

Tests automatisés sur Drupal

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Niji

Nous sommes
1300+ talents

Notre mantra

Aider les entreprises, les talents et les territoires à se développer grâce à des innovations numériques.

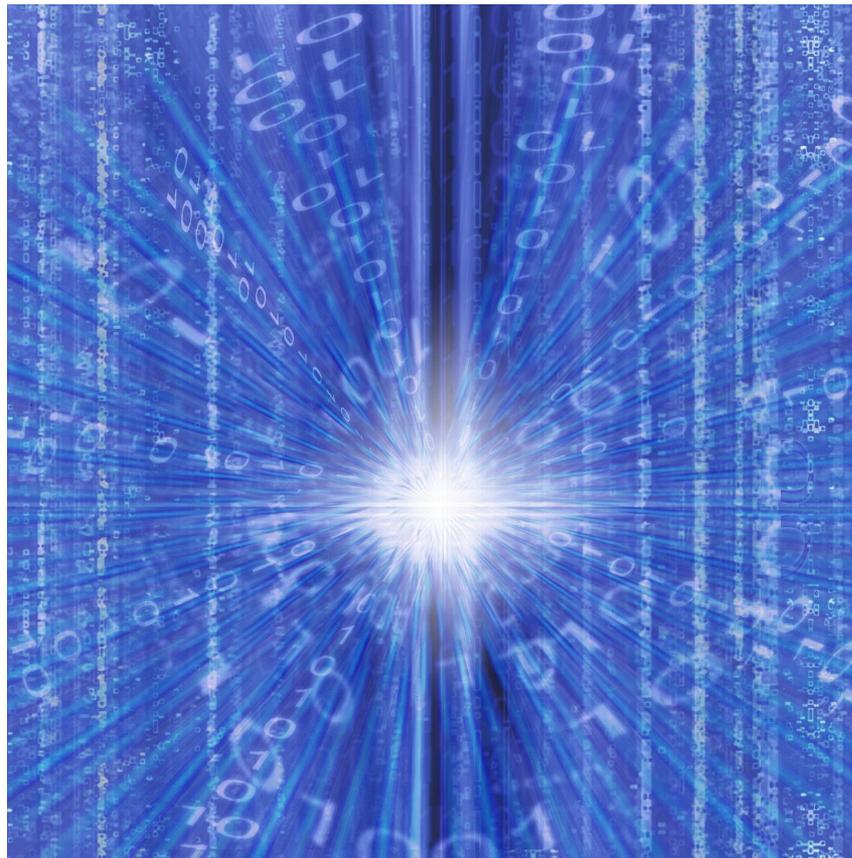


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Sommaire

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2. Les différents types de tests
3. Différentes méthodes de tests
4. Tests automatisés : Avantages et Inconvénients
5. Outils de test.
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7. Sur Drupal.org
8. Couverture des tests et bonnes pratiques





Pourquoi tester ?

Le plus gros bug de l'histoire : 4 juin 1996 - Ariane 5

- 370 millions USD, coût du bug informatique de la fusée Ariane 5 d'Arianespace.
- 36 secondes après son lancement, il explose à 4 000 mètres du sol
- Aucune victime des retombées de la fusée, aucun humain n'était à bord. Or, c'est \$370 M de perdus.



Variable de 8 bits pour stocker une valeur qui

peut être supérieur à 300

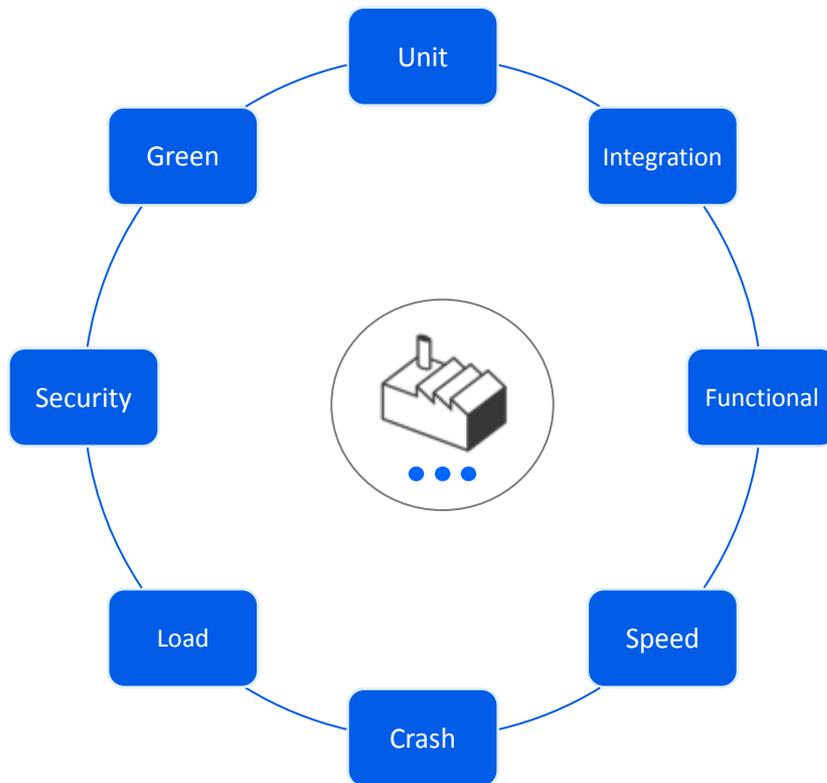
Un copier/coller de code d'Ariane 4

Et pas testé correctement !!!



Les différents types de tests

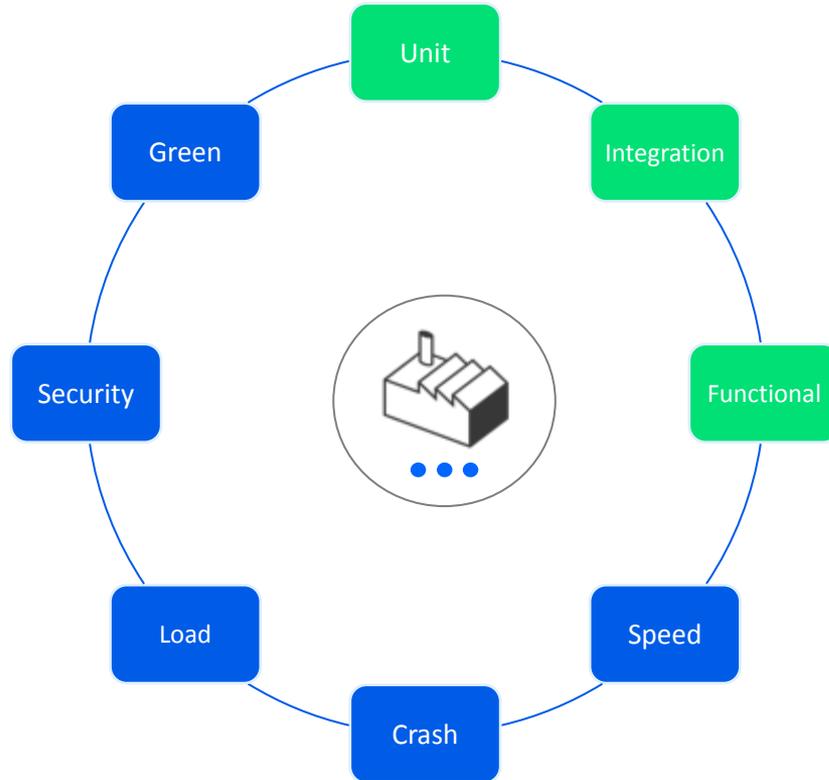
Couvrir la plupart des dysfonctionnements généralement constatés





Les différents types de tests

Couvrir la plupart des dysfonctionnements généralement constatés



Différentes méthodes



Manuel

Semi-automatisé

Automatisé



Tests manuels

Squish Test Center Example Project History Explore Traceability Jira TestRail Example User

Report: 20200216-1915 Batch

None selected

- Windows, 6.5, MSVC14x64, awt_swt, niederbaum-1
- Windows, master, MSVC14x64, awt_swt, niederbaum-1
- Linux, 6.5, def, awt_swt, lacasa

5 failed, 3 passed (Reports) / 11 failed, 3 passed (Test Suites)

Start Time: 16.2.2020, 19:15:07 End Time: 17.2.2020, 04:30:44 Duration: 9h 15'37" Total Run Duration: 16h 26'38"

Hide Summary

View: Reports (8) Configurations (8) OS branch compiler editions host Add to Front Page

Only Failures Only New Failures

Search: Filter...

OS: Linux (4) Windows (4)

branch: 6.5 (4) master (4)

compiler: MSVC14x64 (2) MSVC9 (2) def (4)

editions: awt_swt (8)

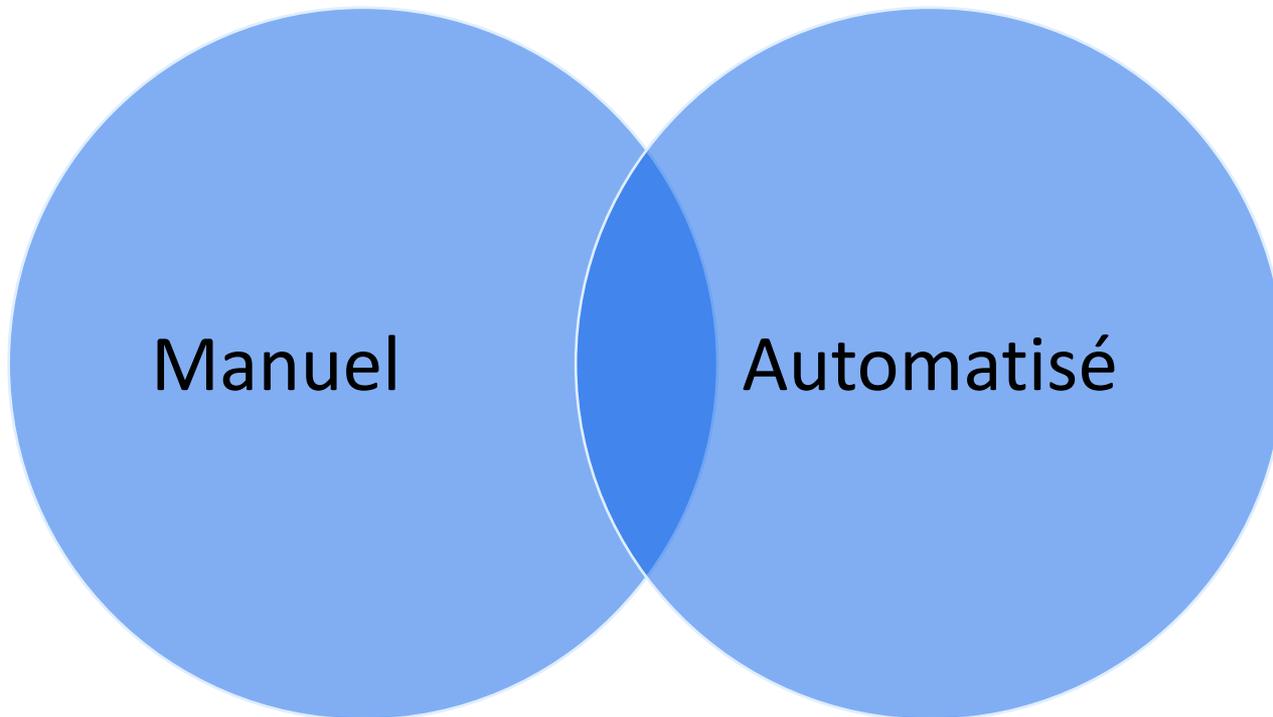
Tests	Status	Total Skips & Warnings	Duration (min/max)	Older Batches	Actions	17.2.2020, 03:03:56 Report #52772	16.2.2020, 22:51:04 Report #52790	16.2.2020, 21:58:06 Report #52771	16.2.2020, 21:42:17 Report #52773
OS									
branch									
compiler									
editions									
host									
suite_runtests Test Suite	✖	0: 51%	2h 02'56"	⊕ ⊖ ⊕ ⊕	:	Windows 6.5 MSVC14x64 awt_swt niederbaum-1	Windows master MSVC14x64 awt_swt niederbaum-1	Linux 6.5 def awt_swt lacasa	Linux 6.5 def awt_swt llorenz22
suite_rb Test Suite	✖	0: 0%	4m 50" / 23m 54"	⊕ ⊕ ⊕ ⊕	:				
suite_pl Test Suite	✖	0: 0%	5m 59" / 19m 20"	⊕ ⊕ ⊕ ⊕	:				
suite_tcl Test Suite	✖	0: 0%	25s / 58m 51"	⊕ ⊕ ⊕ ⊕	:				
suite_js Test Suite	✖	0: 0%	31s / 3m 56"	⊕ ⊕ ⊕ ⊕	:				
suite_py Test Suite	✖	0: 0%	9m 26" / 56m 15"	⊕ ⊕ ⊕ ⊕	:				
suite_bdd_tcl Test Suite	✖	0: 0%	< 1ms / 20s	⊕ ⊕ ⊕ ⊕	:				
suite_bdd_rb Test Suite	✔	0: 0%	17s / 24s	⊕ ⊕ ⊕ ⊕	:				
suite_bdd_py Test Suite	✔	0: 0%	17s / 23s	⊕ ⊕ ⊕ ⊕	:				
suite_bdd_js Test Suite	✖	20: 0%	< 1ms / 30s	⊕ ⊕ ⊕ ⊕	:				
suite_bdd_pl Test Suite	✖	20: 0%	< 1ms / 30s	⊕ ⊕ ⊕ ⊕	:				



Tests Semi-automatisé



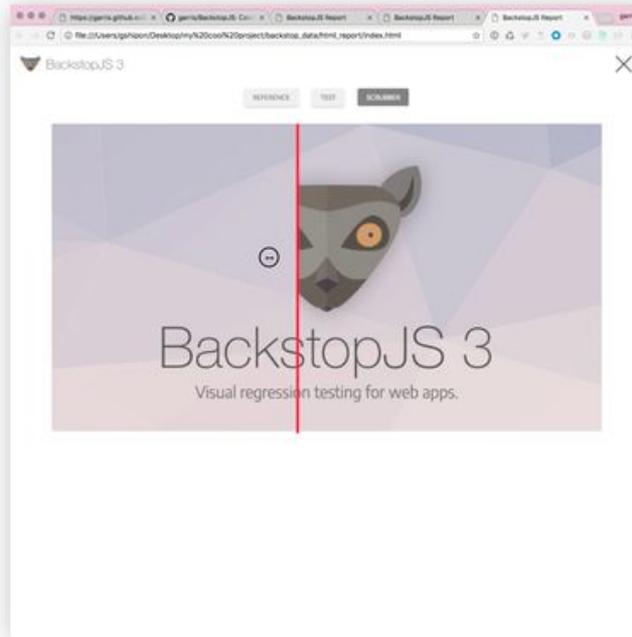
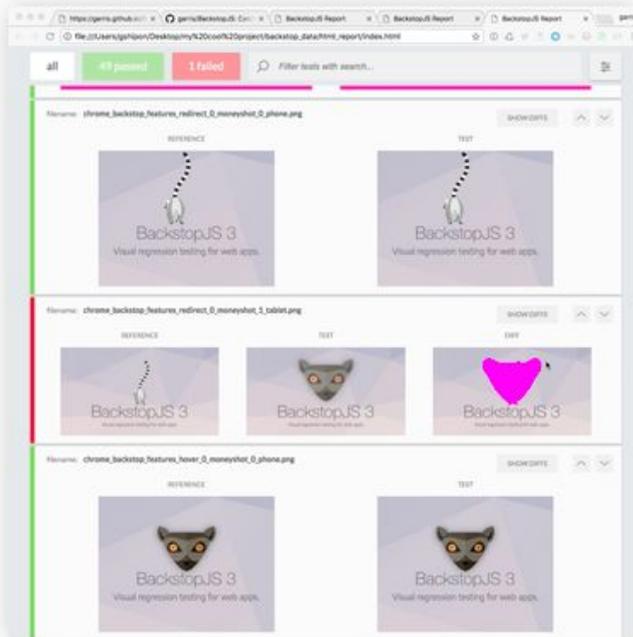
Automatisé + Manuel





Exemple de tests semi-automatisés

BackstopJS



Tests Automatisés





Avantages du test automatisé

Avantages et inconvénients des tests automatisés

Gain de temps

Fiable

Réduire les erreurs humaines

Permet CI/CD



Inconvénients

Avantages et inconvénients des tests automatisés





Quelques outils pour les tests automatisés





Les outils orientés tests unitaires

behat

PHPUnit





Exemple d'implémentation Behat (1/2)

behat



Cucumber

```
Feature: Drupal
  Scenario: Testing drupal.org
    Given I am on "/"
    Then I should see "Drupal is powered by an open source community"
```

```
# language: fr
Fonctionnalité: Drupal
  Scénario: Test de drupal.org
    Quand Je suis sur "/"
    Alors Je devrais voir "Drupal is powered by an open source community"
```



Exemple d'implémentation Behat (2/2)

behat





Sur Drupal



Simpletest : Histoire

Framework de test sur Drupal 7

Testing ☆

List Settings

[Home](#) » [Administration](#) » [Configuration](#) » [Development](#)

Select the test(s) or test group(s) you would like to run, and click *Run tests*.

Search

<input type="checkbox"/>	TEST	DESCRIPTION
<input type="checkbox"/>	▶ Access	
<input type="checkbox"/>	▼ Action	
<input type="checkbox"/>	\Drupal\KernelTests\Core\Action>DeleteActionTest	
<input type="checkbox"/>	\Drupal\KernelTests\Core\Action\PublishActionTest	
<input type="checkbox"/>	\Drupal\KernelTests\Core\Action\SaveActionTest	
<input type="checkbox"/>	\Drupal\Tests\system\Kernel\Action\ActionTest	Tests action plugins.
<input type="checkbox"/>	▶ action	
<input type="checkbox"/>	▶ admin_toolbar	



Possibilités

UnitTest, KernelTest, FunctionalTest (JSFunctionalTest)

UnitTest

Very fast
< 0,01 s

Unit Only, No dupal
Must mock

KernelTest

Slow
About 0,5-1 s

Minimal bootstrap
No theme

FunctionalTest

Very slow
> 10 s

Full bootstrap
Theme & JS



Exemple d'implémentation framework Drupal



```
namespace Drupal\Tests\develUnit;

use PHPUnit\Framework\TestCase;

/** Tests ClientSideFilterTable element. ...*/
class DevelClientSideFilterTableTest extends UnitTestCase {

  /** @covers ::getInfo */
  public function testGetInfo() {
    $translation = $this->getStringTranslationStub();

    $expected_info = [];

    $table = new ClientSideFilterTable([], $plugin_id: 'test', $plugin_definition: 'test');
    $table->setStringTranslation($translation);
    $this->assertEquals($expected_info, $table->getInfo());
  }

  /** @covers ::preRenderTable @dataProvider providerPreRenderTable */
  public function testPreRenderTable($element, $expected) {
    $result = ClientSideFilterTable::preRenderTable($element);
    $this->assertEquals($expected, $result);
  }

  /** Data provider for preRenderHtmlTag test. ...*/
  public function providerPreRenderTable() { ... }
}
```

```
/** Tests ClientSideFilterTable element. ...*/
class DevelClientSideFilterTableTest extends UnitTestCase {

  /** @covers ::getInfo ...*/
  public function testGetInfo() { ... }
}
```

```
/** Tests sending mails with debug interface. ...*/
class DevelMailLogTest extends KernelTestBase {

  /** Modules to enable. ...*/
  public static $modules = ['devel', 'devel_test', 'system'];

  /** The mail manager. ...*/
  protected $mailManager;

  /** {@inheritdoc} ...*/
  protected function setUp() { ... }

  /** Tests devel_mail_log plugin as default mail backend. ...*/
  public function testDevelMailLogDefaultBackend() { ... }
}
```

```
class DevelMailLogTest extends KernelTestBase {

  /** Modules to enable. ...*/
  public static $modules = ['devel', 'devel_test', 'system'];
}
```

```
<?php

namespace Drupal\Tests\my_test\Functional;

class DevelMailLogTest extends KernelTestBase {

  /** {@inheritdoc} ...*/
  protected mixed $defaultTheme = "classy";

  /** {@inheritdoc} ...*/
  protected function setUp(): void { ... }

  /**
   * Test user page.
   */
  public function testPages() {
    $account = $this->drupalCreateUser(['access content']);
    $this->drupalLogin($account);
    $this->drupalGet($path: '/user');
    $this->assertSession()->statusCodeEquals($code: 200);
    $this->assertSession()->pageTextContains($text: 'Member for');
  }
}
```

```
/** Tests basic wizard functionality. ...*/
class CToolsWizardTest extends BrowserTestBase {

  use StringTranslationTrait;

  public static $modules = ['ctools', 'ctools_wizard_test'];
}
```

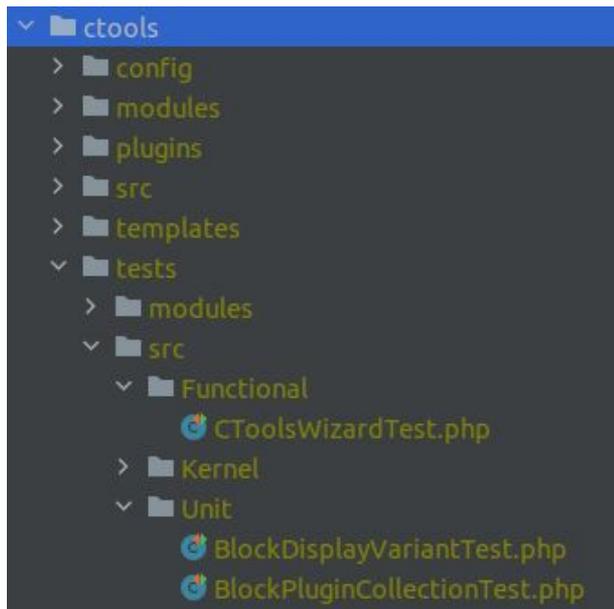
Écrire des tests





Structure

Dossier MODULE/tests



```
namespace Drupal\Tests\devel\Unit;

use ...

/** Tests ClientSideFilterTable element. ... */
class DevelClientSideFilterTableTest extends UnitTestCase {

    /**
     * @covers ::getInfo
     */
    public function testGetInfo() {
        $translation = $this->getStringTranslationStub();

        $expected_info = [...];

        $table = new ClientSideFilterTable([], plugin_id: 'test', plugin_definition: 'test');
        $table->setStringTranslation($translation);
        $this->assertEquals($expected_info, $table->getInfo());
    }

    /**
     * @covers ::preRenderTable
     * @dataProvider providerPreRenderTable
     */
    public function testPreRenderTable($element, $expected) {
        $result = ClientSideFilterTable::preRenderTable($element);
        $this->assertEquals($expected, $result);
    }

    /** Data provider for preRenderHtmlTag test. ... */
    public function providerPreRenderTable() {...}
}
```



UnitTest

```
namespace Drupal\Tests\devel\Unit;

use ...

/** Tests ClientSideFilterTable element. ...*/
class DevelClientSideFilterTableTest extends UnitTestCase {

  /**
   * @covers ::getInfo
   */
  public function testGetInfo() {
    $translation = $this->getStringTranslationStub();

    $expected_info = [...];

    $table = new ClientSideFilterTable([], 'plugin_id: 'test', 'plugin_definition: 'test');
    $table->setStringTranslation($translation);
    $this->assertEquals($expected_info, $table->getInfo());
  }

  /**
   * @covers ::preRenderTable
   * @dataProvider providerPreRenderTable
   */
  public function testPreRenderTable($element, $expected) {
    $result = ClientSideFilterTable::preRenderTable($element);
    $this->assertEquals($expected, $result);
  }

  /** Data provider for preRenderHtmlTag test. ...*/
  public function providerPreRenderTable() {...}
}
```

Environ 0.01 s



```
/** Tests ClientSideFilterTable element. ...*/
class DevelClientSideFilterTableTest extends UnitTestCase {

  /** @covers ::getInfo ...*/
  public function testGetInfo() {...}
}
```



KernelTest

```
/** Tests sending mails with debug interface. ...*/  
class DevelMailLogTest extends KernelTestBase {  
  
  /** Modules to enable. ...*/  
  public static $modules = ['devel', 'devel_test', 'system'];  
  
  /** The mail manager. ...*/  
  protected $mailManager;  
  
  /** {@inheritdoc} ...*/  
  protected function setUp() {...}  
  
  /** Tests devel_mail_log plugin as default mail backend. ...*/  
  public function testDevelMailLogDefaultBackend() {...}
```



Environ 0.5-1 s

```
class DevelMailLogTest extends KernelTestBase {  
  
  /** Modules to enable. ...*/  
  public static $modules = ['devel', 'devel_test'
```



FunctionalTest / JSFunctionalTest

> 10 s



```
1 <?php
2
3 namespace Drupal\Tests\my_test\Functional;
4
5 use ...
6
7
8 /** Test some pages. ... */
9
10 class ExampleBrowserTest extends BrowserTestBase {
11
12     /** Modules to enable. ... */
13     protected static $modules = ['node'];
14
15     /** {@inheritdoc} ... */
16     protected mixed $defaultTheme = "classy";
17
18     /** {@inheritdoc} ... */
19     protected function setUp(): void {...}
20
21     /**
22      * Test user page.
23      */
24     public function testPages() {
25         $account = $this->drupalCreateUser(['access content']);
26         $this->drupalLogin($account);
27         $this->drupalGet('path: /user');
28         $this->assertSession()->statusCodeEquals('code: 200');
29         $this->assertSession()->pageTextContains('text: 'Member for');
30     }
31 }
32
```

```
/** Tests basic wizard functionality. ... */
class CToolsWizardTest extends BrowserTestBase {
    use StringTranslationTrait;
    public static $modules = ['ctools', 'ctools_wizard_test'];
}
```

```
use Drupal\FunctionalJavascriptTests\WebDriverTestBase;
/**
 * Tests the JS functionality in the block add form.
 *
 * @group block
 */
class BlockAddTest extends WebDriverTestBase {
```



Exemple

Page générée par le le Framework de test

```
ID #1 (Previous | Next)
Called from GuzzleHttp\Promise\FulfilledPromise::GuzzleHttp\Promise\{closure}() line 41
GET request to: http://apache/user/login
Skip to main content
Log in
Username 
Enter your Drupal username.
Password 
Enter the password that accompanies your username.

Headers:
array (
  'Date' => 'Thu, 16 Jun 2022 15:16:17 GMT',
  'Server' => 'Apache/2.4.53 (Unix) OpenSSL/1.1.1l',
```

```
GET request to: http://apache/user/2?check_logged_in=1
Skip to main content
administrator
Member for
8 seconds
```

Status report

2 Errors [Errors Details](#)
1 Warning [Warning Details](#)
17 Checked [Checked Details](#)

General System Information

Drupal Version

9.3.9

Last Cron Run

Last run 7 seconds ago ([more information](#))[Run cron](#)

Web Server

Apache/2.4.53 (Unix) OpenSSL/1.1.1l

PHP

Version

8.0.17 ([more information](#))

Exécuter des tests

Localement

Drupal.org





Exécuter localement





Ajouter le framework de test

```
"drupal/bypass-finals": "^1.4",  
"drupal/core-dev": "^10.0",  
"drupal/develop": "^5" 5.1.2
```

```
composer require drupal/core-dev
```



Phpunit.xml Configuration

Copy /core/phpunit.xml.dist to /phpunit.xml

```
<php>
  <ini name="xdebug.mode" value="coverage"/>
  <!-- Set error reporting to E_ALL. -->
  <ini name="error_reporting" value="32767"/>
  <!-- Do not limit the amount of memory tests take to run. -->
  <ini name="memory_limit" value="-1"/>
  <env name="SIMPLETEST_BASE_URL" value="http://apache"/>
  <!-- Example SIMPLETEST_DB value: mysql://username:password@localhost/databasename#table_prefix -->
  <env name="SIMPLETEST_DB"
    value="mysql://drupal:drupal@mariadb/drupal#simpletest"/>
  <!-- Example BROWSERTEST_OUTPUT_DIRECTORY value: /path/to/webroot/sites/simpletest/browser_output -->
  <env name="BROWSERTEST_OUTPUT_DIRECTORY"
    value="web/results/browser_output"/>
  <env name="SYMFONY_DEPRECATIONS_HELPER" value="weak"/>
</php>

<!-- TestSuites -->
<testsuites>
  <testsuite name="modules">
    <directory>web/modules/custom/example4_jsfunctional</directory>
  </testsuite>
</testsuites>
```



Example via CLI

Via command line interface: `vendor/bin/phpunit`

```
Testing
..

Time: 00:00.012, Memory: 10.00 MB
```

```
OK (2 tests, 2 assertions)
```

```
Test 'Drupal\Test\niji_preprocessing\Unit\NijiPreprocess
Test 'Drupal\Test\niji_preprocessing\Unit\NijiPreprocess
Test 'Drupal\Test\niji_preprocessing\Unit\NijiPreprocess
```

```
Time: 00:00.109, Memory: 20.00 MB
```

```
OK, but incomplete, skipped, or risky tests!
```

```
Tests: 128, Assertions: 128, Incomplete: 2.
```

```
ndor/phpunit
```

```
ERRORS!
```

```
Tests: 128, Assertions: 127, Errors: 1, Incomplete: 2.
```

```
make: *** [Makefile:158 : phpunit] Error 2
```

```
Failed asserting that two arrays are equal.
--- Expected
+++ Actual
@@ @@
Array (
-   'title' => 'title'
+   'title' => 'ERROR'
   'conso' => Array (...)
   'switch_toggle' => Array (...)
   'dl_contract' => Array (...)
)
```



Exécuter automatiquement

Jenkins

Gitlab CI/CD

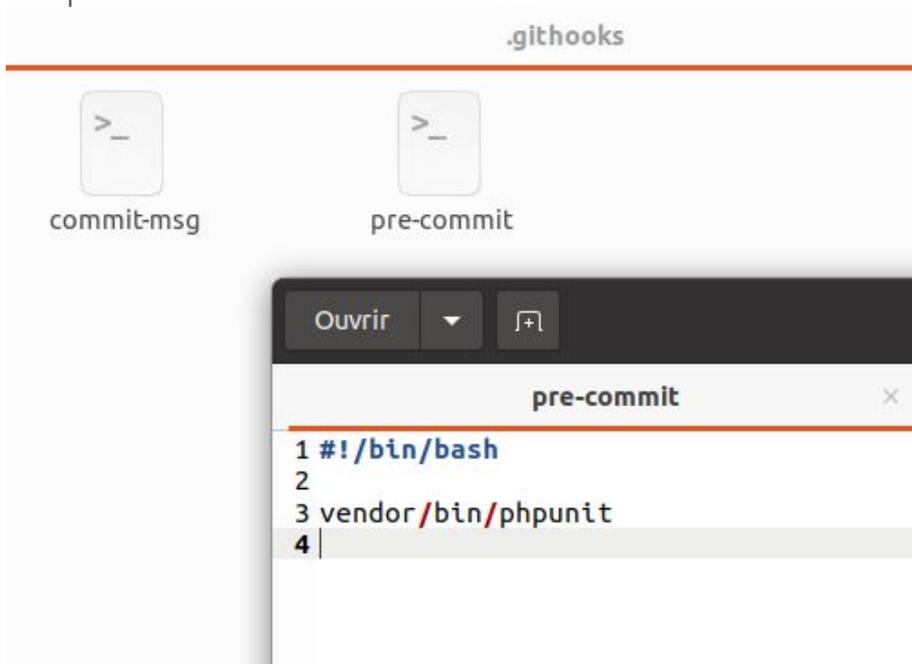
...

CLI – Git hook



Lancer par git hook

From : `.git/hooks/pre-commit`





Exemple

Launch via CLI and generate coverage report : (php -d

	Code Coverage								
	Lines			Functions and Methods			Classes and Traits		
Total	<div style="width: 0%;"></div>	0.00%	0 / 131	<div style="width: 0%;"></div>	0.00%	0 / 17	<div style="width: 0%;"></div>	0.00%	0 / 6
📁	<div style="width: 0%;"></div>	0.00%	0 / 87	<div style="width: 0%;"></div>	0.00%	0 / 9	<div style="width: 0%;"></div>	0.00%	0 / 4
Controller	<div style="width: 0%;"></div>			<div style="width: 0%;"></div>			<div style="width: 0%;"></div>		
📁 Form	<div style="width: 0%;"></div>	0.00%	0 / 34	<div style="width: 0%;"></div>	0.00%	0 / 3	<div style="width: 0%;"></div>	0.00%	0 / 1
📁 Service	<div style="width: 0%;"></div>	0.00%	0 / 10	<div style="width: 0%;"></div>	0.00%	0 / 5	<div style="width: 0%;"></div>	0.00%	0 / 1

Legend

Low: 0% to 50%

Medium: 50% to 90%

High: 90%

```
Test 'Drupal\Test\niji_preprocessing\Unit\NijiPreprocess
Test 'Drupal\Test\niji_preprocessing\Unit\NijiPreprocess
Test 'Drupal\Test\niji_preprocessing\Unit\NijiPreprocess

Time: 00:00.109, Memory: 20.00 MB

OK, but incomplete, skipped, or risky tests!
Tests: 128, Assertions: 128, Incomplete: 2.
```



Sur Drupal.org





Modules contribué

Sur drupal.org

```
INSTALL: $ composer require 'drupal/admin_toolbar:^3.1'
```

Development version: [3.x-dev](#) updated 11 May 2022 at 04:18 UTC

Testing result: **PHP 7.4 & MySQL 8, D9.3 17 pass** [all results](#)



Admin Toolbar

View Version control **Automated testing**

? DrupalCI testing is supported by [Drupal Association members](#) and [supporting partners](#).

3.x-dev

PHP 7.4 & MySQL 8, D9.3 17 pass tested on commit, issue testing default

PHP 8.0 & MySQL 5.7, D9.3 17 pass tested weekly

PHP 8.1 & MySQL 5.7, D9.3 17 pass tested weekly

8.x-2.x-dev

PHP 7.3 & MySQL 5.7, D8.9.16 7 pass disabled, testing configuration no longer available

8.x-1.x-dev

No test results.



Options

Versions & Schedule

Environment

PHP 5.5 & MySQL 5.5

Core *

- Drupal 10 Development, currently 10.0.x**
Drupal 10 development branch
- Drupal 9 Supported, currently 9.3.x**
The stable Drupal 9 branch, security and bugfixes only
- Drupal 9 Development, currently 9.4.x**
Major version development
- Drupal 9 Security, currently 9.2.10**
The highest stable release in the D9 security fixes branch
- Drupal 9 Stable Release, currently 9.3.0**
The latest stable version of Drupal 9

[About core branch labels](#)

Schedule

- Run once
- Run weekly
- Run daily
- Run on commit
- Run on commit and for issues



Patches

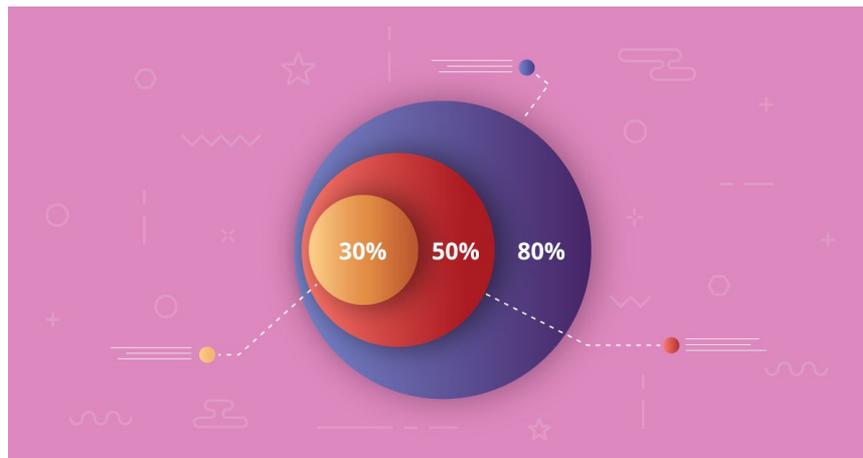
Test a patch for drupal core or contrib module

Comment	File	Size	Author
#85	interdiff_81-85.txt	950 bytes	vsujeetkumar
	2880011-85.patch	3.27 KB	vsujeetkumar
	9.3.x: PHP 8.0 & MySQL 5.7 29,510 pass		
	PHP 8.1 & MySQL 5.7 29,477 pass		
#85	9.2.x: PHP 7.4 & MySQL 5.7 28,640 pass		
	9.4.x: PHP 8.1 & MySQL 5.7 29,688 pass		
	Add test / retest		
#81	interdiff_75-81.txt	2.76 KB	Anandhi Karnan
	inline_form_error_2880011-81.patch	3.29 KB	Anandhi Karnan
#81	9.3.x: PHP 8.0 & MySQL 5.7 28,841 pass, 2 fail		
	9.2.x: PHP 7.3 & MySQL 5.7 28,612 pass		
	Add test / retest		
	2880011-add-disable-errors-summary-property-75.patch	5.26 KB	tsplash
#75	9.2.x: PHP 7.3 & MySQL 5.7 28,100 pass, 1 fail		
	PHP 7.3.x-dev & MySQL 5.7 28,100 pass, 1 fail		
	Add test / retest		



Couverture

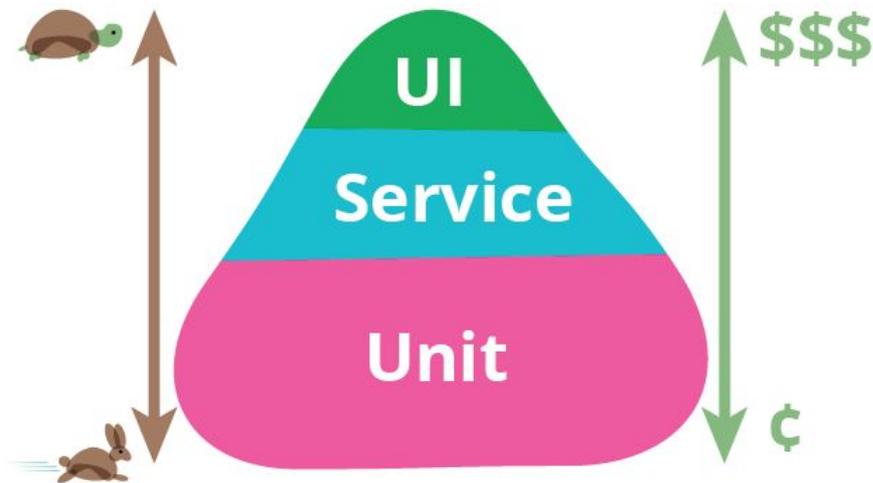
Couverture des tests automatisés





Bonnes pratiques

Unit +++++ / Kernel +++ / Functional +





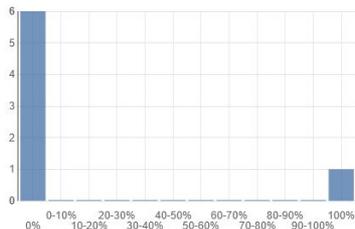
Exemple de tableau de bord de couverture

PhpUnit code coverage

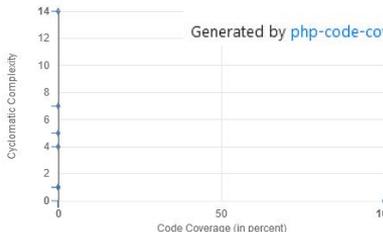
	Code Coverage								
	Lines			Functions and Methods			Classes and Traits		
Total		0.00%	0 / 131		0.00%	0 / 17		0.00%	0 / 6
Controller		0.00%	0 / 87		0.00%	0 / 9		0.00%	0 / 4
Form		0.00%	0 / 34		0.00%	0 / 3		0.00%	0 / 1
Service		0.00%	0 / 10		0.00%	0 / 5		0.00%	0 / 1

Classes

Coverage Distribution



Complexity



Legend

Low: 0% to 50% **Medium:** 50% to 90% **High:** 90% to 100%

Generated by [php-code-coverage 9.2.7](#) using [PHP 8.0.11](#) and [PHPUnit 9.5.9](#) at Fri Nov 26 21:21:44 AEDT 2021.

Insufficient Coverage



Project Risks



En résumé

Facile à utiliser

Fiable

Mais on ne peut pas tout couvrir.





Des questions ?



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Lead Tech



Merci
pour votre
écoute !

