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Plugins

Where does this thing go?

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Plugins

- What are plugins?
- Drupal Plugin API
- How do I use plugins?
 - Core plugin types
- How do I create my own plugins?
- Advanced topics
 - Derivatives
 - Collections

What are plugins?

- D.O. – Small, swappable pieces of functionality.
- drupalize.me – Plugins are a design pattern.



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Plugin API



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Plugin API

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- **Plugin factory – Responsible for instantiating a specific plugin and returning a usable instance.**

Plugin API

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- Plugin factory – Responsible for instantiating a specific plugin and returning a usable instance.
- **Plugins – A plugin is an implementation of a plugin type definition.**

Using plugins

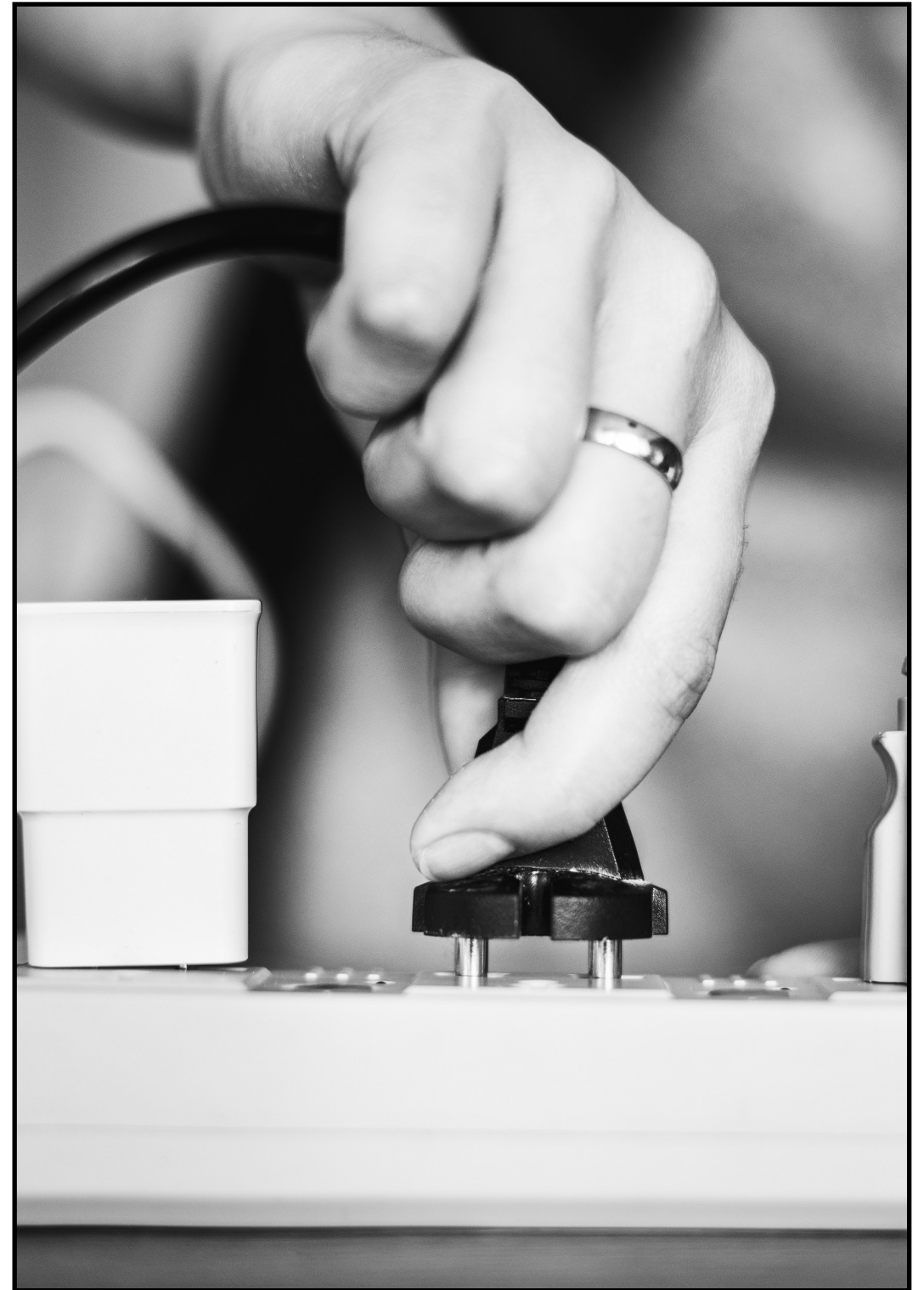


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Using plugins

- Blocks
- Menus
- Fields – types, widgets and formatters
- REST resources
- Image effects and formatters
- Validation constraints
- Data types
- **Views**

Using plugins

- `drupal debug:plugin` — get a list of all the plugin types on your Drupal instance
- `drupal debug:container` — list the services available on your Drupal instance
- `$manager = \Drupal::service('plugin.manager.block');`

Using plugins

```
$plugin_manager = \Drupal::service('plugin.manager.block');
```

```
$plugin_manager->getDefinitions();
```

```
devel_execute_php  
devel_switch_user  
help_block  
node_syndicate_block  
search_form_block  
shortcuts  
system_branding_block  
system_breadcrumb_block  
system_main_block  
system_menu_block:account  
system_menu_block:admin  
system_menu_block:devel  
system_menu_block:footer  
system_menu_block:main  
system_menu_block:tools  
system_messages_block  
system_powered_by_block  
user_login_block  
views_block:comments_recent-block_1  
views_block:content_recent-block_1  
views_block:who_s_new-block_1  
views_block:who_s_online-who_s_online_block
```

Using plugins

```
$plugin_manager = \Drupal::service('plugin.manager.block');  
  
$plugin_manager->getDefinitions();  
  
$block = $plugin_manager->getDefinition('search_form_block');  
  
[  
  __admin_label => Drupal\Core\StringTranslation\TranslatableMarkup {#3831},  
  category => Drupal\Core\StringTranslation\TranslatableMarkup {#3838},  
  id => search_form_block,  
  class => Drupal\search\Plugin\Block\SearchBlock,  
  provider => search,  
]
```


Using plugins

```
$plugin_manager = \Drupal::service('plugin.manager.block');

$plugin_manager->getDefinitions();

$plugin_manager->getDefinition('search_form_block');

[
  __admin_label => Drupal\Core\StringTranslation\TranslatableMarkup {#3831},
  category => Drupal\Core\StringTranslation\TranslatableMarkup {#3838},
  id => search_form_block,
  class => Drupal\search\Plugin\Block\SearchBlock,
  provider => search,
]
$block = $plugin_manager->createInstance('search_form_block');

$search_block = $block->build();
```

Plugin type

When you want to enable different ways of doing the same thing.



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Creating a plugin type

- An interface – to ensure that all plugins of this type really are swappable.
- A base class – an abstract class that extends the PluginBase class and implements your interface.
- A plugin manager – keeps track of plugins of this type.
- An annotation file – defines the properties of your plugin.
- Make your plugin manager a service.

Creating a plugin type

```
drupal generate:plugin:type:annotation
```

```
modules/custom/drupalcamp_2018/src/Annotation/Musician.php
```

```
modules/custom/drupalcamp_2018/src/Plugin/MusicianBase.php
```

```
modules/custom/drupalcamp_2018/src/Plugin/MusicianInterface.php
```

```
modules/custom/drupalcamp_2018/src/Plugin/MusicianManager.php
```

```
modules/custom/drupalcamp_2018/drupalcamp_2018.services.yml
```

```
modules/custom/drupalcamp_2018/src/Plugin/Musician/
```

Creating a plugin type

MusicianManager

```
public function __construct(\Traversable $namespaces, CacheBackendInterface
$cache_backend, ModuleHandlerInterface $module_handler) {

    parent::__construct('Plugin/Musician', $namespaces, $module_handler,
'Drupal\drupalcamp_2018\Plugin\MusicianInterface',
'Drupal\drupalcamp_2018\Annotation\Musician');

    $this->alterInfo('drupalcamp_2018_musician_info');

    $this->setCacheBackend($cache_backend, 'drupalcamp_2018_musician_plugins');

}
```

Creating a plugin type

Musician Annotation

```
class Musician extends Plugin {  
  
    public $id;  
  
    public $name;  
  
    public $instrument;  
  
    // other attributes like rhythm, pitch, etc.  
  
}
```


Creating a plugin type

Extending DefaultPluginManager

- `CategorizingPluginManagerTrait` – Methods for categorizing plugin definitions based on a 'category' key. Used in core by `ActionManager`, `BlockManager`, `ConditionsManager` and `FieldTypePluginManager`.
- `FilteredPluginManagerTrait` – Methods for plugin managers that allow filtering plugin definitions. Used by `BlockManager`, `ConditionManager` and `LayoutPluginManager`.
- `PluginDependencyTrait` – For calculating dependencies of a plugin. Views and config entities use this one.

What is a plugin?

A plugin is an instance of a plugin type.



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Creating a plugin

MY_MODULE/**src/Plugin/Musician**/Guitarist.php

```
namespace Drupal\MY_MODULE\Plugin\Musician;  
  
use Drupal\drupalcamp_2018\Plugin\MusicianBase;  
  
/**  
 * Provides a guitarist  
 *  
 * @Musician (  
 *   id = guitarist,  
 *   name = Guitar,  
 *   instrument = guitar,  
 *   . . .  
 * )  
 */  
class Guitarist extends MusicianBase {  
  
}
```

Creating a plugin

```
$union_rep = \Drupal::service('plugin.manager.musician');  
  
$picker = $union_rep->createInstance('guitarist');  
  
$picker->play('Stairway to Heaven');
```


Plugin derivatives

Derivatives are plugins that are derived from other data.

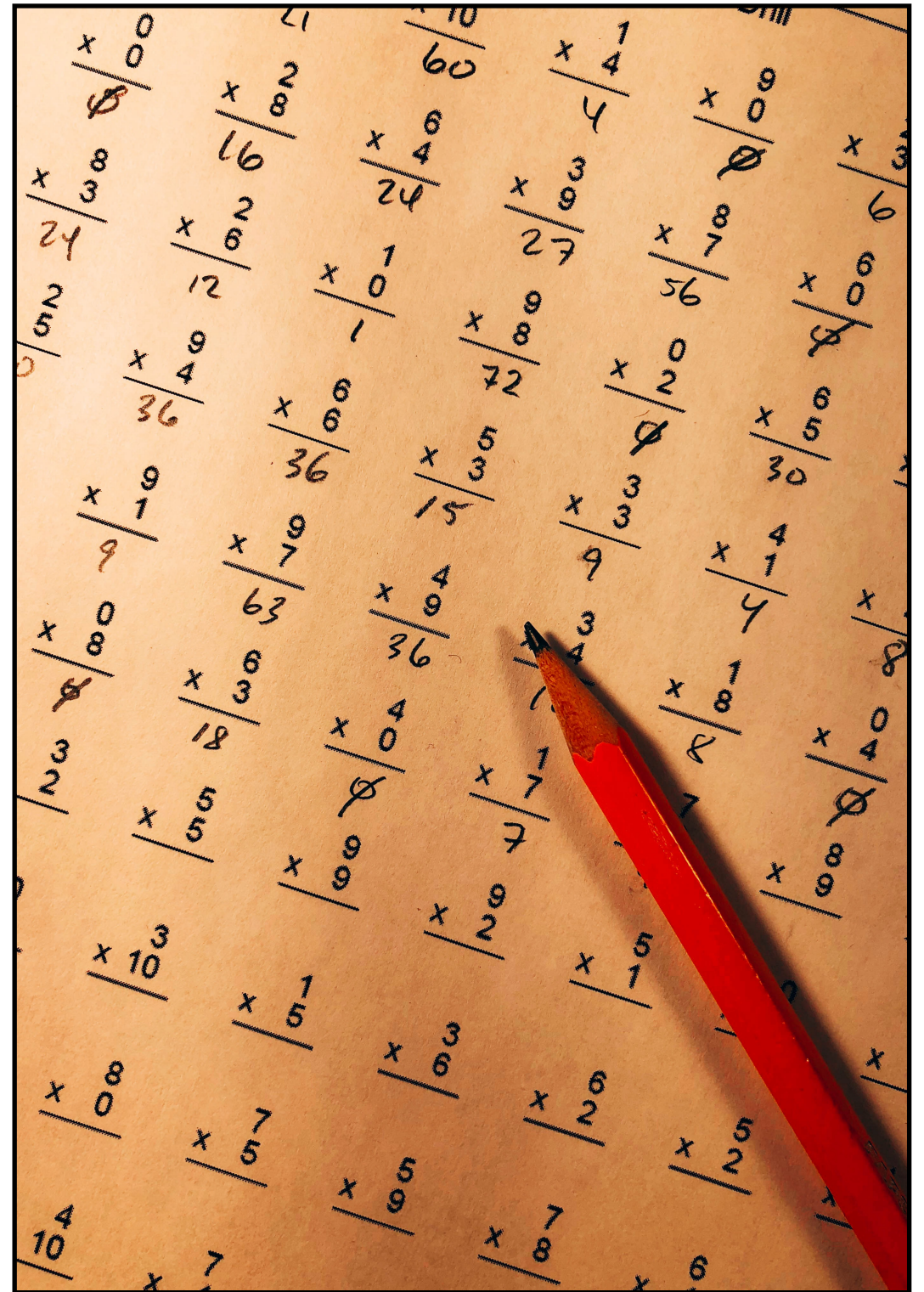


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Plugin derivatives

```
namespace Drupal\MY_MODULE\Plugin\Musician;

use Drupal\drupalcamp_2018\Plugin\MusicianBase;

/**
 * Provides a guitarist
 *
 * @Musician (
 *   id = guitarist,
 *   name = Guitar,
 *   instrument = guitar,
 *   deriver = Drupal\drupalcamp_2018\Plugin\Derivative\GuitarDeriver
 * )
 */
class Guitarist extends MusicianBase {

}
```

Plugin derivatives

```
class GuitarDeriver extends DeriverBase implements ContainerDeriverInterface {  
  
    [boring stuff here]  
  
    public function getDerivativeDefinitions($base_plugin_definition) {  
        $this->derivatives = [];  
  
        $node_storage = $this->entityTypeManager->getStorage('node');  
        $node_ids = $node_storage->getQuery()  
            ->condition('type', 'musician')  
            ->condition('field_instrument', 'guitar')  
            ->execute();  
  
        if (!empty($node_ids)) {  
            $nodes = $node_storage->loadMultiple($node_ids);  
            foreach ($nodes as $node) {  
                $this->derivatives[$node->id()] = $base_plugin_definition;  
                $this->derivatives[$node->id()]['name'] = $node->field_name->getValue();  
                $this->derivatives[$node->id()]['instrument'] = $node->field_axe->getValue();  
            }  
        }  
  
        return $this->derivatives;  
    }  
}
```

Plugin derivatives

```
$pickers = $union_rep->getDefinitions('guitarist');
```

```
"guitarist:3" => [
  "id" => "guitarist",
  "name" => [
    [
      "value" => "Leo Kottke",
    ],
  ],
  "instrument" => [
    [
      "value" => "12-string Acoustic",
    ],
  ],
  "deriver" => "Drupal\drupalcamp_2018\Plugin\Derivative\GuitarDeriver",
  "class" => "Drupal\drupalcamp_2018\Plugin\Musician\Guitar",
  "provider" => "drupalcamp_2018",
],
"guitarist:4" => [
  "id" => "guitarist",
  "name" => [
    [
      "value" => "Mark Knopfler",
    ],
  ],
  "instrument" => [
    [
      "value" => "Stratocaster",
    ],
  ],
  "deriver" => "Drupal\drupalcamp_2018\Plugin\Derivative\GuitarDeriver",
  "class" => "Drupal\drupalcamp_2018\Plugin\Musician\Guitar",
  "provider" => "drupalcamp_2018",
],
```

```
$mark_knopfler = $musician_manager->createInstance('guitarist:4');
$mark_knopfler->play('Money For Nothing');
```


Plugin collections

Because we really don't want everybody playing all the time.



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Plugin collections

Collections store plugin configurations.

Best used when plugin instances are configurable.

Usually associated with config entities, like Blocks and Views.

Plugin collections

Core

- Condition
- Entity
- Filter
- Image
- Tours
- Views – <https://www.drupal.org/project/views/issues/1817582>

Plugin collections

```
namespace Drupal\drupalcamp_2018;

use Drupal\Core\Plugin\DefaultLazyPluginCollection;

/**
 * An experimental collection of musicians.
 */
class MusicianPluginCollection extends DefaultLazyPluginCollection {

    /**
     * The key within the plugin configuration that contains the plugin ID
     */
    protected $pluginKey = 'id';

}
```


Plugin collections

```
$guitarists = new MusicianPluginCollection('guitarists');
```

```
$mark_knopfler = $guitarists->get('guitarist:4');
```

```
$mark_knopfler->play('Sultans of Swing');
```

One more thing...

https://www.drupal.org/u/sunset_bill

<https://www.linkedin.com/in/bgbohling/>

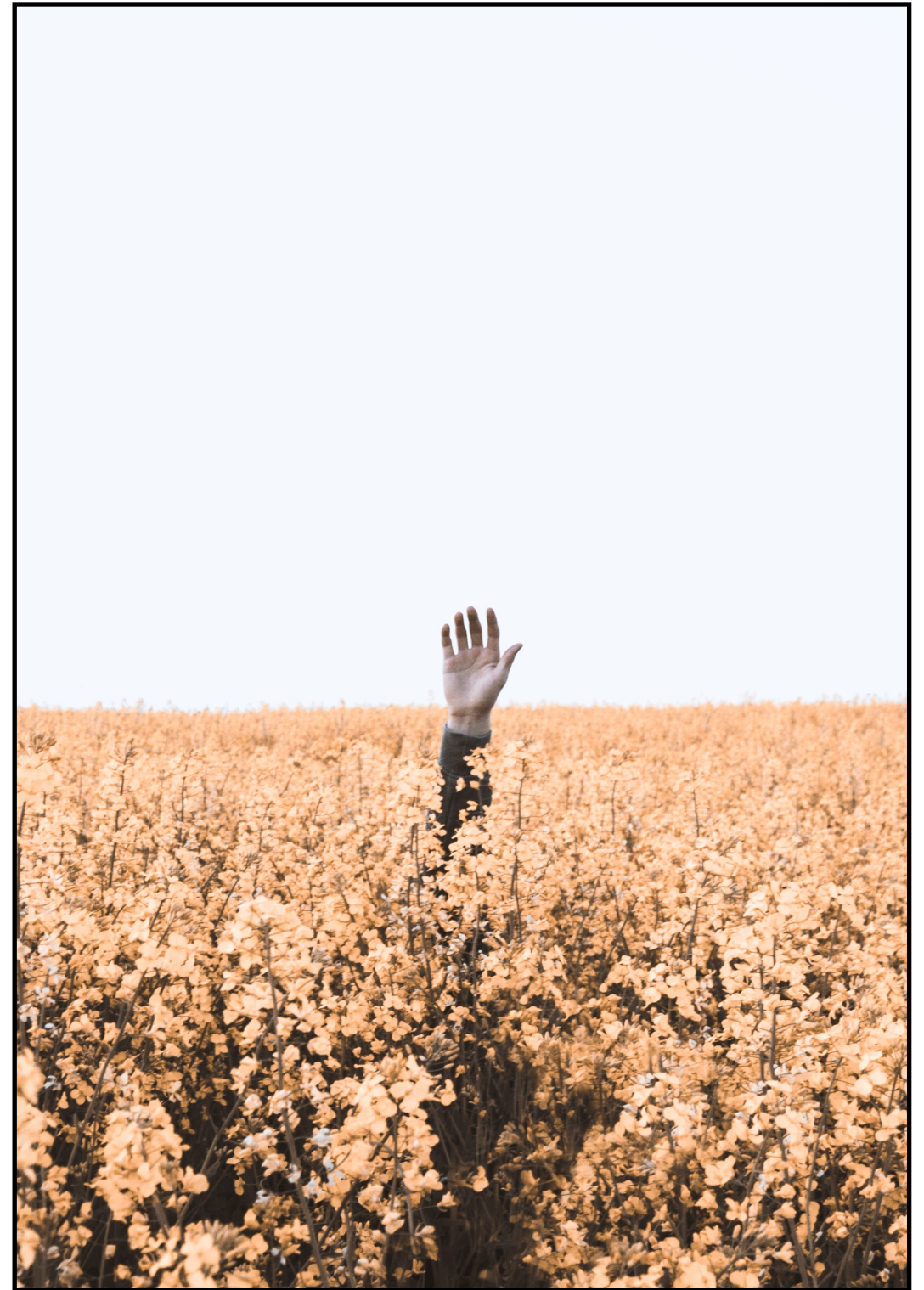


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Unplugging

Resources:

<https://www.drupal.org/docs/8/api/plugin-api>

https://api.drupal.org/api/drupal/core!core.api.php/group/plugin_api/8.6.x

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<https://www.drupalcampatlanta.com/2018/sessions/plugins-or-where-does-thing-go>



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