
    $response->setStatusCode(410);
    $response->setContent('Gone!');

    return $response;
}
```

Return a ViewModel

```
public function imageAction()
{
    $id = $this->params('id');         // FROM ROUTE

    $image = $this->mapper->load($id);

    $viewModel = new ViewModel(array(
        'photo' => $image,
    ));
    $viewModel->setVariable('name', $image->getName());
    $viewModel->exif = $image->getExif();

    return $viewModel;
}
```

Views

View templates

Add module's view directory:

```
// in module.config.php
return array(
    // …
    'view_manager' => array(
        'template_path_stack' => array(
            __DIR__ . '/../view',
        ),
    ),
);
```

default template:

`{module}/{controller}/{action}.phtml`

Override default template

```
public function listAction()
{
    $result = new ViewModel(array(
        'images' => $this->photoMapper->fetchAll(),
    ));

    $result->setTemplate('photos/gallery');

    return $result;
}
```

Writing view scripts

- PHP within HTML
- Script extension: .phtml
- Assigned variables accessed via *$this*
- View helpers for reusable complex functionality:

```
<?= $this->escapeHtml($this->photo->title) ?>
```

View script

```
<ul>
<?php foreach($this->photos as $image) :
  $url = $this->url('gallery/photo',
            array('id' => $image->getId()));
?>
  <li>
    <a href="<?= $url ?>">
      <?= $this->displayImage($image) ?>
    </a>
  </li>
<?php endforeach; ?>
</ul>
```

Layouts

- For cohesive look and feel
- Includes default CSS, JS & structural HTML
- Default layout template is *layout/layout*
- Implemented as nested view models:
    - “root” view model is the layout
    - Renders action view model

Layout view script

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8">
    <?= $this->headTitle('Photo App') ?>
    <?= $this->headLink() ?>
    <?= $this->headScript() ?>
  </head>
  <body>

    <?= $this->content ?>

    <footer><p>&copy; 2014 Rob Allen</p></footer>
  </body>
</html>
```

View helpers

- When you do the same thing twice in a script
- Interaction with model from view
- Hide complexity from view script
- Usually extend from `AbstractHelper`
- Implement __invoke() for ease of use:

View helper registration

```
// Application/config/module.config.php:
'view_helpers' => array(
  'invokables' => array(
    'date'    => 'Application\View\Helper\FormatDate',
    'formRow' => 'Application\View\Helper\FormRow',
  ),
),
```

(This should look familiar)

…or in Module.php

```
public function getViewHelperConfig()
{
  return array(
    'factories' => array(
      'displayChoice' => function($vhsm) {
          $sm = $vhsm->getServiceLocator();
          $mapper = $sm->get('Choice\ChoiceMapper');

          return new DisplayChoice($mapper);
      },
    ),
  );
}
```

(This should also look familiar)

A view helper

```
namespace Application\View\Helper;
use Zend\View\Helper\AbstractHelper;

class FormatDate extends AbstractHelper
{
  public function __invoke($date, $format='jS F Y')
  {
    $date = strtotime($date);
    $html = $date ? date($format, $date) : '';
    return $html;
  }
}

// use:
<?= $this->date($photo->getDateTaken()); ?>
```

In summary

Everything is in a module
Extend and modify using events
Wire up using Zend\ServiceManager

Thank you!

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