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# UI Patterns Documentation

*Release 1.x*

**Nuvole Web**

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The UI Patterns module allows developers to define self-contained UI patterns as Drupal plugins and use them seamlessly in their [panels](#), [field groups](#) or [Display Suite](#) view modes.

The module also generates a pattern library page to be used as documentation for content editors or as a showcase for business like the one shown below:

## Showcase

Demo site for the [UI Patterns](#) module. Build [pattern](#)

## UI Patterns

- Carousel
- Jumbotron
- Modal
- Metadata
- Blockquote

### Carousel

[View Carousel >](#)

A slideshow component for cycling through elements, like a carousel.

ID	Field	Description
<a href="#">slides</a>	Slides	Each slide is a collection of title, subtitle and slide image.



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## Project overview

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The UI Patterns project provides 5 modules:

- **UI Patterns:** the main module, its purpose is to expose patterns to the Drupal rendering system and provide a pattern library overview page, available at `/patterns`.
- **UI Patterns Field Group:** allows to use patterns to format field groups provided by the [Field group](#) module.
- **UI Patterns Layouts:** allows to use patterns as layouts provided by the [Layout plugin](#) module. This allows patterns to be used on [Display Suite](#) view modes or on [panels](#) out of the box.
- **UI Patterns Display Suite:** allows to use patterns to format [Display Suite](#) field templates.
- **UI Patterns Views:** allows to use patterns as Views row templates.

By the way plugin definitions are handled the UI Patterns module also integrated with tools like [PatternLab](#) or modules like [Component Libraries](#).

## 1.1 Try it out

Download and install the [Bootstrap Patterns](#) theme on a vanilla Drupal 8 installation to quickly try out the UI Patterns module.

### 1.1.1 Define your patterns

Patterns can be exposed by both modules and themes: all defined patterns are collected and managed by a centralized plugin manager, this means that pattern IDs must be unique in order to avoid conflicts.

Pattern plugins are described using the [YAML discovery method](#). To define your patterns simply create a YAML file named `MY_MODULE.ui_patterns.yml` or `MY_THEME.ui_patterns.yml` and list them using the following format:

```
blockquote:
  label: Blockquote
  description: Display a quote with attribution information.
  fields:
    quote:
      type: text
      label: Quote
      description: Quote text.
      preview: Life is like riding a bicycle. To keep your balance, you must keep moving.
      attribution:
```

```

    type: text
    label: Attribution
    description: Quote attribution.
    preview: Albert Einstein
  libraries:
    - MY_MODULE/module_library_one
    - MY_MODULE/module_library_two
    - pattern_library_one:
        css:
          component:
            css/my_component.css: {}
            http://example.com/external.min.css: { type: external, minified: true }
    - pattern_library_two:
        js:
          js/library_two.js: {}

```

Let's break this down:

**id** The root of a new pattern definition (blockquote in the example above). It must contain only lowercase characters, numbers and underscores (i.e. it should validate against `^[a-z0-9_]+`).

**label** Pattern label, used on pattern library page.

**description** Pattern description, used on pattern library page.

**fields** Hash defining the pattern fields. Each field must have the following properties defined below.

**type** Field type, can be `text`, `numeric`, etc. at the moment only used for documentation purposes.

**label** Field label, used on pattern library page.

**description** Field description, used on pattern library page.

**preview** Preview content, used on pattern library page. It can be either a string or a Drupal render array, in which case we can use keys like `type: processed_text` or `theme: image`.

**libraries** List of libraries to be loaded when rendering the pattern. UI patterns are supposed to be self-contained so they should define along all needed libraries.

Once the pattern is defined the module will expose them as standard Drupal theme definitions.

For example, given the `my_pattern` pattern ID then a theme function `pattern_my_pattern` is created and, consequently, the module will look for a template file called `pattern-my-pattern.html.twig`.

Once the pattern is defined it's time to provide its Twig template. In order to do so we create a Twig file called `pattern-blockquote.html.twig` and we place it either under `MY_MODULE/templates`, if the pattern is exposed by a module, or under `MY_THEME/templates`, if it is exposed by a theme. Obviously themes can always override templates exposed by modules.

For example, a blockquote Twig template file `pattern-blockquote.html.twig` could look like the following:

```

<blockquote>
  <p>{{ quote }}</p>
  <footer>{{ attribution }}</footer>
</blockquote>

```

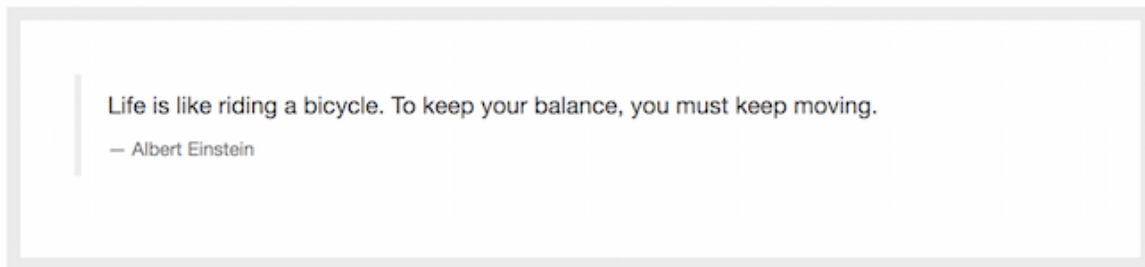
The `blockquote` pattern defined above will be rendered in the pattern library as shown below (styled using the [Bootstrap](#) theme):

## Blockquote

[View Blockquote >](#)

Display a quote with attribution information.

Field	Label	Type	Description
<code>quote</code>	Quote	<code>text</code>	Quote text.
<code>attribution</code>	Attribution	<code>text</code>	Quote attribution.



**Remember:** we can always visit the `/pattern` page in order to have access to a full preview of all our patterns.

### Organize your patterns in sub-folders

Patterns can be defined using a single `NAME.ui_patterns.yml` file. However, in case of sites with a large number of patterns, this might quickly become difficult to manage.

Luckily pattern definitions can be organised in sub-folders too, as shown below:

```
.
-- templates
|   -- patterns
|       -- button
|           |   -- button.ui_patterns.yml
|           |   -- pattern-button.html.twig
|       -- media
|           |   -- media.ui_patterns.yml
|           |   -- pattern-media.html.twig
|       ...
|           -- pattern-jumbotron.html.twig
-- ui_patterns_test_theme.info.yml
-- ui_patterns_test_theme.ui_patterns.yml
```

**Note:** the example above is taken by the actual test target site that is used to test the module itself: have a look at `./tests/README.md` and at `./tests/target/custom` for working examples on how to use the UI Patterns module.

### Expose pattern assets as libraries

In case you wish to bundle your assets within the pattern directory you can define libraries with the alternative syntax below:

```
blockquote:
  label: Blockquote
  ...
  libraries:
    ...
    - pattern_library_one:
      css:
        component:
          css/my_component.css: {}
          http://example.com/external.min.css: { type: external, minified: true }
    - pattern_library_two:
      js:
        js/library_two.js: {}
```

Libraries defined as above will be automatically loaded when the pattern is rendered. They are also exposed as ordinary Drupal libraries as follows: `ui_patterns/PATTERN_ID.LIBRARY_NAME`

For example, the two local libraries above can be attached to your render arrays in the following way:

```
<?php
$build['#attached']['library'][] = 'ui_patterns/blockquote.pattern_library_one';
$build['#attached']['library'][] = 'ui_patterns/blockquote.pattern_library_two';
```

## Override patterns behavior

The default behavior can be changed by using the following properties in you pattern definitions:

**theme hook** If specified it overrides the default `pattern_[id]` theme hook with the provided value; the template file will change accordingly.

**template** If specified it overrides only the template file keeping the default `pattern_[id]` theme hook.

**use** If specified it will use a stand-alone Twig file as template. The value supports [Twig namespaces](#), so the following notations are valid examples:

```
use: "@my_module/templates/my-template.html.twig"
```

```
use: "@molecules/media/media-block.html.twig"
```

The possibility of using stand-alone Twig templates allows for a swift integration with tools like [PatternLab](#) or modules like [Component Libraries](#).

**Attention:** always remember to double-quote `use:` values or some YAML parsers (including PatternLab's) will complain.

### 1.1.2 Use patterns with Field Groups

Patterns can be used to style entities' [field groups](#) thanks to the `ui_patterns_field_group` module.

For example, say we want to show some metadata associated with an article, such as author, post date and tags.

After enabling the module we create a new field group of type **Pattern** and drag all fields you want to use in that group, as shown below:

LABEL	REGION	NAME	FIELD	WIDGET
Content				
⛶ Metadata	Content ▾		Pattern ▾	Pattern: Metadata
⛶ Author	Content ▾	- Hidden - ▾	Author ▾	Field template: default
⛶ Post date	Content ▾	- Hidden - ▾	long ▾	Field template: default
⛶ Tags	Content ▾	- Hidden - ▾	Label ▾	No link Field template: default

Once all fields are in place we access the field group settings and choose the **Metadata** pattern. At this point we map the fields to the pattern destination fields and save our settings:

Field group format: pattern\_formatter

Field group label

Metadata

Pattern \*

Metadata ▾

Show row weights

SOURCE	PLUGIN	DESTINATION
⛶ Tags	Fields	Categories ▾
⛶ Author	Display Suite	Author ▾
⛶ Post date	Display Suite	Publication date ▾
Update Cancel		

Articles will now always use the **Metadata** pattern to style that field group, as shown below:

# Pellentesque habitant morbi tristique senectus

Author:	admin
Publication date:	Wednesday, January 11, 2017 - 19:12
Categories:	Tag 1 Tag 2

Ut a nisl id ante tempus hendrerit. Nullam cursus lacinia erat. Sed augue ipsum, egestas nec, vestibulum et, malesuada adipiscing, dui. Proin sapien ipsum, porta a, auctor quis, euismod ut, mi. Praesent venenatis metus at tortor pulvinar varius.

Nam pretium turpis et arcu. Nullam vel sem. Morbi mollis tellus ac sapien. Donec mi odio, faucibus at, scelerisque quis, convallis in, nisi. Ut tincidunt tincidunt erat.

Suspendisse eu ligula. Donec vitae sapien ut libero venenatis faucibus. Donec sodales sagittis magna. Proin magna. Proin sapien ipsum, porta a, auctor quis, euismod ut, mi.

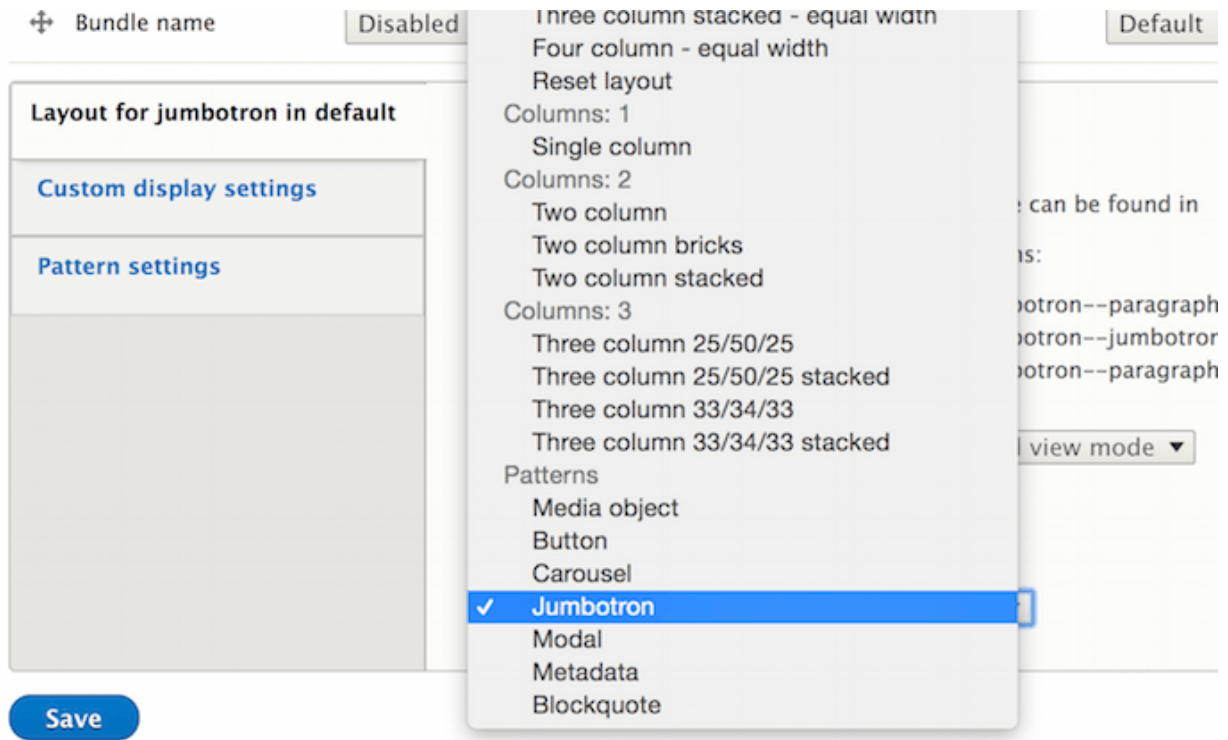
## 1.1.3 Use patterns with Layout Plugin

Patterns can be used as [Layout Plugin](#)'s layouts thanks to the `ui_patterns_layouts` module.

Once exposed as layouts patterns can be used to arrange fields on entities like nodes, [paragraphs](#), etc. or to place blocks on a page using [Panels](#).

In the example below we will style a **Jumbotron** paragraph using the Jumbotron paragraph.

Once on the paragraph **Manage display** page we choose the **Jumbotron** pattern as layout:



After doing that the pattern fields will be exposed as layout regions, so given the following definition:

```
jumbotron:
  label: Jumbotron
  description: A lightweight, flexible component that can optionally extend the entire viewport to sh
  fields:
    title:
      type: text
      label: Title
      description: Jumbotron title.
      preview: Hello, world!
    subtitle:
      type: text
      label: Description
      description: Jumbotron description.
      preview: This is a simple hero unit, a simple jumbotron-style component for calling extra atten
```

We will get the following layout regions:

[+ Add group](#)

LABEL	REGION	NAME
Title		
✚ Title	Title ▼	Above ▼
Description		
✚ Subtitle	Description ▼	Above ▼

We can now arrange the paragraph fields on the layout and save our settings.

The paragraph below:

[Show row weights](#)

PARAGRAPHS
<div>✚ Type: Jumbotron <span>Remove</span></div> <div> <p>Title</p> <p>This is my Jumbotron title!</p> <p>Subtitle</p> <p>It is a long established fact that a reader will be distracted by the readable content of a page when looking at its layout.</p> </div>

[Add Jumbotron](#)

will be now styled using the **Jumbotron** pattern as follows:

**This is my Jumbotron title!**

It is a long established fact that a reader will be distracted by the readable content of a page when looking at its layout.

### 1.1.4 Use patterns with Field templates

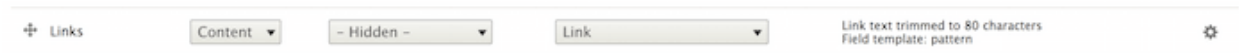
Patterns can be used as Display Suite field templates by enabling the `ui_patterns_ds` module. This opens the following interesting possibilities:

- Link fields can be styled as buttons by mapping their URL and link titles to specific pattern destinations.
- Image fields can be styled as an “image with caption” by mapping a formatted image and title to specific pattern destinations.

Let’s see how to implement the first example having the following pattern definition:

```
button:
  label: Button
  description: A simple button.
  fields:
    title:
      type: text
      label: Label
      description: The button label
      preview: Submit
    url:
      type: text
      label: URL
      description: The button URL
      preview: http://example.com
```

On the entity display setting page we access the link field setting by clicking on the gear icon:



Then, after selecting the **Pattern** field template and the **Button** pattern, we map the link field columns to the pattern’s fields defined above:

 A screenshot of the 'Choose a Field Template' dialog. At the top, there is a dropdown menu labeled 'Pattern' with 'Pattern' selected. Below it, there is a dropdown menu labeled 'Button' with 'Button' selected. To the right of these dropdowns, there is a link that says 'Show row weights'. Below the dropdowns, there is a table with three columns: 'SOURCE', 'PLUGIN', and 'DESTINATION'. The table has four rows:
 

SOURCE	PLUGIN	DESTINATION
Links	Field template	- Hidden -
Links: uri	Field template	URL
Links: title	Field template	Label
Links: options	Field template	- Hidden -

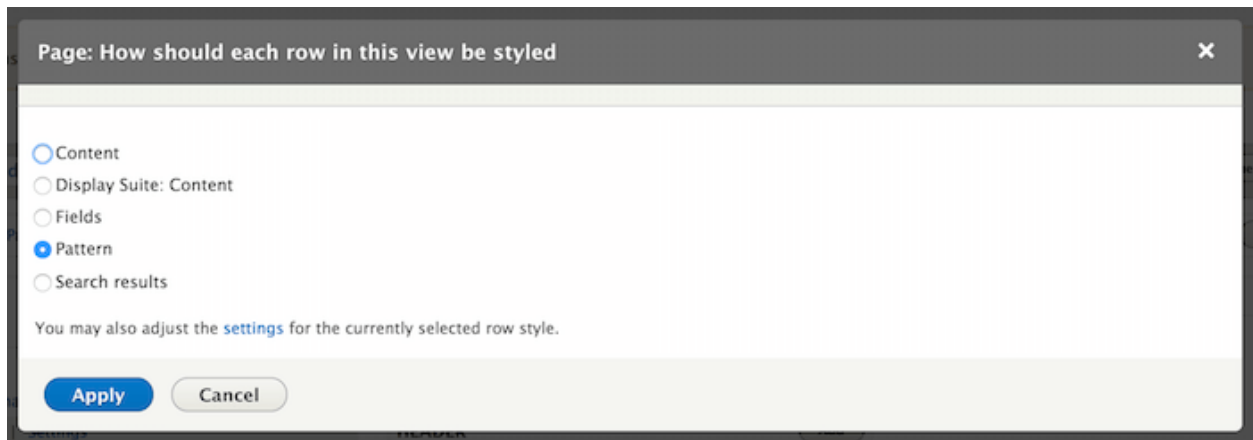
 At the bottom of the dialog, there are two buttons: 'Update' and 'Cancel'.

Our multi-valued link field will then be formatted as follow:

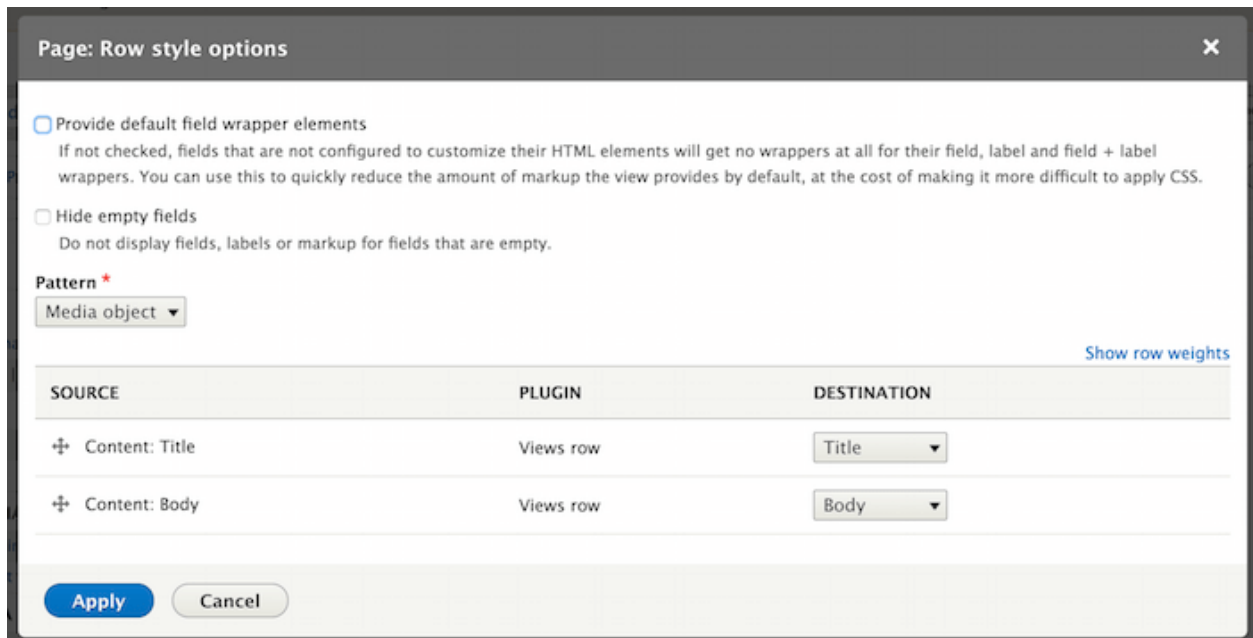


### 1.1.5 Use patterns with Views

Patterns can be used as Views row templates thanks to the `ui_patterns_views` module, which exposes a **Patterns** row style plugin.



After choosing the **Pattern** row style plugin we can map the current Views display fields to the chosen pattern destinations, as shown below:



Views rows will now be styled using the selected pattern.

## 1.1.6 Developer documentation

### Render patterns programmatically

Patterns can be rendered programmatically by using the following syntax:

```
<?php
$elements['quote'] = [
  '#type' => 'pattern',
  '#id' => 'blockquote',
  '#fields' => [
    'quote' => 'You must do the things you think you cannot do.',
    'attribution' => 'Eleanor Roosevelt'
  ]
];

\Drupal::service('renderer')->render($elements);
```

The code above will produce the following result:

```
You must do the things you think you cannot do.
— Eleanor Roosevelt
```

It is also possible to just render a pattern preview as displayed on the patterns overview page in the following way (since fields are already bundled within the pattern definition we don't need to re-declare them here):

```
<?php
$elements['quote'] = [
  '#type' => 'pattern_preview',
  '#id' => 'blockquote',
];

\Drupal::service('renderer')->render($elements);
```

Rendering the code above will produce the following output:

```
Life is like riding a bicycle. To keep your balance, you must keep moving.
— Albert Einstein
```

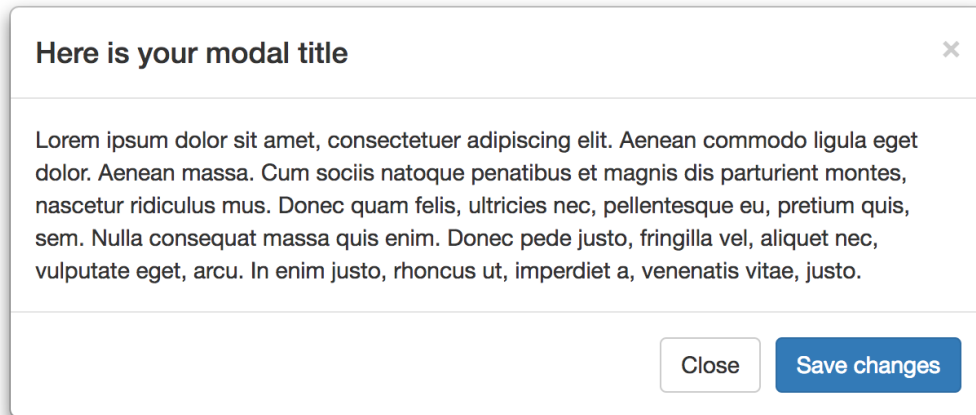
### Render patterns using Twig functions

The UI Patterns module also exposes two Twig functions to easily render patterns into your Twig templates.

The following two calls:

```
{{ pattern('button', {title: 'Link title', url: 'http://example.com'}) }}
{{ pattern_preview('modal') }}
```

Will print:

[Link title](#)


Since patterns are rendered using the render element described above all libraries and preprocess hooks will be ran when using Twig functions.

## Working with pattern suggestions

Modules that want to add theme hook suggestions to patterns can do that by implementing the following hook:

```
<?php
/**
 * Provide hook theme suggestions for patterns.
 *
 * @see ui_patterns_theme_suggestions_alter()
 */
function hook_ui_patterns_suggestions_alter(array &$suggestions, array $variables, PatternContext $context) {
    if ($context->isOfType('views_row')) {
        $hook = $variables['theme_hook_original'];
        $view_name = $context->getProperty('view_name');
        $display = $context->getProperty('display');

        $suggestions[] = $hook . '__views_row__' . $view_name;
        $suggestions[] = $hook . '__views_row__' . $view_name . '__' . $display;
    }
}
```

The hook above is a `hook_theme_suggestions_alter()` specifically designed for patterns. The hook is invoked with a `PatternContext` object that describes information on where the current pattern is being used.

Pattern suggestions can, for example, allow developers to use alternative pattern templates in specific contexts or to “massage” data before it sent to the pattern by implementing fine-grained preprocess hooks.

The following suggestions are automatically exposed by the project’s sub-modules:

```
<?php
// Suggestions for patterns used as Display Suite field templates.
// @see ui_patterns_ds_ui_patterns_suggestions_alter()
$suggestions[] = $hook . '__ds_field_template__' . $field_name;
$suggestions[] = $hook . '__ds_field_template__' . $field_name . '__' . $entity_type;
```

```

$suggestions[] = $hook . '__ds_field_template__' . $field_name . '__' . $entity_type . '__' . $bundle;
$suggestions[] = $hook . '__ds_field_template__' . $field_name . '__' . $entity_type . '__' . $view_mode . '__' . $bundle;
$suggestions[] = $hook . '__ds_field_template__' . $field_name . '__' . $entity_type . '__' . $bundle;

// Suggestions for patterns used as field groups templates.
// @see ui_patterns_field_group_ui_patterns_suggestions_alter()
$suggestions[] = $hook . '__field_group__' . $group_name;
$suggestions[] = $hook . '__field_group__' . $group_name . '__' . $entity_type;
$suggestions[] = $hook . '__field_group__' . $group_name . '__' . $entity_type . '__' . $bundle;
$suggestions[] = $hook . '__field_group__' . $group_name . '__' . $entity_type . '__' . $view_mode;
$suggestions[] = $hook . '__field_group__' . $group_name . '__' . $entity_type . '__' . $bundle . '__' . $bundle;

// Suggestions for patterns used as Views row templates.
// @see ui_patterns_views_ui_patterns_suggestions_alter()
$suggestions[] = $hook . '__views_row__' . $view_name;
$suggestions[] = $hook . '__views_row__' . $view_name . '__' . $display;

```

## Expose source field plugins

When using a pattern on a view or an entity display form we are provided with a set of possible patterns source fields that we can map to our pattern destination fields. Available source fields depends on the context in which a pattern is being configured.

Pattern source fields are provided by plugins of type @UiPatternsSource.

For example, when a pattern is used as a Views row template then the UiPatternsSourceManager collects all plugins annotated with @UiPatternsSource and tagged by views\_row. A context array describing the current view is then passed to each of the @UiPatternsSource plugins.

In the example below we can see the actual implementation of such a system:

```

<?php

namespace Drupal\ui_patterns_views\Plugin\UiPatterns\Source;

use Drupal\ui_patterns\Plugin\UiPatternsSourceBase;

/**
 * Defines Views row pattern source plugin.
 *
 * @UiPatternsSource(
 *   id = "views_row",
 *   label = @Translation("Views row"),
 *   provider = "views",
 *   tags = {
 *     "views_row"
 *   }
 * )
 */
class ViewsRowSource extends UiPatternsSourceBase {

  /**
   * {@inheritdoc}
   */
  public function getSourceFields() {
    $sources = [];
    /** @var \Drupal\views\ViewExecutable $view */
    $view = $this->getContextProperty('view');
  }
}

```

```

    foreach ($view->display_handler->getFieldLabels() as $name => $label) {
        $sources[] = $this->getSourceField($name, $label);
    }
    return $sources;
}
}

```

At the moment the available source plugin tags are the following:

- `entity_display`: provided by the `ui_patterns` module and triggered on an entity display configuration page.
- `ds_field_template`: provided by the `ui_patterns_ds` module and triggered when setting up a field template on an entity display configuration page.
- `views_row`: provided by the `ui_patterns_views` module and triggered on a Views row setting pane.
- `test`: provided by the `ui_patterns_test` module and used in tests.

## 1.1.7 Working with tests

UI Patterns is tested using both [Behat](#) and [PHPUnit](#).

Both test suites uses a fully functional Drupal site to run tests against. To build the test site perform the following steps in the module's root:

```

$ composer install
$ cd tests
$ composer install
$ cd drupal
$ ../vendor/bin/drush si standard -y --db-url=mysql://USER:PASS@HOST/DATABASE
$ ../vendor/bin/drush en ui_patterns_test -y

```

The test site will then be available in `./tests/drupal`.

In order to test the UI Patterns module itself we symlink the full repository in a Composer post-install hook to `./tests/drupal/modules/contrib/ui_patterns` so that the target site can correctly install the module. See `./tests/composer.json` for more info.

We also use a test module and a test theme, available respectively in `./tests/ui_patterns_test` and `./tests/ui_patterns_test_theme`, both extensions expose test patterns and test configuration and are great resources to discover UI Patterns' possibilities.

### PHPUnit

To execute PHPUnit tests run the following command in the module's root:

```

$ ../vendor/bin/phpunit --bootstrap ./tests/vendor/autoload.php tests/src/PHPUnit

```

### Behat

To run Behat tests perform the following steps:

1. Copy `./behat.yml.dist` in `./behat.yml` and change its parameters according to your local setup.
2. Run: `./vendor/bin/behat`

## Working with the test site

When working locally with the target site it might be handy to disable the Twig cache as follows:

1. Copy `./tests/drupal/sites/example.settings.local.php` into `./tests/drupal/sites/default/settings.local.php`
2. Un-comment lines including `settings.local.php` in `./tests/drupal/sites/default/settings.php`
3. Disable Twig cache by adding the following lines to `./tests/drupal/sites/development.services.yml` and clear the cache.

```
parameters:
  http.response.debug_cacheability_headers: true
twig.config:
  debug: true
  auto_reload: true
  cache: false
```

### ATTENTION

Since the repository symlinks itself in the target site you **MUST** disable test directory scanning when disabling Twig cache by setting the following value into your `./tests/drupal/sites/default/settings.local.php`:

```
$settings['extension_discovery_scan_tests'] = FALSE;
```