Paradigm Shift: Drupal 7 Hooks to Drupal 8 Plugins

Jennifer Hodgdon (jhodgdon)

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What do Hooks and Plugins Do?

- Allow modules to add functionality to Drupal Core or other modules.
- Allow modules to alter how Drupal Core or other modules work.
- Define things like Blocks, Text Formats, Content Types, etc. for Drupal Core or other modules to use or display.

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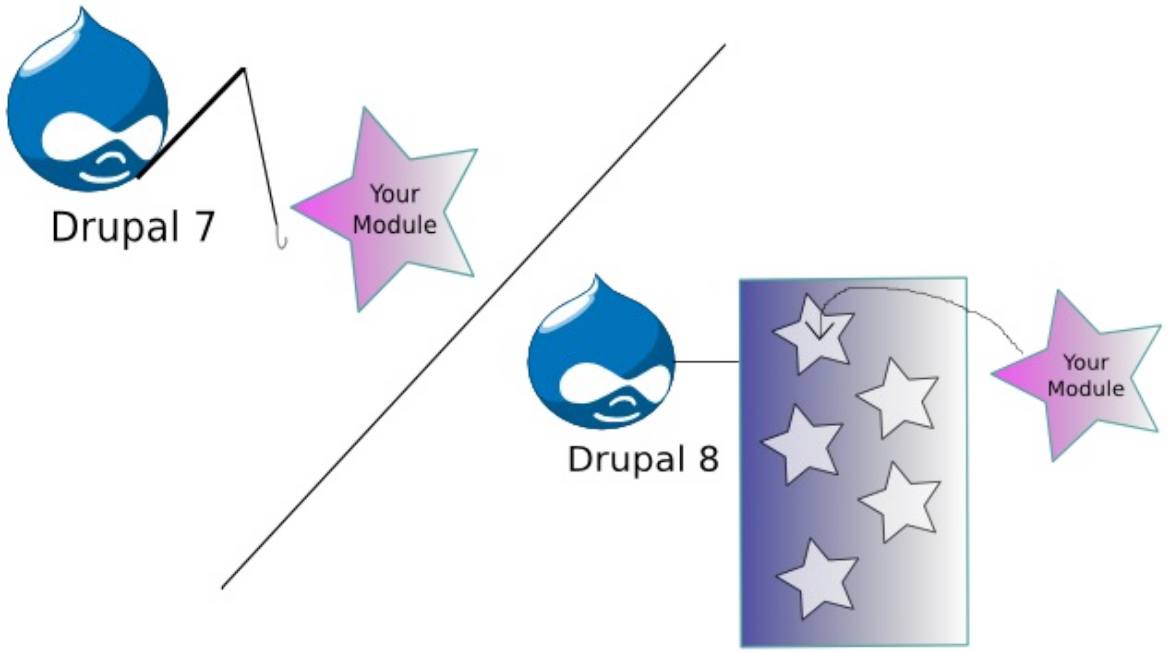
How Hooks and Plugins Interact with Drupal



How Hooks Work (Functional Code in D7)

- Module A (example: Block module) ***defines*** a hook (implicitly), and chooses a hook name like "`hook_block_foo`". Often, there are sets of related hooks, such as `hook_block_info()`, `hook_block_view()`, `hook_block_configure()`, etc.
- Module A (hopefully) ***documents*** the hook's parameters/return value in its `block.api.php` file.
- Module B (example: My Module) ***implements*** the hook by defining a function `mymodule_block_foo()` in its `mymodule.module` file.
- Module A uses `module_invoke($module, 'block_foo')` or `module_invoke_all('block_foo')` to ***invoke*** the hook on a module or all implementing modules at appropriate times.

Example of Hooks in Code (D7)

```
// Block module (making list of module-supplied blocks):
foreach (module_implements('block_info') as $module) {
  $blocks[$module] = module_invoke($module, 'block_info');
}

// Your module (telling Block module about your blocks):
function mymodule_block_info() {
  $blocks = array();
  $blocks['first_block'] = array(
    'info' => t('First block from My Module'),
  );
  return $blocks;
}
```

Example of Hooks in Code (D7) [cont.]

```
// Block module (viewing a block):
$array = module_invoke($block->module, 'block_view', $block->delta);

// Your module (providing block output):
function mymodule_block_view($delta = '') {
  if ($delta == 'first_block') {
    return array(
      // The block's title.
      'subject' => t('First block'),
      // The block's content.
      'content' => t('Hello World'),
    );
  }
}
```

Problems with Hook Idea

- Rather ad-hoc: a bunch of related functions that may not all be defined by implementing module.
- Trying to be object-oriented without using object-oriented code (left over from the old days of PHP).
- Hooks may not be documented (function signatures, return values).
- Discovery of a hook implementation is basically `function_exists($module . '_' . $hook_name)`, so module C could implement a hook on behalf of module B, uck!

How Plugins Work (Object-Oriented Code D8)

- Module A (example: Block) defines a PHP interface, an annotation scheme (PHP class), and (hopefully) a base class to help implementation.
- Classes use namespaces and PSR-0 for auto-loading.
- Module B (example: My Module) creates a class with an annotation block, which implements the interface.
- Module A uses a Plugin Manager class to collect plugin classes, instantiate them, and call interface methods as appropriate.

Example of Plugins in Code (D8)

```
// Block module — annotation class
// core/modules/block/lib/Drupal/block/Annotation/Block.php
class Block extends Plugin {
  // Your unique plugin ID.
  public $id;
  // Administrative label of your block type.
  public $admin_label;
}

// Block module - plugin interface
// core/modules/block/lib/Drupal/block/BlockPluginInterface.php
interface BlockPluginInterface {
  // Define who can see the block.
  public function access();
  // Output the block.
  public function build();
  // etc.
}

// There is also a base class: BlockBase
```

Example of Plugins in Code (D8) [cont.]

```
// Your module – defining the block.
// File: mymodule/lib/Drupal/mymodule/Plugin/Block/MyModuleFirstBlock.php
namespace Drupal\mymodule\Plugin\Block;

use Drupal\block\BlockBase;
use Drupal\block\Annotation\Block;
use Drupal\Core\Annotation\Translation;

/**
 * Provides a sample block.
 *
 * @Block(
 *   id = "mymodule_first_block",
 *   admin_label = @Translation("First block from My Module")
 * )
 */
class MyModuleFirstBlock extends BlockBase {
  public function build() {
    return array(
      '#markup' => t('Hello World'),
    );
  }
}
```

Example of Plugins in Code (D8) [cont.]

```
// Block module: Making a list of available block plugins

// Defining the Plugin Manager pluggable service's default class
// in block.services.yml :
services:
  plugin.manager.block:
    class: Drupal\block\Plugin\Type\BlockManager

// Constructing the Block List controller
// In class  \Drupal\block\BlockListController create()/construct():
$this->blockManager = $container->get('plugin.manager.block');

// In buildForm() method:
$plugins = $this->blockManager->getDefinitions();
foreach ($plugins as $plugin_id => $plugin_definition) {
  // …
}
```