Dave Liddament (Lamp Bristol):

# Modernising Legacy Code

ConFoo.ca
DEVELOPER CONFERENCE

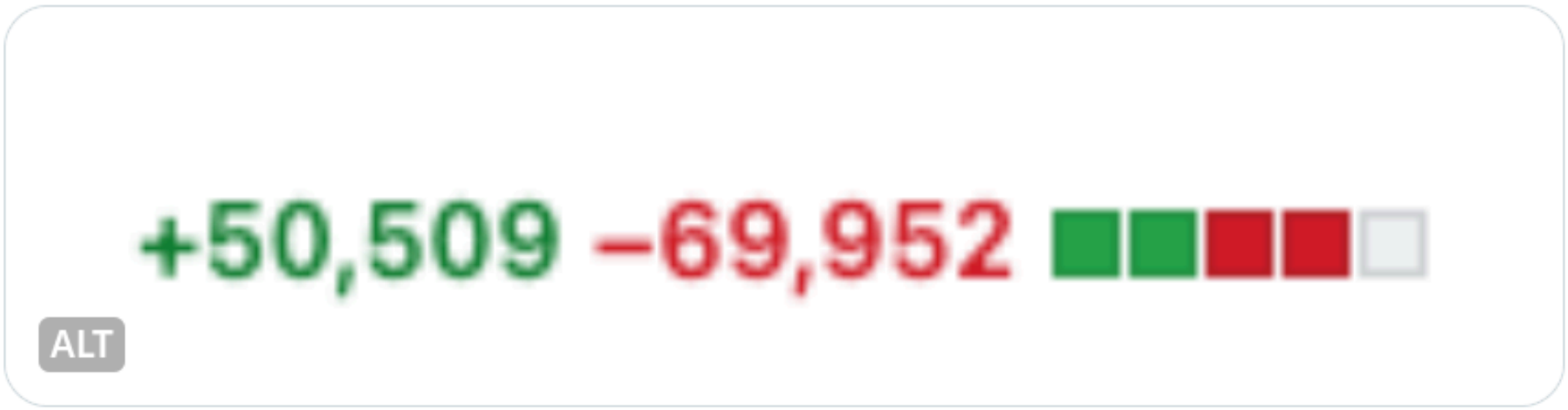
**Dave Liddament**
@DaveLiddament

Finally completed an upgrade from #laravel 4.2 to 9.

To celebrate Laravel have released version 10!

Remember your tests folks. This upgrade wouldn't have been possible, or as smooth, without tests.
Also @rectorphp is pretty handy for this.

I must write a blog/talk about it.




5:25 PM · Feb 24, 2023 · **3,813** Views

Writing a Custom Rector Rule

Thoughts

Execute

Code Prehab

Plan

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# Add tombstones

```
final class PriceCalculator
{
 public function calculate(): void
 {
    TombstoneReporter::trigger(
      'PriceCalculator::calculate');

    // Rest of method's code
  }
}
```

# Trigger tombstones

triggered_tombstones.json

```
[
    'PriceCalculator::calculate',
    'PriceController::index',
    'PriceRepository::getItems,
    ...
];
```

Photo by Christin Hume on Unsplash

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# Remove triggered tombstones

```
final class PriceCalculator
{
 public function calculate(): void
 {
    TombstoneReporter::trigger(
      'PriceCalculator::calculate');

    // Rest of method's code
  }
}
```

# Delete code

```
“REMOVE: Product listing page”

“REMOVE: 2 for 1 discount code”
```

Photo by Claudio Schwarz on Unsplash

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# Increase type coverage

```
function getNames($users)
{

   $names = [];
   foreach($users as $user) {
      $names[] = $user->getUser();
   }

   return join(‘,’, $names);
}
```

**0% type coverage**

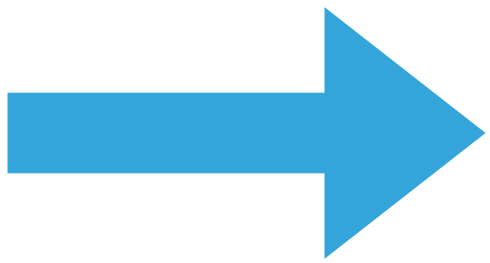
```php
/** @param array<int,User> $users */
function getNames(array $users): string
{

  $names = [];
  foreach($users as $user) {
    $names[] = $user->getUser();
  }
  return join(‘,’, $names);

}
```

**100% type coverage**

# User

getUser  getUsername

# 0% type coverage

```
function getNames($users)
{

   $names = [];
   foreach($users as $user) {
      $names[] = $user->getUser();
   }

   return join(‘,’, $names);
}
```

# 100% type coverage

```
/** @param array<int,User> $users */
function getNames(array $users): string
{

   $names = [];
   foreach($users as $user) {
     $names[] = $user->getUser();
   }
   return join(‘,’, $names);

}
```

# 100% type coverage

```
/** @param array<int,User> $users */
function getNames(array $users): string
{

    $names = [];
    foreach($users as $user) {
      $names[] = $user->getUsername();
    }
    return join(‘,’, $names);

}
```

## 100% automated!

# Tests

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# Code Prehab

Remove dead code

Increase type coverage

Increase test coverage

Writing a Custom Rector Rule

Thoughts

Execute

Code Prehab

Plan

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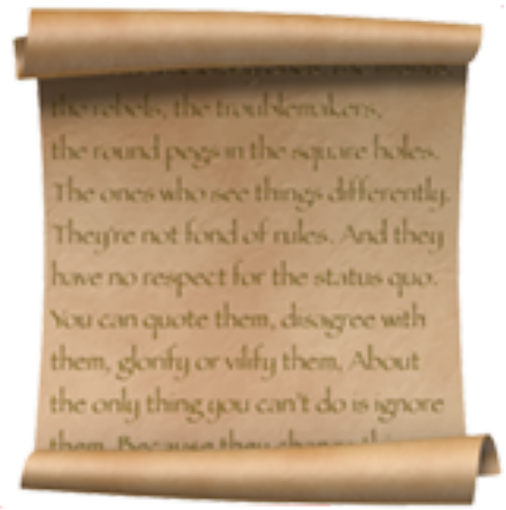
# SHIFT

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https://laravelshift.com/

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https://getrector.com/

# 382 Rules (and counting)

## RenameMethodRector

Turns method names to new ones.

### 🔧 configure it!

- class: `Rector\Renaming\Rector\MethodCall\RenameMethodRector`

```
 $someObject = new SomeExampleClass;
-$someObject->oldMethod();
+$someObject->newMethod();
```

## ChangeIfElseValueAssignToEarlyReturnRector

Change if/else value to early return

- class: `Rector\EarlyReturn\Rector\If_\ChangeIfElseValueAssignToEarlyReturnRector`

```
class SomeClass
{
    public function run()
    {
        if ($this->hasDocBlock($tokens, $index)) {
-            $docToken = $tokens[$this->getDocBlockIndex($tokens, $index)];
-        } else {
-            $docToken = null;
+            return $tokens[$this->getDocBlockIndex($tokens, $index)];
        }
-
-        return $docToken;
+        return null;
    }
}
```

```
composer require --dev rector/rector
```

```
vendor/bin/rector
```

```
No "rector.php" config found. Should we
generate it for you? [yes]:
 > yes
```

```
 [OK] The config is added now. Re-run command
to make Rector do the work!
```

```php
<?php

use Rector\Config\RectorConfig;
use Rector\Renaming\Rector\MethodCall\RenameMethodRector;
use Rector\Renaming\ValueObject\MethodCallRename;

return RectorConfig::configure()

    ->withPaths([
        __DIR__ . '/src',
    ])

    ->withConfiguredRule(
        RenameMethodRector::class,
        [
            new MethodCallRename(
                App\Framework\Model::class,
                'belongsTo',
                'belongs')
        ]
    );
```

```
 7/7 [============================] 100%
2 files with changes
====================

1) src/Framework/Model.php:5

    ---------- begin diff ----------
@@ @@

 abstract class Model
 {
-    public function belongsTo(string $model): BelongsTo
+    public function belongs(string $model): BelongsTo
     {
         return new BelongsTo($model);
     }
    ----------- end diff -----------

Applied rules:
 * RenameMethodRector
```

```
2) src/Models/Car.php:10

    ---------- begin diff ----------
@@ @@
 {
     public function user(): BelongsTo
     {
-        return $this->belongsTo('User');
+        return $this->belongs('User');
     }

     public function manufacturer(): BelongsTo
     {
-        return $this->belongsTo(Manufacturer::class);
+        return $this->belongs(Manufacturer::class);
     }
 }
    ---------- end diff ----------

Applied rules:
 * RenameMethodRector
```

# Rulesets:  A set of rules

Rector: PHP Language upgrades

https://github.com/rectorphp/rector-symfony

https://github.com/driftingly/rector-laravel

```php
<?php

declare(strict_types=1);

use Rector\Config\RectorConfig;
use RectorLaravel\Set\LaravelSetList;

return RectorConfig::configure()

    ->withSets([
        LaravelSetList::LARAVEL_90
    ]);
```

### Renamed "Swift" Methods

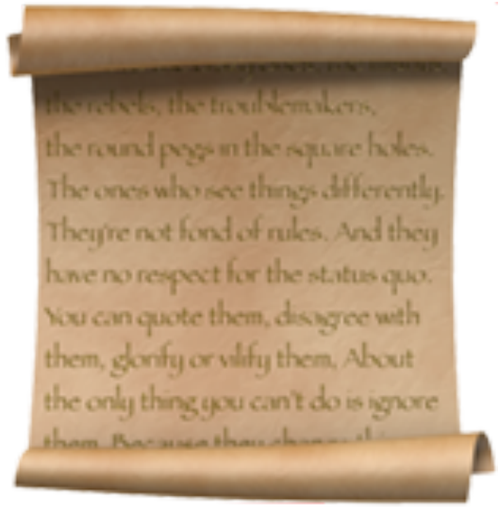
Various SwiftMailer related methods, some of which were undocumented, have been renamed to their Symfony Mailer counterparts. For example, the `withSwiftMessage` method has been renamed to `withSymfonyMessage`:

https://laravel.com/docs/9.x/upgrade#symfony-mailer

---

```php
$rectorConfig>ruleWithConfiguration(
RenameMethodRector::class,
[
    new MethodCallRename(
        'Illuminate\Mail\Message',
        'withSwiftMessage',
        'withSymfonyMessage'),
]);
```

https://github.com/driftingly/rector-laravel/blob/main/config/sets/laravel90.php#L89

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Laravel

Search

Prologue

- Release Notes
- Upgrade Guide
- Contribution Guide

# Upgrade Guide

## # Upgrading to 10.0 from 9.x

Symfony

Upgrade to highest minor version → Fix all the deprecation warnings → Upgrade major version → Run flex recipes

https://symfony.com/doc/current/setup/upgrade_major.html

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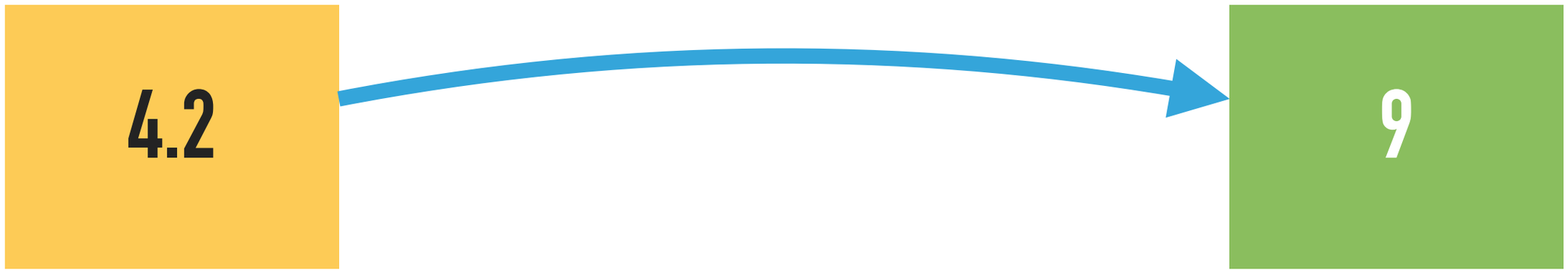


- [x] Laravel validators
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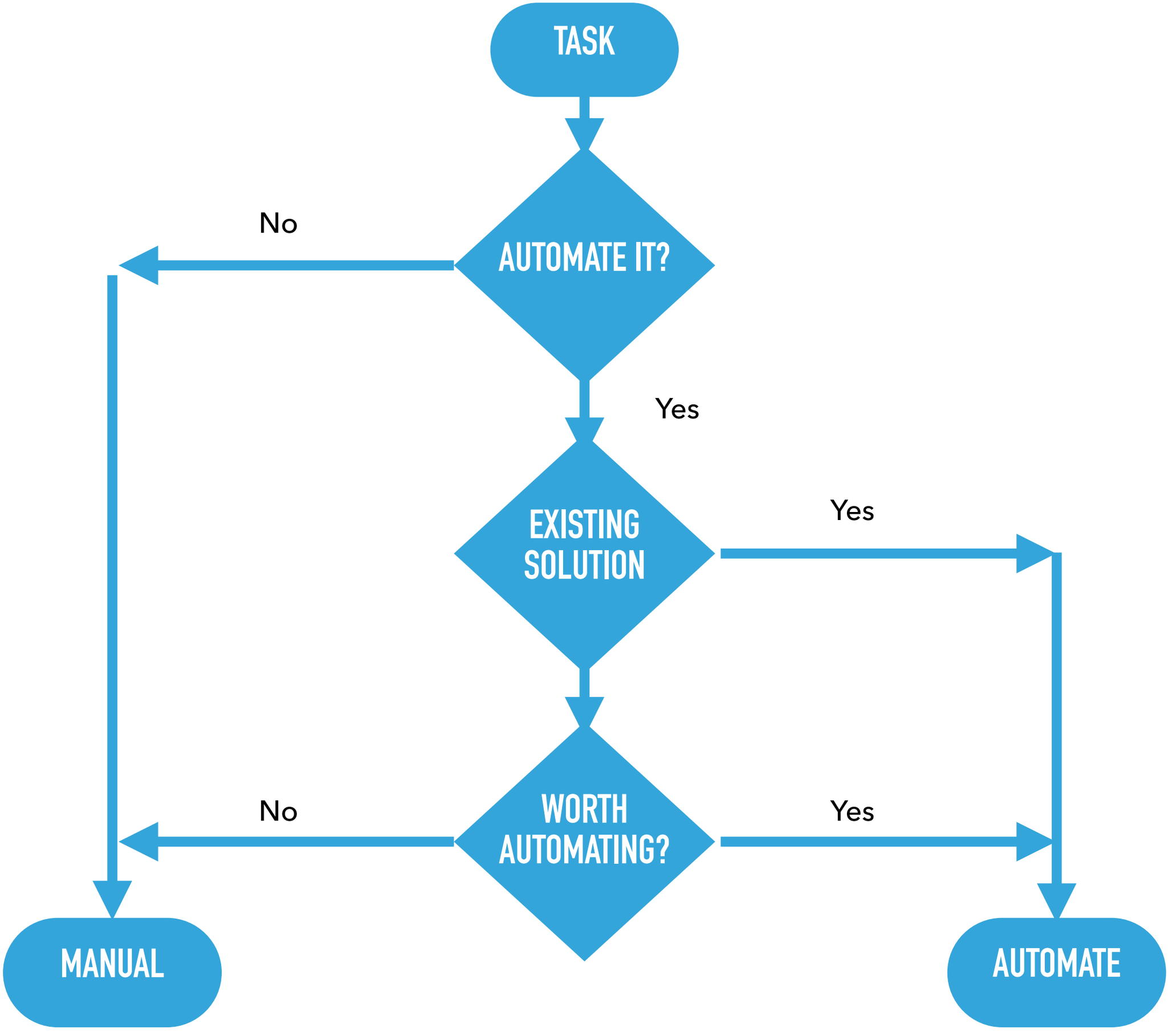
TASK
AUTOMATE IT?
No
Yes
EXISTING SOLUTION
Yes
WORTH AUTOMATING?
No
Yes
MANUAL
AUTOMATE

Development

UPGRADE

Development

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# Smaller deploys would be better*

| | Framework | PHP | PHPUnit |
|---|---|---|---|
| **Current deployed versions** | **12** | **8.1** | **8** |
| **Current supported versions** | **12** | **8.0, 8.1, 8.2** | **8, 9** |
| **New supported versions** | **13** | **8.2, 8.3** | **9, 10** |

| | Framework | PHP | PHPUnit |
|---|---|---|---|
| **Current deployed versions** | **12** | **8.1** | **8** |
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Development

UPGRADE

Development

Development

UPGRADE

Development

Dev

MOVING CODE

Dev

UPGRADE

Development

WRITE AUTOMATION SCRIPTS

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# Code Prehab

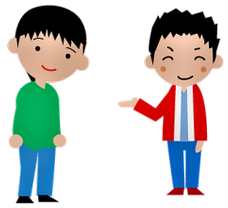
# Remove dead code

# Increase Type coverage

# Increase test coverage

# Plan

SHIFT



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Writing a Custom
Rector Rule

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# Tips

- Be systematic; do one type of change at once. (Both manual and automation).
  - Note other changes you need to make. (e.g. TODO L9)
- Use git commits (even if you later squash them)
- Upgrades: fix the deprecations. You don’t need to (immediately) use the new features.
  - Less code in diff to search through when tracking down bugs.
- Do the minimum number of changes between possible release points

# Writing a Custom Rector Rule


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# Old

```
class Car extends Model
{
  public function user()
  {
    return $this->belongsTo('User');
  }
}
```

# New

```
class Car extends Model
{
  public function user()
  {
    return $this->belongsTo(App\Models\User::class);
  }
}
```

# No Change: 1

```
class Car extends Model
{
  public function user()
  {
    return $this->belongsTo(User::class);
  }
}
```

# No Change: 2

```
class CarService
{
  public function user()
  {
    return $this->belongsTo('User');
  }
}
```

```
$ vendor/bin/rector custom-rule
```

```
 What is the name of the rule class (e.g. "LegacyCallToDbalMethodCall")?:
 > FixModelMappingsRector

Generated files
===============

 * utils/rector/src/Rector/FixModelMappingsRector.php
 * utils/rector/tests/Rector/FixModelMappingsRector/Fixture/some_class.php.inc
 * utils/rector/tests/Rector/FixModelMappingsRector/config/configured_rule.php
 * utils/rector/tests/Rector/FixModelMappingsRector/FixModelMappingsRectorTest.php

 [OK] Base for the "FixModelMappingsRector" rule was created.
Now you can fill the missing parts

 [OK] We also update composer.json autoload-dev, to load Rector
rules. Now run "composer dump-autoload" to update paths
```

**Old**

```php
<?php
namespace Utils\Rector\Tests\Rector\FixModelMappingsRector\Fixture;

use App\Framework\BelongsTo;
use App\Framework\Model;

final class Car extends Model
{
    public function user(): BelongsTo
    {
        return $this->belongsTo('User');
    }
}
```

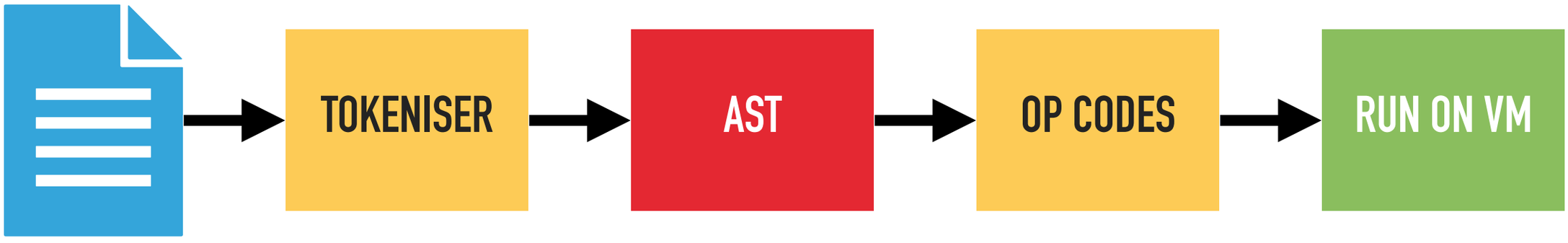
**New**

```php
<?php
namespace Utils\Rector\Tests\Rector\FixModelMappingsRector\Fixture;

use App\Framework\BelongsTo;
use App\Framework\Model;

final class Car extends Model
{
    public function user(): BelongsTo
    {
        return $this->belongsTo(App\Models\User::class);
    }
}
```

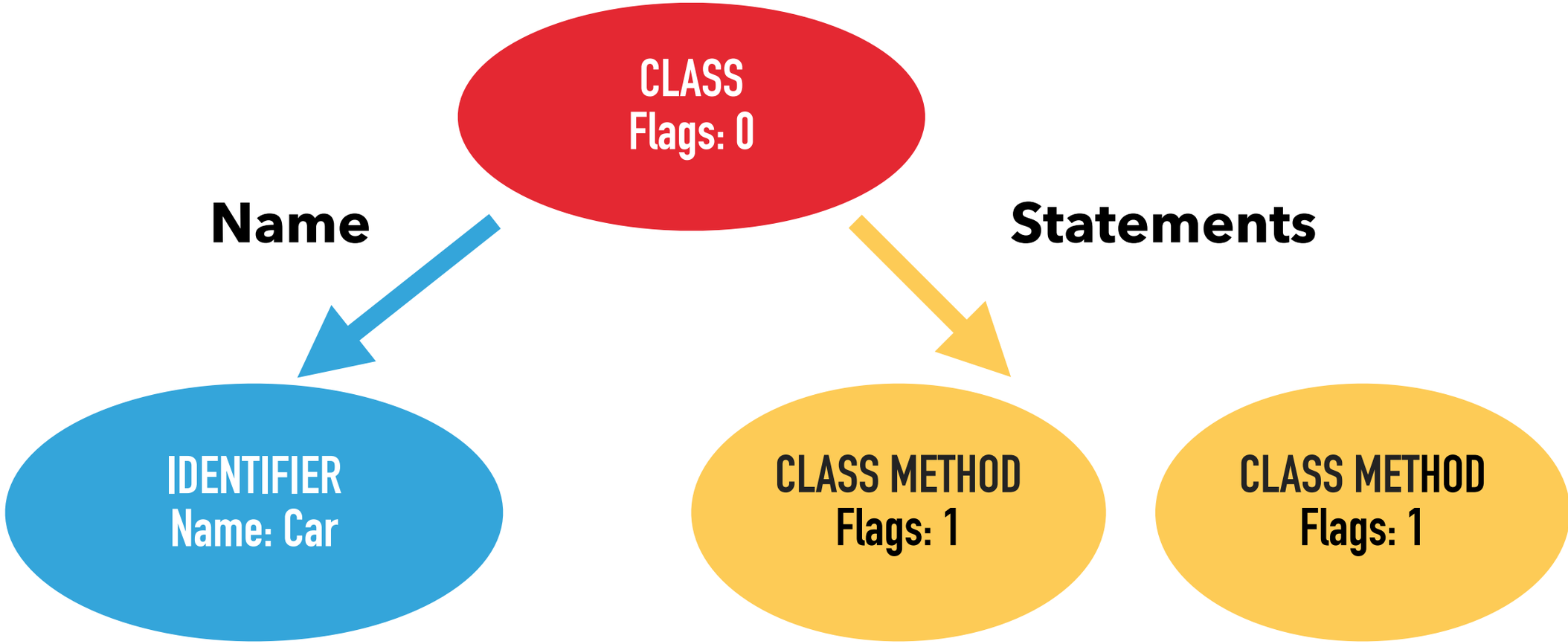
**No change**

```php
<?php
namespace Utils\Rector\Tests\Rector\FixModelMappingsRector\Fixture;

use App\Framework\BelongsTo;
use App\Framework\Model;

final class Car extends Model
{
    public function user(): BelongsTo
    {
        return $this->belongsTo(App\Models\User::class);
    }
}
```

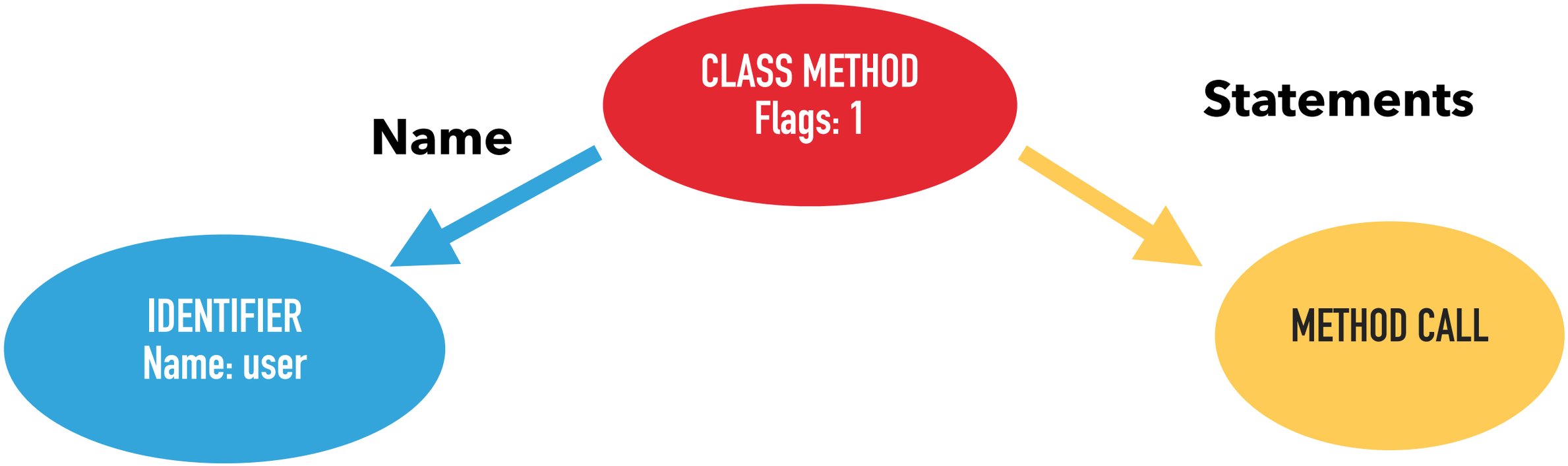
```
FixModelMappingsRector extends AbstractRector
{

    public function getNodeTypes(): array

    public function refactor(Node $node): ?Node
}
```


TOKENISER
AST
OP CODES
RUN ON VM

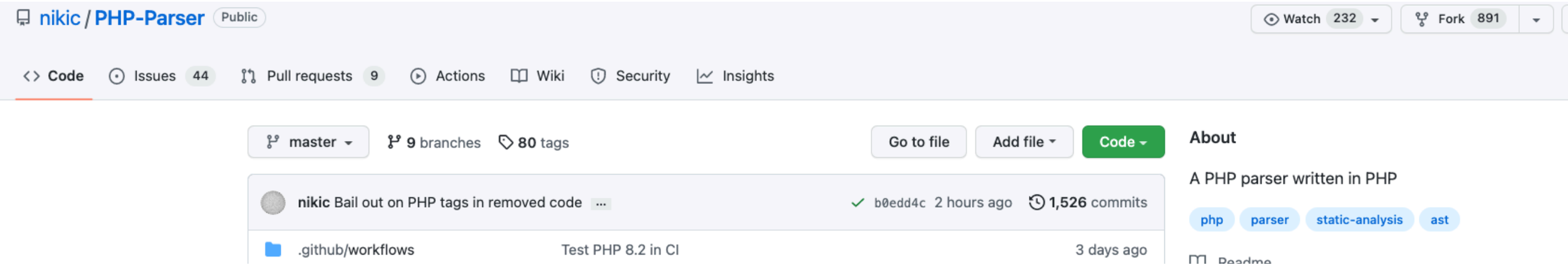
```
class Car
{
    public function users() {…}

    public function anotherMethod() {…}
}
```



```
public function user ()
{
    return $this->belongsTo('User');
}
```



# https://github.com/nikic/PHP-Parser




- PHP code can be represented by an AST
- Different types of Node
- Nodes contain information
- Each type of node has different information

CLASS
Flags: 0

IDENTIFIER
Name: PersonNotifier

PROPERTY
Flags: 4

CLASS METHOD
Flags: 1

CLASS METHOD
Flags: 1

IDENTIFIER
Name: notifyPlayer

PARAM
ByRef: false
Variadic: false

METHOD CALL

IDENTIFIER
Name: string

VALUE
ByRef: false
Variadic: false

```
$this->belongsTo('User');

$this->belongsTo(App\Models\User::class);
```

```
class MethodCall extends \PhpParser\Node\Expr\CallLike
{
    /** @var Expr Variable holding object */
    public $var;

    /** @var Identifier|Expr Method name */
    public $name;

    /** @var array<Arg|VariadicPlaceholder> Arguments */
    public $args;

    // Rest of class …
```

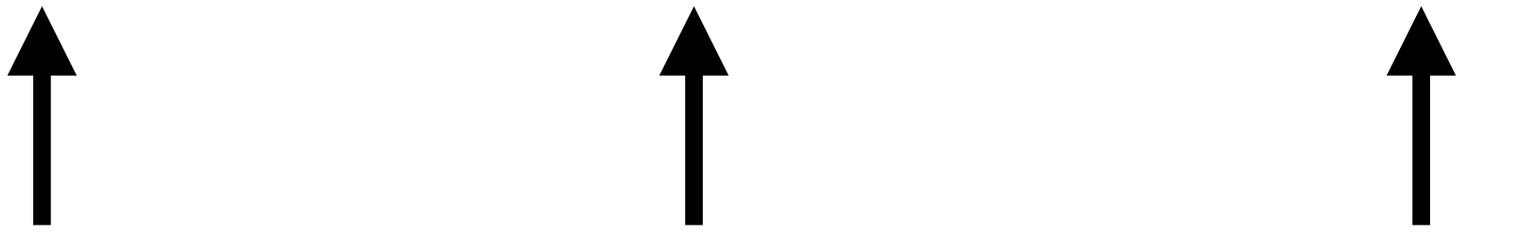
---

```
$this -> belongsTo ('User');
```

```
public function getNodes(): array
{
    return [MethodCall::class];
}
```

```
public function refactor(Node $node): ?Node
{

}
```

```
$this->belongsTo('User');
```




- var is an object that extends Model
- name is belongsTo
- 1st argument is a string

```
public function refactor(Node $node): ?Node
{
    // Is var an object that extends Model?

    $modelType = new ObjectType(Model::class);

    if (!$this->isObjectType($node->var, $modelType)) {
        return null;
    }
```

```
// Is name belongsTo

if (!$this->isName($node->name, 'belongsTo')) {
    return null;
}
```

```php
// Is 1st argument a string?

$arg = $node->args[0] ?? null;
if (! $arg instanceof Arg) {
    return null;
}

if (! $arg->value instanceof String_) {
    return null;
}
```

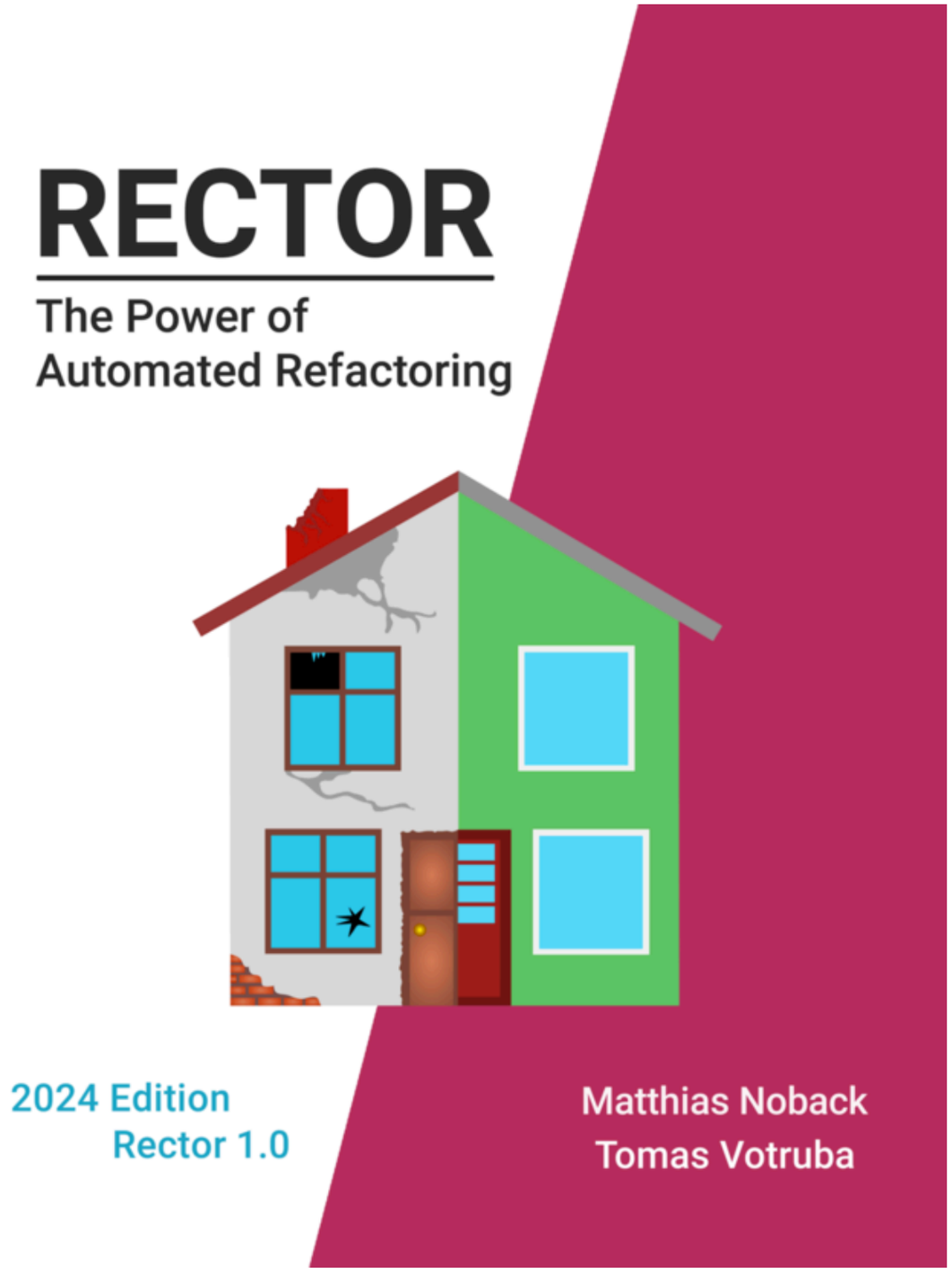
```php
// Return updated node

$fqcn = 'App\\Models\\' . $arg->value->value;

$arg->value = new ClassConstFetch(
                        new Name($fqcn),
                        new Identifier("class"));

    return $node;
}
```

---

**User::class** is a ClassConstFetch Node in the AST

```php
public function refactor(Node $node): ?Node
{
    // Is var an object that extends Model?
    $modelType = new ObjectType(Model::class);
    if (!$this->isObjectType($node->var, $modelType)) {
        return null;
    }

    // Is name belongsTo
    if (!$this->isName($node->name, 'belongsTo')) {
        return null;
    }

    // Is 1st argument a string?
    $arg = $node->args[0] ?? null;
    if (! $arg instanceof Arg) {
        return null;
    }
    if (! $arg->value instanceof String_) {
        return null;
    }

    // Return updated node
    $fqcn = 'App\\Models\\' . $arg->value->value;
    $arg->value = new ClassConstFetch(new Name($fqcn),new Identifier("class"));

    return $node;
}
```

https://github.com/DaveLiddament/rector-rule-demo-update-belongs-to

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# Code Prehab

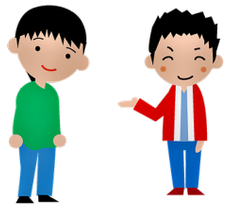
## Remove dead code

## Increase Type coverage

## Increase test coverage

# Plan

SHIFT



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# Execute

## Small focused steps

## Minimum to upgrade

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Writing a Custom Rector Rule

Thoughts

Execute

Code Prehab

Plan

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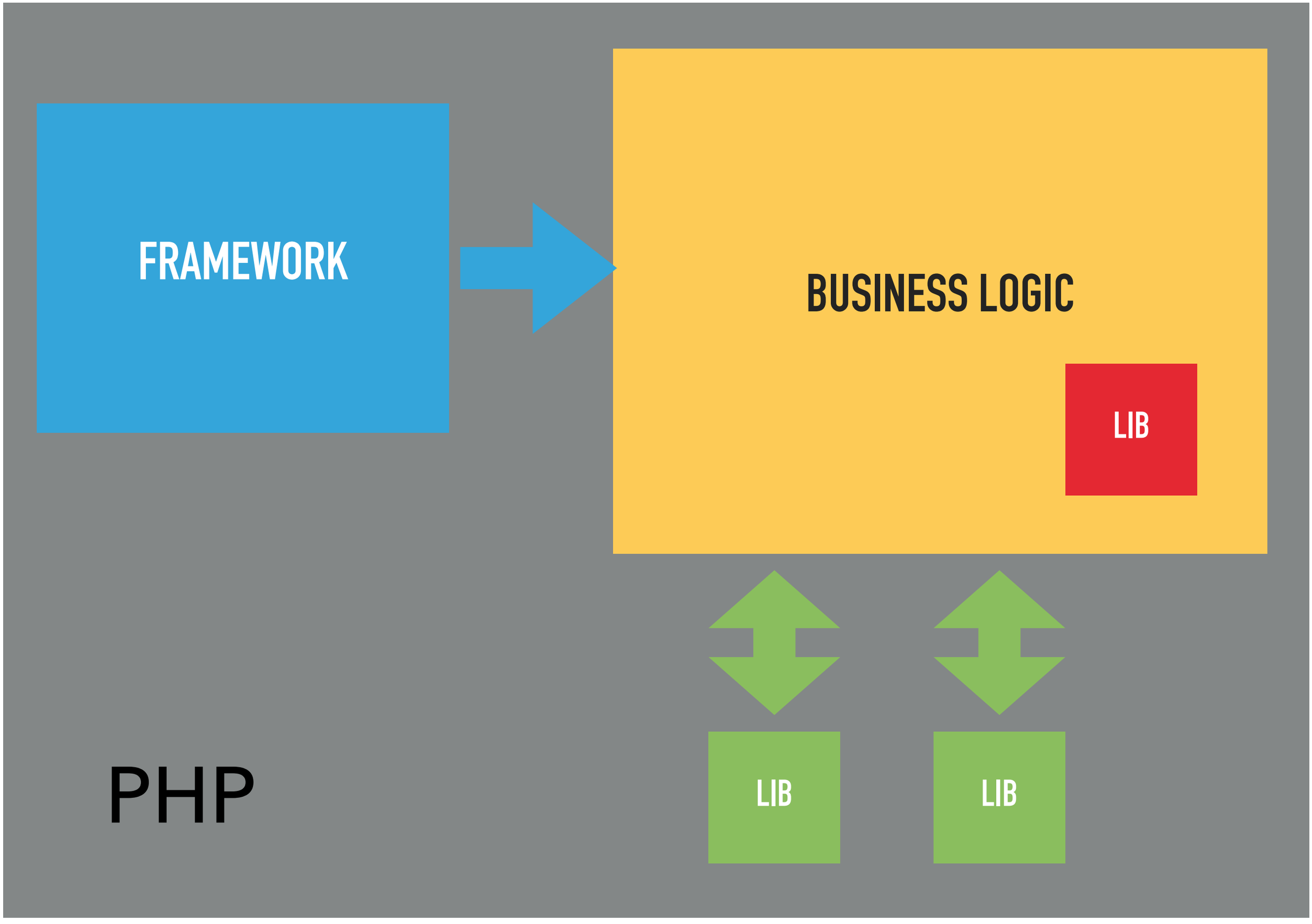


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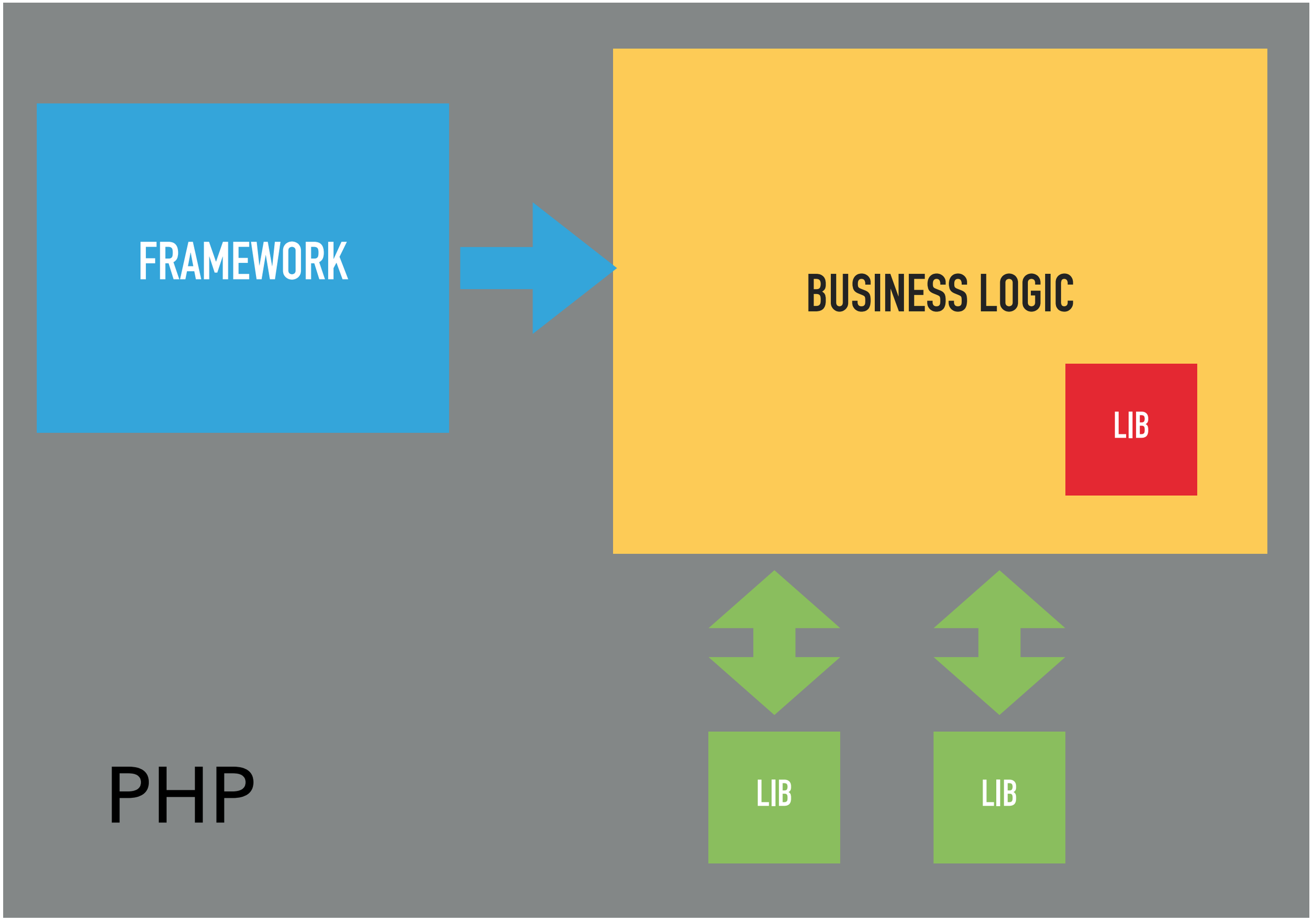
```
interface TextMessageGateway
{

    public function sendMessage(
        MobileNumber $from,
        MobileNumber $to,
        string $message,
    ):void ;

}
```

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# What if....

composer.json

```
  “version-upgrade” : {
      “2” :  {
          “validate” : [
              “phpstan:my-framework/v1-2-checks”,
              “script:upgrades/v1-2-checks.sh”
          ],

          “upgrade” : [
              “script:upgrades/v1-2-update-1.sh”
              “rector:my-framework/v1-2-rector”,
              “script:upgrades/v1-2-update-2.sh”
          ]
  }
}
```

```
composer update
  framework/framework:^2
  --allow-upgrade-scripts
```

# Dave Liddament

@daveliddament
@daveliddament.bsky.social
github.com/DaveLiddament


Me when I'm not coding!

**@daveliddament**

**@daveliddament.bsky.social**

**github.com/DaveLiddament**

# php language extensions

**#[Friend]**
**#[MustUseResult]**
**#[NamespaceVisibility]**
**#[InjectableVersion]**
**#[Override]**
**#[RestrictTraitTo]**
**#[TestTag]**