

THE

MYTH

OF UNTESTABLE
CODE

SEBASTIAN BERGMANN



CREATOR OF PHPUNIT
CO-FOUNDER OF THEPHP.CC

SEBASTIAN HEUER



DEVELOPER ADVOCATE
DIE KARTENMACHEREI



Interessengemeinschaft PHP e.V.

Mach mit!

Interessengemeinschaft PHP e.V.

Wir setzen uns ein für eine langfristig gute Verbreitung der Programmiersprache PHP in Ausbildung, Forschung und Entwicklung.

Wer wir sind

Unsere Ziele

Was wir tun



die kartenmacherei GmbH

**karten
macherei**

Geburt Hochzeit Geburtstag Anlässe Einladungen Danksagungen Extras

4.9/5
107241 Bewertungen

Dankeskarten zur Hochzeit

Das Beste kommt zum Schluss! Unsere Dankeskarten bilden das perfekte Finale Ihrer Hochzeit.

JETZT ANSEHEN

Einladungen zur Hochzeit

JETZT ENTDECKEN >

Dankeskarten Hochzeit

ALLE ANSEHEN >

Geburtskarten

ALLE ANSEHEN >

Geburtstag

JETZT ENTDECKEN >

**TESTING
CLEAN CODE
IS EASY**

LEGACY HELI

TEMPLATE NEW



template_new.php



die kartenmacherei GmbH

Geburt Hochzeit Geburtstag Anlässe Einladungen Danksagungen Extras Fotoprodukte

4.9/5
133014 Bewertungen

GEBURTSKARTE

Blickfang

20,00 €

2,00 € pro Stück inkl. MwSt., zzgl. Versand
Designer: Andrea Winter

Farbe:

Format: Postkarte flach (148 x 105mm)

Stanzung: keine Stanzung

Papiersorte: mattes Feinstpapier (weiß)

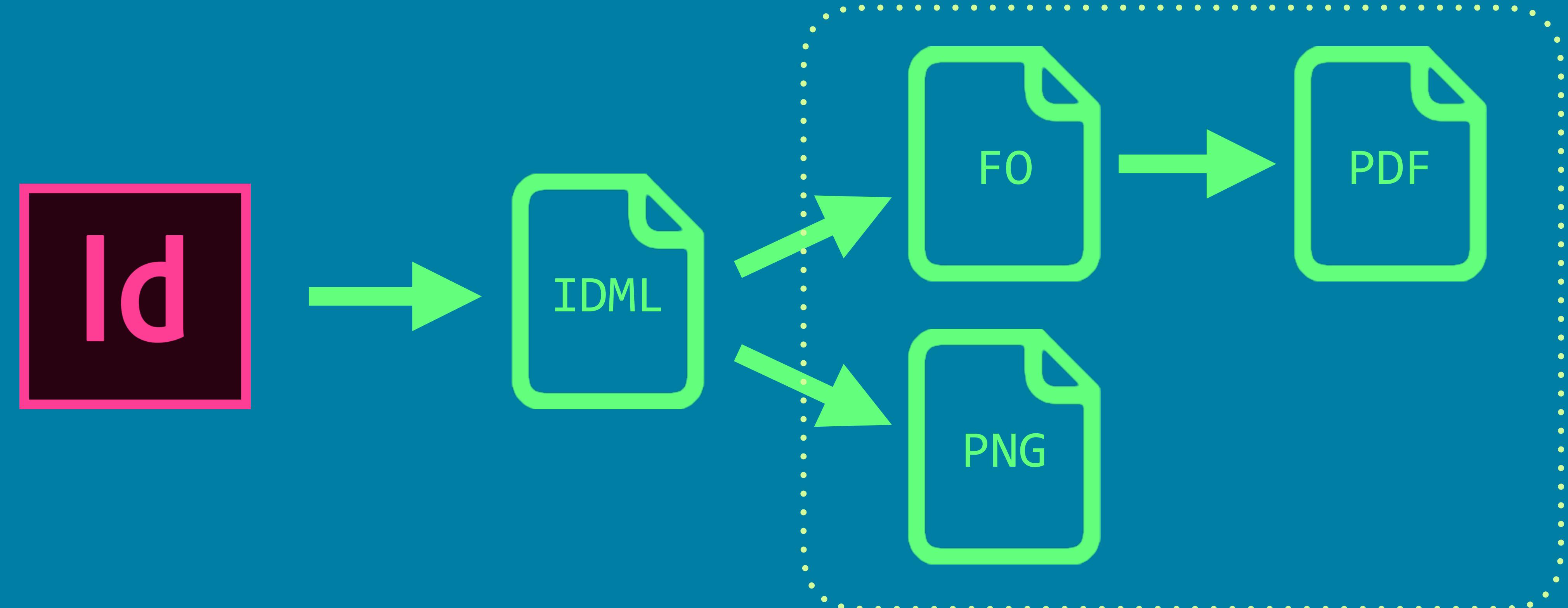
Menge: 10 Stück (à 2,00 €)

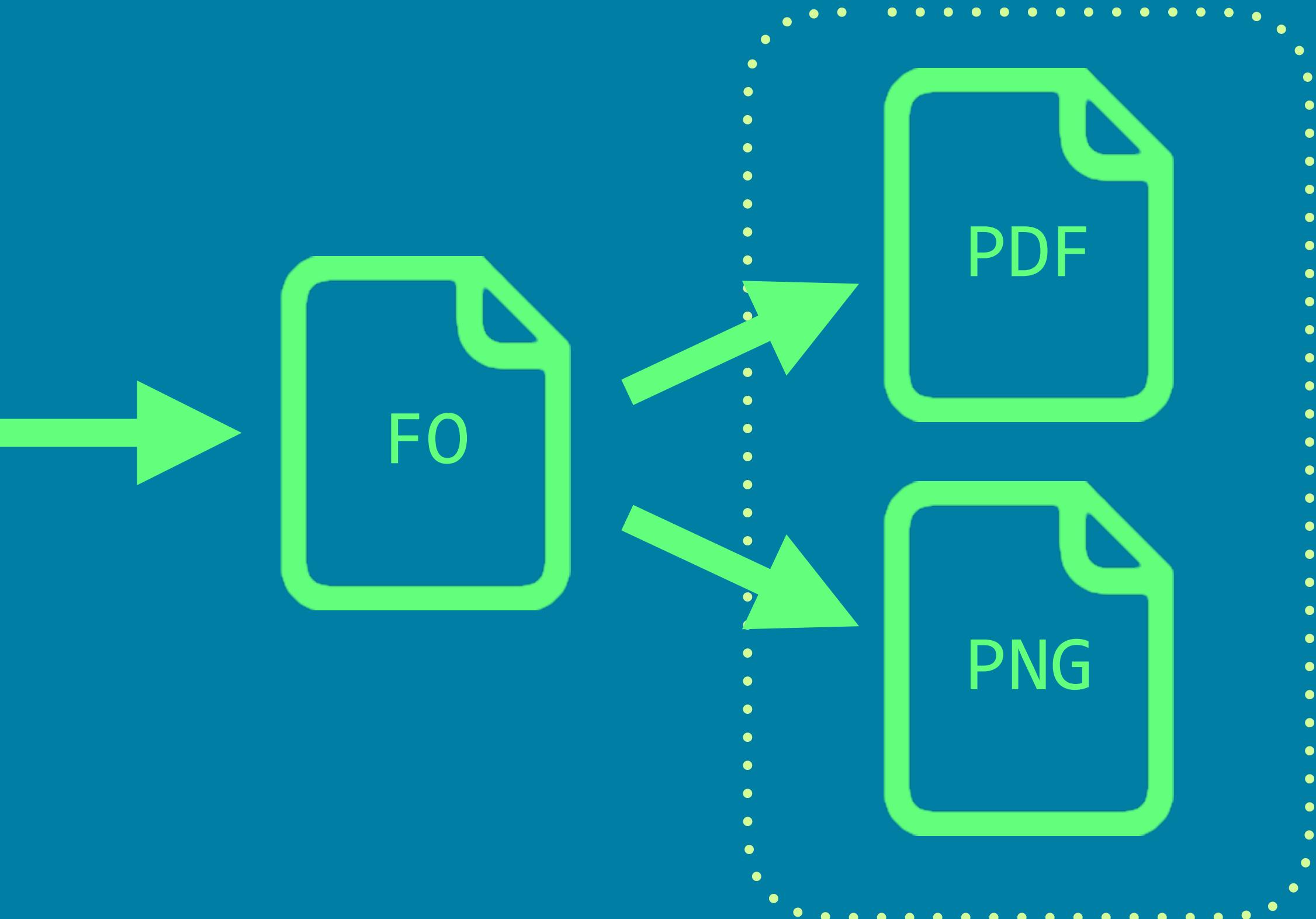
JETZT GESTALTEN

Gratis Muster bestellen Auf den Merkzettel Teilen

Bestellen Sie bis heute 10:00 Uhr und wir verschicken Ihr Paket:
heute (Expressversand) oder spätestens morgen (Standardversand).

The screenshot shows a web browser displaying a product page for a birth announcement card. The card features a large photo of a baby's face, the names 'EMILIE CHARLOTTA', the date '06/09/2014', and a smaller photo of a smiling woman holding a baby. The card is yellow with black text. To the right, the product is named 'Blickfang' with a price of '20,00 €'. Below the price, it says '2,00 € pro Stück inkl. MwSt., zzgl. Versand' and 'Designer: Andrea Winter'. There are dropdown menus for 'Farbe', 'Format', 'Stanzung', 'Papiersorte', and 'Menge'. A red button at the bottom says 'JETZT GESTALTEN'. At the very bottom, there is a note about delivery times.





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 4.9/5
133087 Bewertungen

HOCHZEITSEINLADUNG

Spitzenblüte

45,00 €

4,50 € pro Stück inkl. MwSt., zzgl. Versand
Mehr "Spitzenblüte": [Gesamte Serie anzeigen](#)
Designer: [Tessa Oehne](#)

Farbe: 

Format:  Lange Doppelklappkarte mit Banderol... ▾

Papiersorte: mattes Feinstpapier (weiß) ▾

Anhänger: Ohne Anhänger ▾

Menge: 10 Stück (à 4,50 €) ▾

JETZT GESTALTEN

 Gratis Muster bestellen

 Auf den Merkzettel

 Teilen

Bestellen Sie bis heute 10:00 Uhr und wir verschicken Ihr Paket:



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macherei**

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4.9/5
133087 Bewertungen

GEBURTSKARTE

Bildreich

45,00 €

4,50 € pro Stück inkl. MwSt., zzgl. [Versand](#)

Farbe:

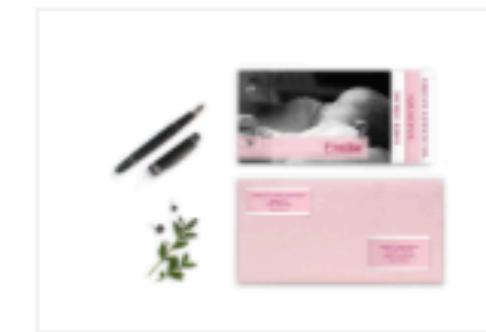
Format:  Booklet (210x100mm) ▾

Papierart: mattes Feinstpapier (weiß) ▾

Menge: 10 Stück (à 4,50 €) ▾

[JETZT GESTALTEN](#)





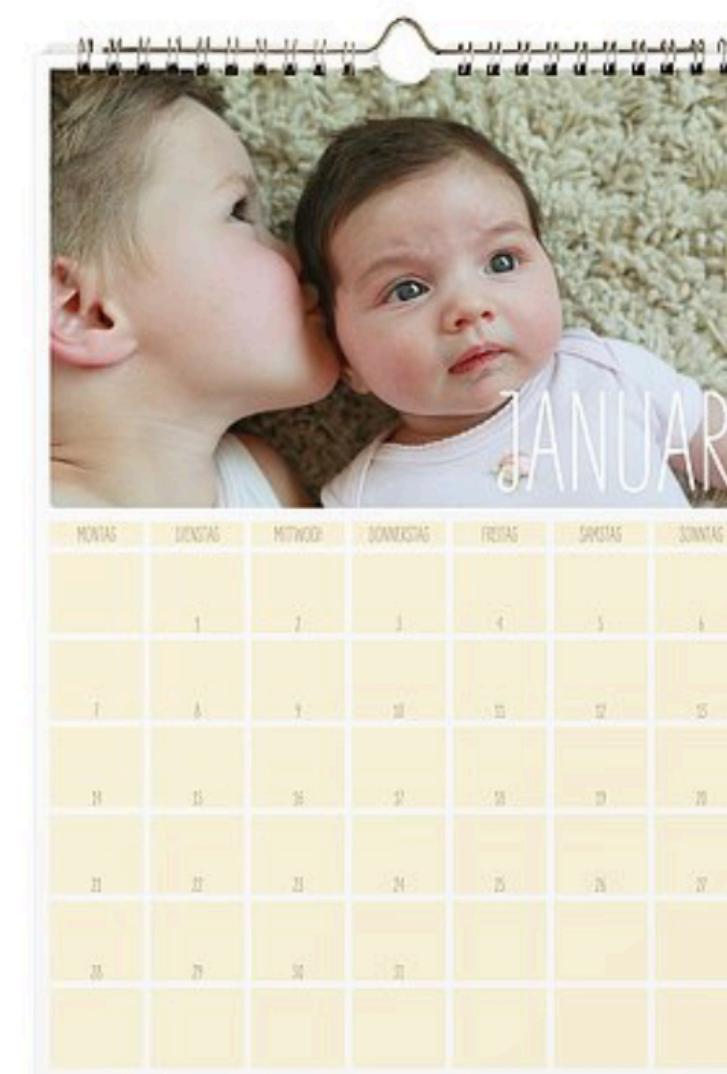


 Gratis Muster bestellen

 Auf den Merkzettel

 Teilen

Bestellen Sie bis heute 10:00 Uhr und wir verschicken Ihr Paket:
morgen (Expressversand) oder spätestens Montag
(Standardversand).



WANDKALENDER

Farbenpracht

17,90 €

17,90 € pro Stück inkl. MwSt., zzgl. [Versand](#)Designer: [Andrea Winter](#)

Farbe:



Format:



Aufhängung:

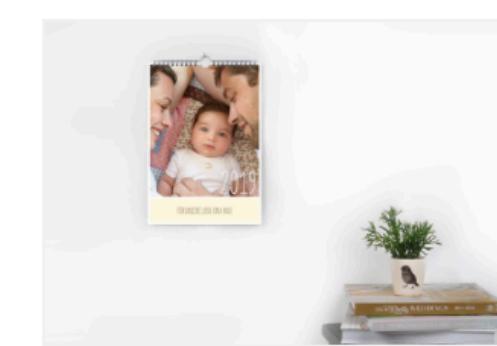
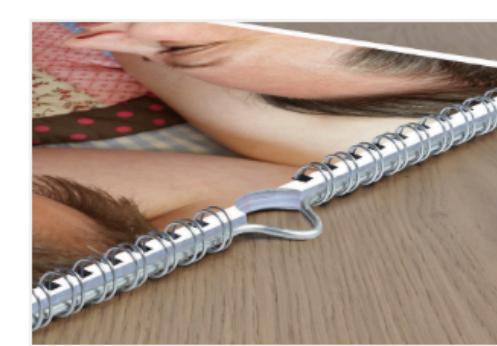
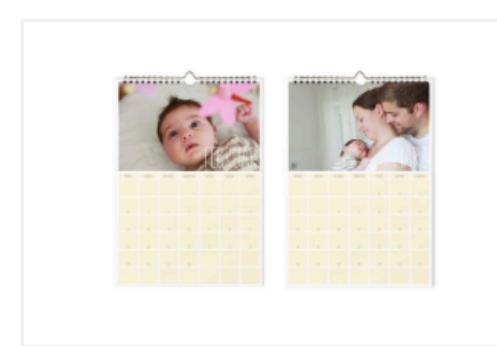
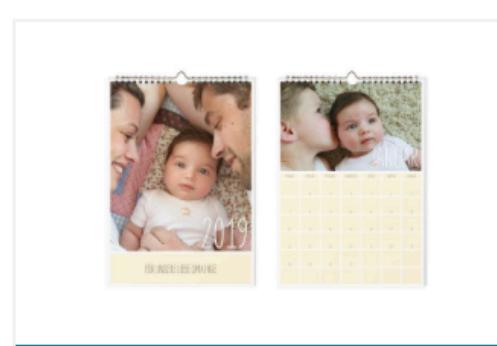


Papierart:

mattes Feinstpapier (weiß) 300g/qm

Menge:

1 Stück (17,90 €)



JETZT GESTALTEN



Auf den Merkzettel



Teilen

Bestellen Sie bis morgen 10:00 AM Uhr und wir verschicken Ihr Paket: Montag (Expressversand) oder spätestens Dienstag (Standardversand).

die kartenmacherei GmbH

**karten
macherei**

Geburt Hochzeit Geburtstag Anlässe Einladungen Danksagungen Extras Fotoprodukte

4.9/5
133087 Bewertungen

RETRO BILDER

Momentaufnahme

13,90 €

13,90 € pro Stück inkl. MwSt., zzgl. [Versand](#)

Farbe:

Format: Retro Fotos (100mm x 120mm)

Papierart: mattes Feinstpapier (weiß) ▾

Box: Love Moments +5,50 € ▾

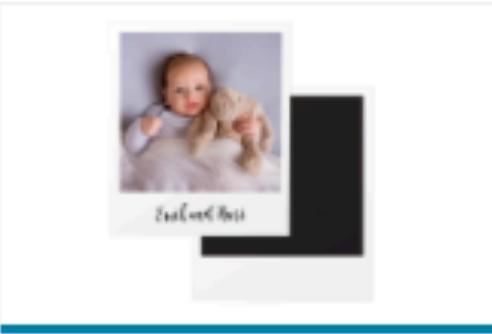
Fotoanzahl: 12 Stück exkl. Boxpreis (8,40 €) ▾

JETZT GESTALTEN

Auf den Merkzettel

Teilen

Bestellen Sie bis morgen 10:00 AM Uhr und wir verschicken Ihr Paket: morgen (Expressversand) oder spätestens Montag (Standardversand).



```
1 <?php
2 use Content\CraftPaper\CraftPaper;
3 use Content\CraftPaper\InputTextFo;
4 use Content\DomainRemover\DomainRemover;
5 use Content\FlipCalendar\FlipCalendar;
6 use Content\FlipCalendar\Pdf;
7 use Content\FlipCalendar\ShellCommands;
8 use Content\Logging\Error;
9 use Content\Loggly\LogglyClient;
10 use Content\Loggly\LogglyToken;
11 use Content\RenderLock\FakeLock;
12 use Content\RenderLock\RealLock;
13 use Content\Shared\ConfigurationId;
14 use Content\Shared\ConfigurationIdChecker;
15 use Content\Shared\ConfigurationPathBuilder;
16 use Content\Shared\ContentDomain;
17 use Content\Shared\OrderItemId;
18 use Content\Shared\OrderToolDomain;
19 use Content\Shared>Status;
20 use Content\Shared\TemplatePath;
21
22 error_reporting(E_ALL);
23
24 ini_set('memory_limit', '2048M');
25 ini_set('post_max_size', '64M');
26 ini_set('upload_max_filesize', '64M');
27
28 require_once '../../config.php';
29 require_once 'idml.php';
30 require_once '../../helper/logging/Logging.php';
31
32 require_once '../../tools/fpdf/fpdf.php';
```

```

(...)
2777 if ($isTranslationTool === false) {
2778     if (file_exists($configurationPath . 'spot' . $filenameSuffix . '.pdf')) {
2779         if ($isDebugMode) {
2780             echo $configurationPath . 'spot' . $filenameSuffix . '.pdf<br/>';
2781             echo 'GENERATING PAGES ' . $i . ' spot.pdf<br/>';
2782         }
2783         $pdf->setSourceFile($configurationPath . 'spot' . $filenameSuffix . '.pdf');
2784         $tplIdx = $pdf->importPage($i + 1);
2785         $pdf->useTemplate($tplIdx, 0, 0);
2786     } elseif (file_exists($template_path . 'spot.pdf')) {
2787         if ($isDebugMode) {
2788             echo $template_path . 'spot.pdf<br/>';
2789             echo 'GENERATING PAGES ' . $i . ' spot.pdf<br/>';
2790         }
2791         $pdf->setSourceFile($template_path . 'spot.pdf');
2792         $tplIdx = $pdf->importPage($i + 1);
2793         $pdf->useTemplate($tplIdx, 0, 0);
2794     } elseif ($isDebugMode) {
2795         echo 'NOT FOUND >> spot.pdf<br/>';
2796     }
2797 }
(...)

```



sebastian@berta: ~/projects/kartenmacherei/content

sebastian:content/ (masterX) \$ phpmd src/Content/TemplateNew.php xml codesize

[10:41:17]

```
<?xml version="1.0" encoding="UTF-8" ?>
<pmd version="@project.version@" timestamp="2017-05-28T08:41:19+00:00">
  <file name="/Users/sebastian/projects/kartenmacherei/content/src/Content/TemplateNew.php">
    <violation beginline="40" endline="3009" rule="ExcessiveClassLength" ruleset="Code Size Rules" package="Content" externalInfoUrl="http://phpmd.org/rules/codesize.html#excessiveclasslength">
      The class has 2941 lines of code. Current threshold is set to 100. Avoid really long classes.
    </violation>
    <violation beginline="40" endline="3009" rule="NPathComplexity" ruleset="Code Size Rules" package="Content" externalInfoUrl="http://phpmd.org/rules/codesize.html#npathcomplexity" class="TemplateNew" method="execute" priority="3">
      The method execute() has an NPath complexity of 422613806751446844383776889554081900123042754108583958093751102384903715343564800000. The configured NPath complexity threshold is 200.
    </violation>
    <violation beginline="68" endline="3008" rule="NPathComplexity" ruleset="Code Size Rules" package="Content" externalInfoUrl="http://phpmd.org/rules/codesize.html#npathcomplexity" class="TemplateNew" method="execute" priority="3">
      The method execute() has an NPath complexity of 422613806751446844383776889554081900123042754108583958093751102384903715343564800000. The configured NPath complexity threshold is 200.
    </violation>
    <violation beginline="68" endline="3008" rule="ExcessiveMethodLength" ruleset="Code Size Rules" package="Content" externalInfoUrl="http://phpmd.org/rules/codesize.html#excessivemethodlength" class="TemplateNew" method="execute" priority="3">
      The method execute() has 2941 lines of code. Current threshold is set to 100. Avoid really long methods.
    </violation>
  </file>
</pmd>
```

sebastian:content/ (masterX) \$

[10:41:19]

"The method execute() has an NPath complexity of
422613806751446844383776889554081900123042754108583958093751102384903715343564800000."
rules/codesize.html#npathcomplexity" class="TemplateNew" method="execute" priority="3">
The method execute() has an NPath complexity of 422613806751446844383776889554081900123042754108583958093751102384903715343564800000. The configured NPath complexity threshold is 200.

"The configured NPath complexity threshold is 200."

Convert Cardinal Numbers (integers) into words

Enter number:

Click to Convert

Your number is too big for me to spell

FOUR HUNDRED TWENTY-TWO SEXVIGINTILLION, SIX HUNDRED THIRTEEN
QUINVIGINTILLION, EIGHT HUNDRED SIX QUATTUORVIGINTILLION, SEVEN HUNDRED
FIFTY-ONE TREVIGINTILLION, FOUR HUNDRED FORTY-SIX DUOVIGINTILLION, EIGHT
HUNDRED FORTY-FOUR UNVIGINTILLION, THREE HUNDRED EIGHTY-THREE
VIGINTILLION, SEVEN HUNDRED SEVENTY-SIX NOVEMDECILLION, EIGHT HUNDRED
EIGHTY-NINE OCTODECILLION, FIVE HUNDRED FIFTY-FOUR SEPTENDECILLION,
EIGHTY-ONE SEXDECILLION, NINE HUNDRED QUINDECILLION, ONE HUNDRED
TWENTY-THREE QUATTUORDECILLION, FORTY-TWO TREDECILLION, SEVEN HUNDRED
FIFTY-FOUR DUODECILLION, ONE HUNDRED EIGHT UNDECILLION, FIVE HUNDRED
EIGHTY-THREE DECILLION, NINE HUNDRED FIFTY-EIGHT NONILLION, NINETY-THREE
OCTILLION, SEVEN HUNDRED FIFTY-ONE SEPTILLION, ONE HUNDRED
SEXTILLION, THREE HUNDRED EIGHTY-FOUR QUINTILLION, NINE HUNDRED
QUADRILLION, SEVEN HUNDRED FIFTEEN TRILLION, THREE HUNDRED
BILLION, FIVE HUNDRED SIXTY-FOUR MILLION, EIGHT HUNDRED THOUSAND



**GLOBAL STATE
STATIC METHOD CALLS
A GAZILLION
EXECUTION PATHS**

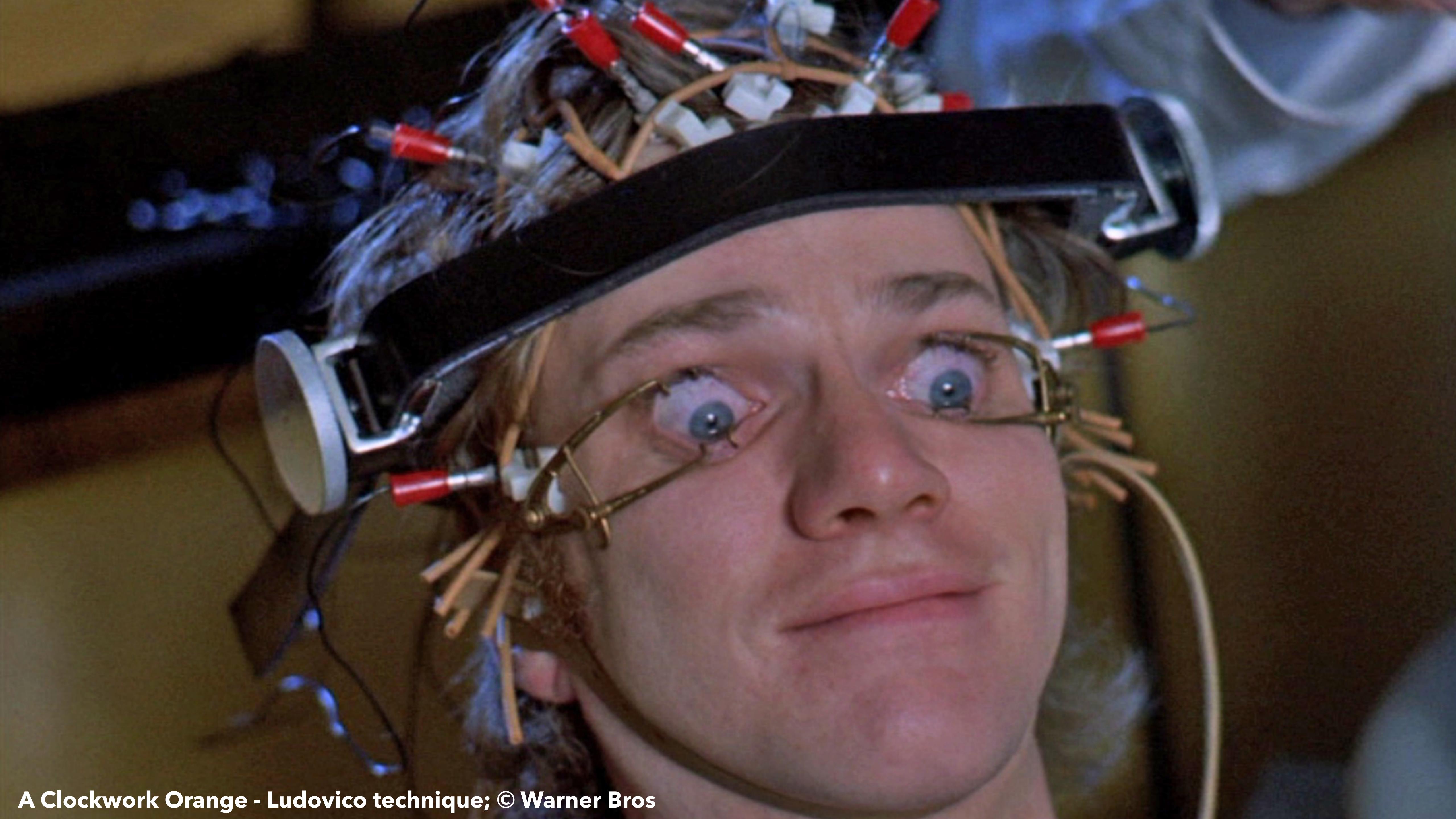
**TESTING
LEGACY CODE
IS HARD**

impossible?

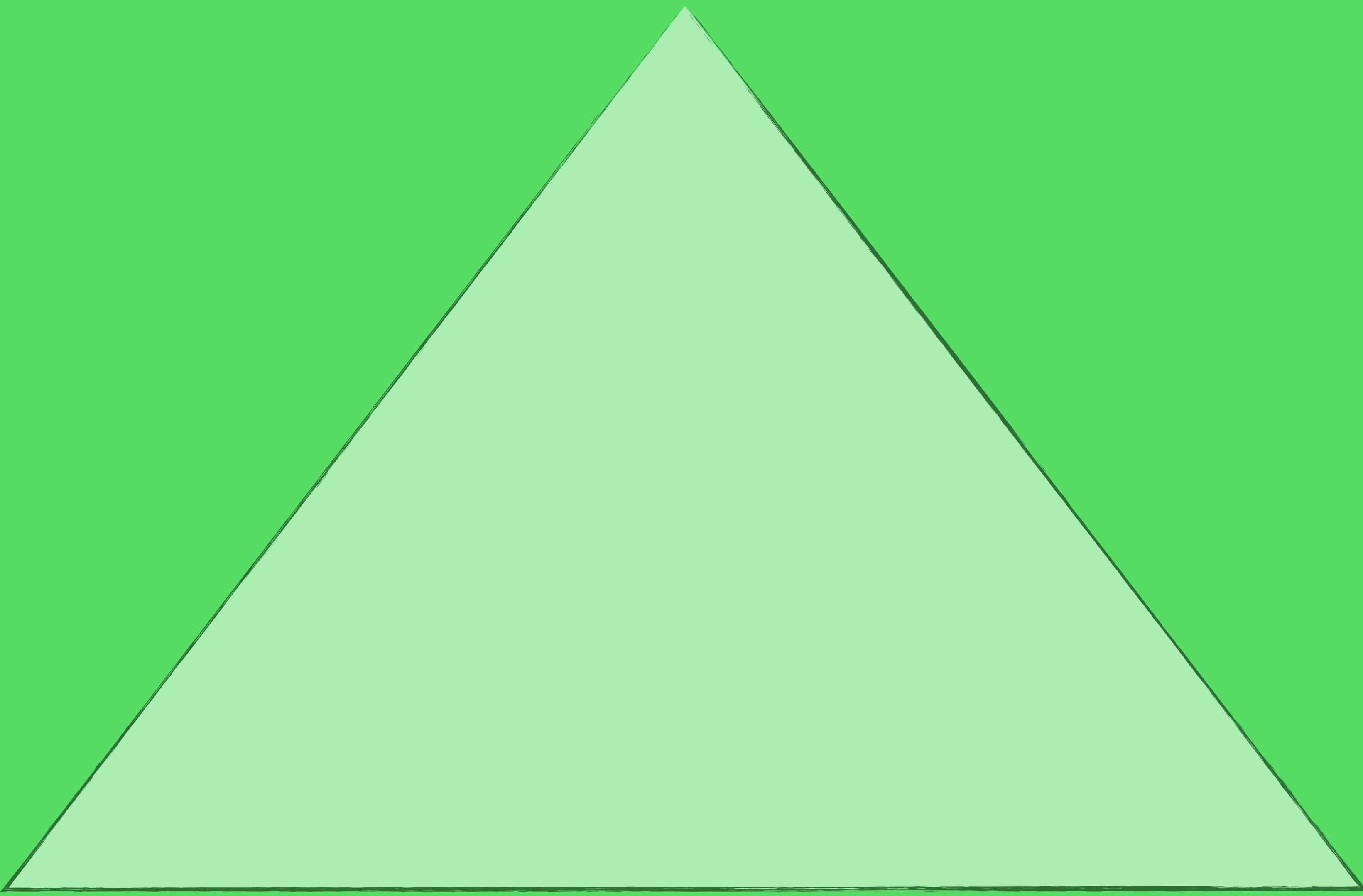
**"LET'S JUST
REBUILD THIS FROM
SCRATCH!"**

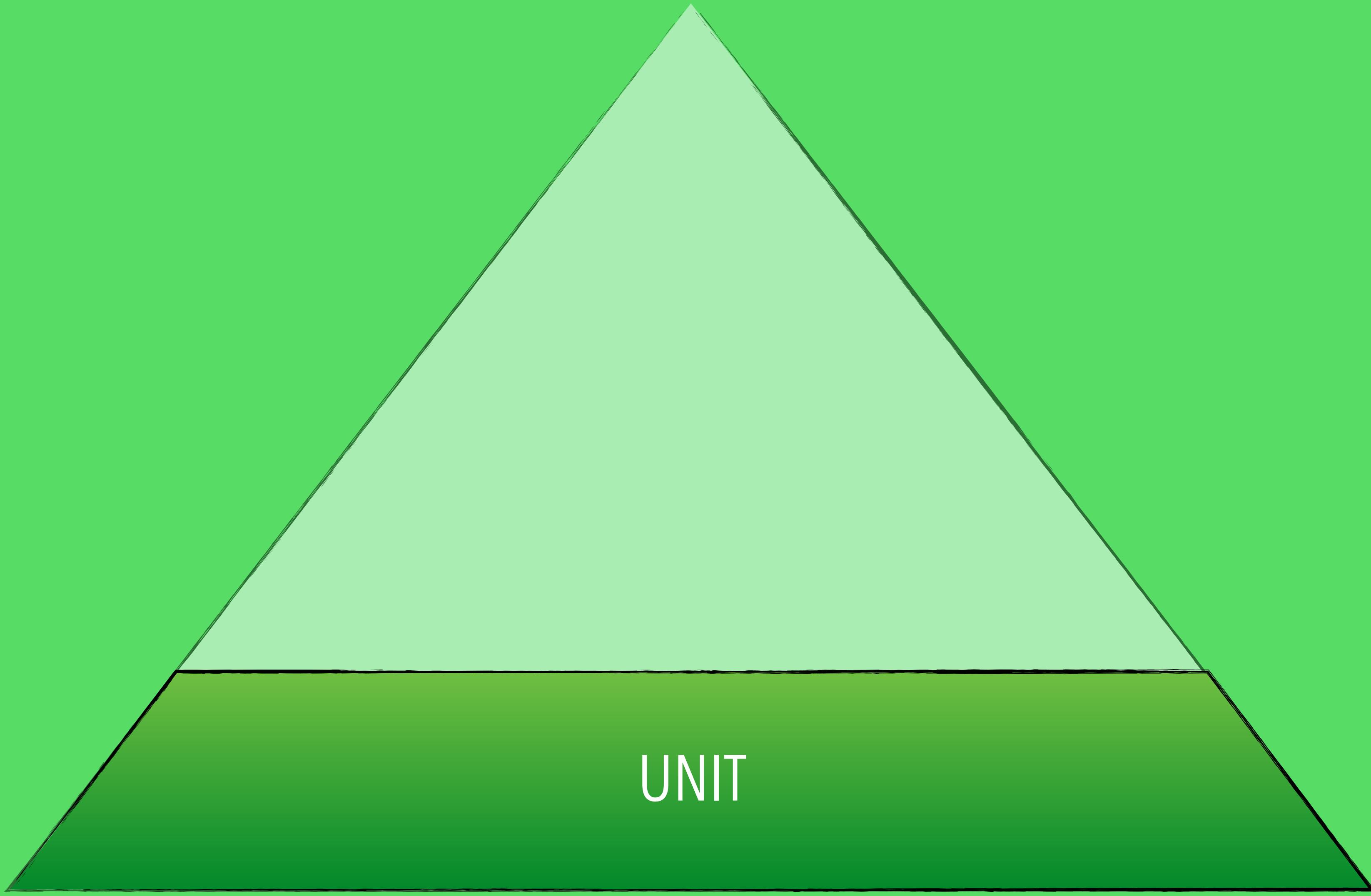
**NO
DOCUMENTATION**

ONLY CODE



A Clockwork Orange - Ludovico technique; © Warner Bros





do we write the software right?

**TESTING
LEGACY CODE
IS HARD**

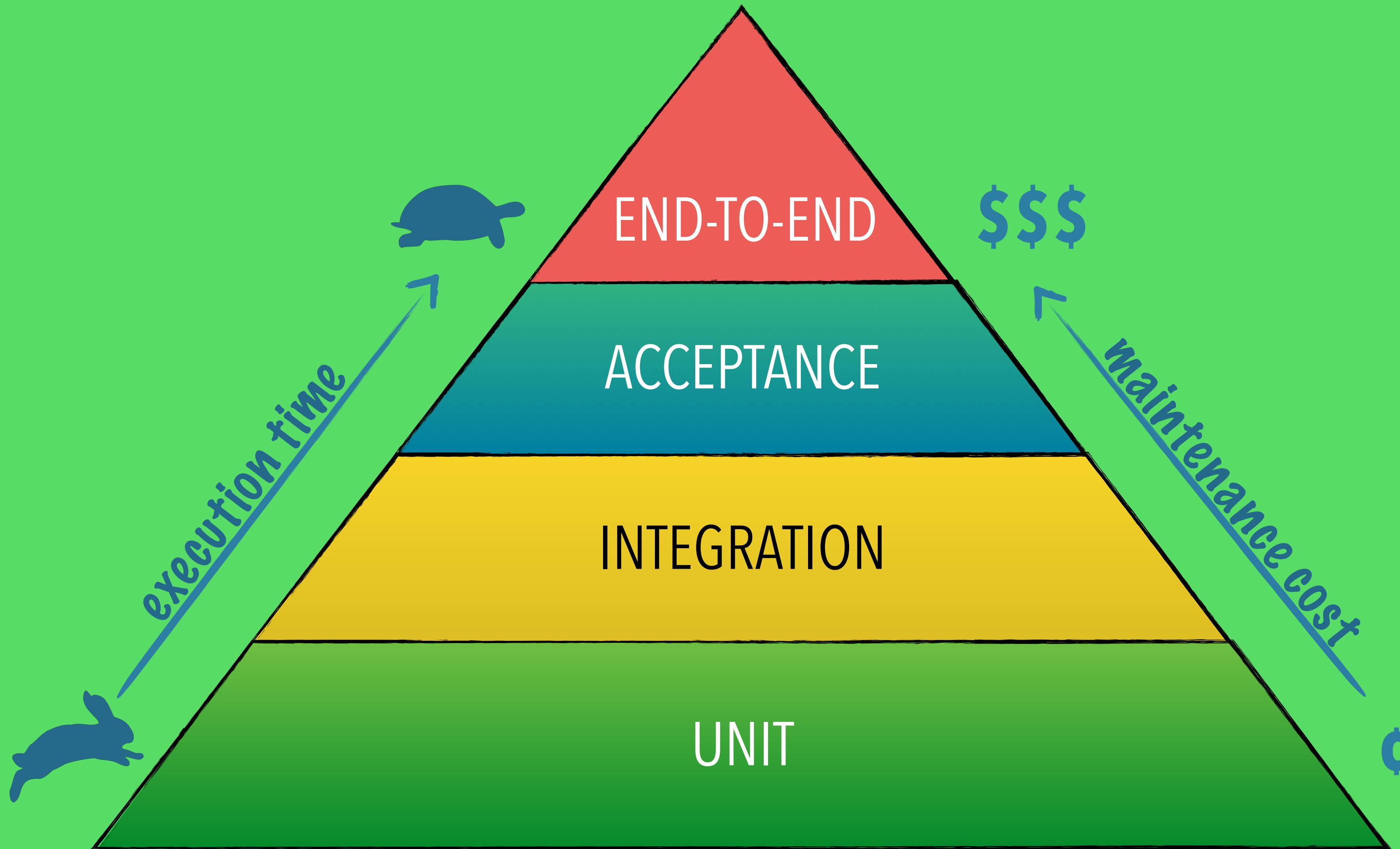
impossible?

Unit-testing unrefactored legacy code is impossible

~~TESTING
LEGACY CODE
IS HARD~~

**END-TO-END TESTING
UNREFACTORED
LEGACY CODE
IS ALWAYS POSSIBLE**

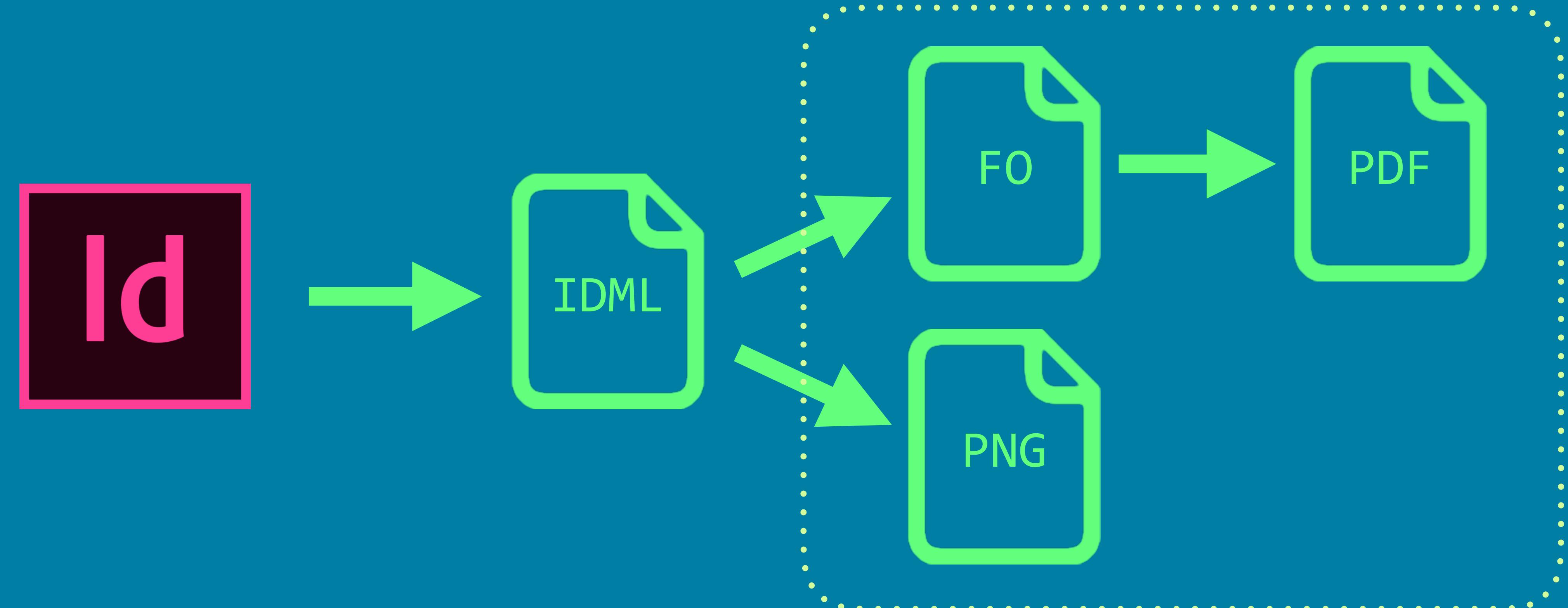
do we write the right software?



do we write the software right?

do we write the right software?





```
1 <?php
2 class EndToEndTest extends PHPUnit\Framework\TestCase {
3     /**
4      * @backupGlobals enabled
5      */
6     public function testCreatesExpectedFoFile() {
7
8         $_REQUEST = [
9             'template_design' => 'KAM11GG',
10            'template_format' => 'F210',
11            'template_color' => 'C06',
12            // [...]
13        ];
14
15        require __DIR__ . '/../src/template_new.php';
16
17        $expectedFile = __DIR__ . '/fixtures/expected.fo';
18        $actualFile = __DIR__ . '/../data/templates/KAM11GG/F210/C06/input.fo';
19
20        $this->assertFileEquals($expectedFile, $actualFile);
21    }
22 }
```

```
1 <?php
2 class EndToEndTest extends PHPUnit\Framework\TestCase {
3
4     /**
5      * @backupGlobals enabled
6      *
7      * @dataProvider inputFoCreationTestProvider
8      *
9      * @param string $design
10     * @param string $format
11     * @param string $color
12     * @param string $expectedFile
13     */
14    public function testCreatesExpectedInputFoFile($design, $format, $color, $expectedFile) {
15
16        $_REQUEST = [
17            'template_design' => $design,
18            'template_format' => $format,
19            'template_color' => $color,
20            // ...
21        ];
22
23        require __DIR__ . '/../src/template_new.php';
24
25        $actualFile = sprintf(__DIR__ . '/../data/templates/%s/%s/%s/input.fo', $design, $format, $color);
26
27        $this->assertFileEquals($expectedFile, $actualFile);
28    }
29 }
```

**BUT WHAT IF YOU
DON'T KNOW INPUT
AND/OR OUTPUT?**

CHARACTERIZATION TESTS

"An attempt to lock existing behavior into an untested or undocumented system."

<http://wiki.c2.com/?CharacterizationTest>

GitHub, Inc.

Features Business Explore Marketplace Pricing

This repository Search Sign in or Sign up

sebastianbergmann / de-legacy-fy

Watch 6 Star 55 Fork 2

Code Issues 2 Pull requests 0 Insights

Tool for dealing with legacy PHP code

41 commits 1 branch 4 releases 2 contributors

Branch: master New pull request Find file Clone or download

sebastianbergmann Fix Latest commit 5fd9dbd 13 days ago

File	Message	Time
build	Cleanup	23 days ago
src	Prepare release	13 days ago
tests	Fix CS/WS issues	21 days ago
.gitignore	Cleanup	23 days ago
.php_cs	Drop support for PHP 5.3, PHP 5.4, and PHP 5.5	23 days ago
ChangeLog.md	Fix	13 days ago
LICENSE	Cleanup	23 days ago
README.md	Update documentation	22 days ago
build.xml	Update	21 days ago

EXAMPLE

legacy.php

```
1 <?php
2 function add($a, $b)
3 {
4     return $a + $b;
5 }
6
7 add(1, 2);
```

```
$ php -d xdebug.auto_trace=1 -d xdebug.trace_format=1 \
-d xdebug.collect_params=5 -d xdebug.collect_return=1 legacy.php
```

```
$ cat /tmp/trace.4251619279.xt
```

Version: 2.5.3

File format: 4

TRACE START [2014-06-27 10:40:40]

```
1 0 0 0.000282 279896 {main} 1    /home/sb/legacy.php 0 0
2 1 0 0.000371 280136 add 1    /home/sb/legacy.php 7 2 aTox0w== aToy0w==
2 1 1 0.000440 280256
2 1 R      aToz0w==
1 0 1 0.000470 280016
1 0 R      aTox0w==
          0.000648 8488
```

TRACE END [2014-06-27 10:40:40]

```
$ de-legacy-fy generate-characterization-test add /tmp/trace.4251619279.xt CharacterizationTest
CharacterizationTest.php
de-legacy-fy 2.0.0 by Sebastian Bergmann.
```

Generated class "CharacterizationTest" in file "CharacterizationTest.php"

```
1 <?php
2 class CharacterizationTest extends \PHPUnit\Framework\TestCase
3 {
4
5     /**
6      * @return array
7      */
8     public function provider()
9     {
10         return array(
11             array($this->decode('aToz0w=='), $this->decode('aTox0w=='), $this->decode('aToy0w=='))
12         );
13     }
14
15     /**
16      * @param string $value
17      * @return mixed
18      */
19     private function decode($value)
20     {
21         return unserialize(base64_decode($value));
22     }
23
24     /**
25      * @dataProvider provider
26      */
27     public function testAddFunctionWorksLikeItUsedTo($expected, $a, $b)
28     {
29         $this->assertEquals($expected, add($a, $b));
30     }
31 }
```

**BACK TO
OUR CASE**

**NEXT:
REFACTOR
TO ALLOW
INTEGRATION
TESTING**

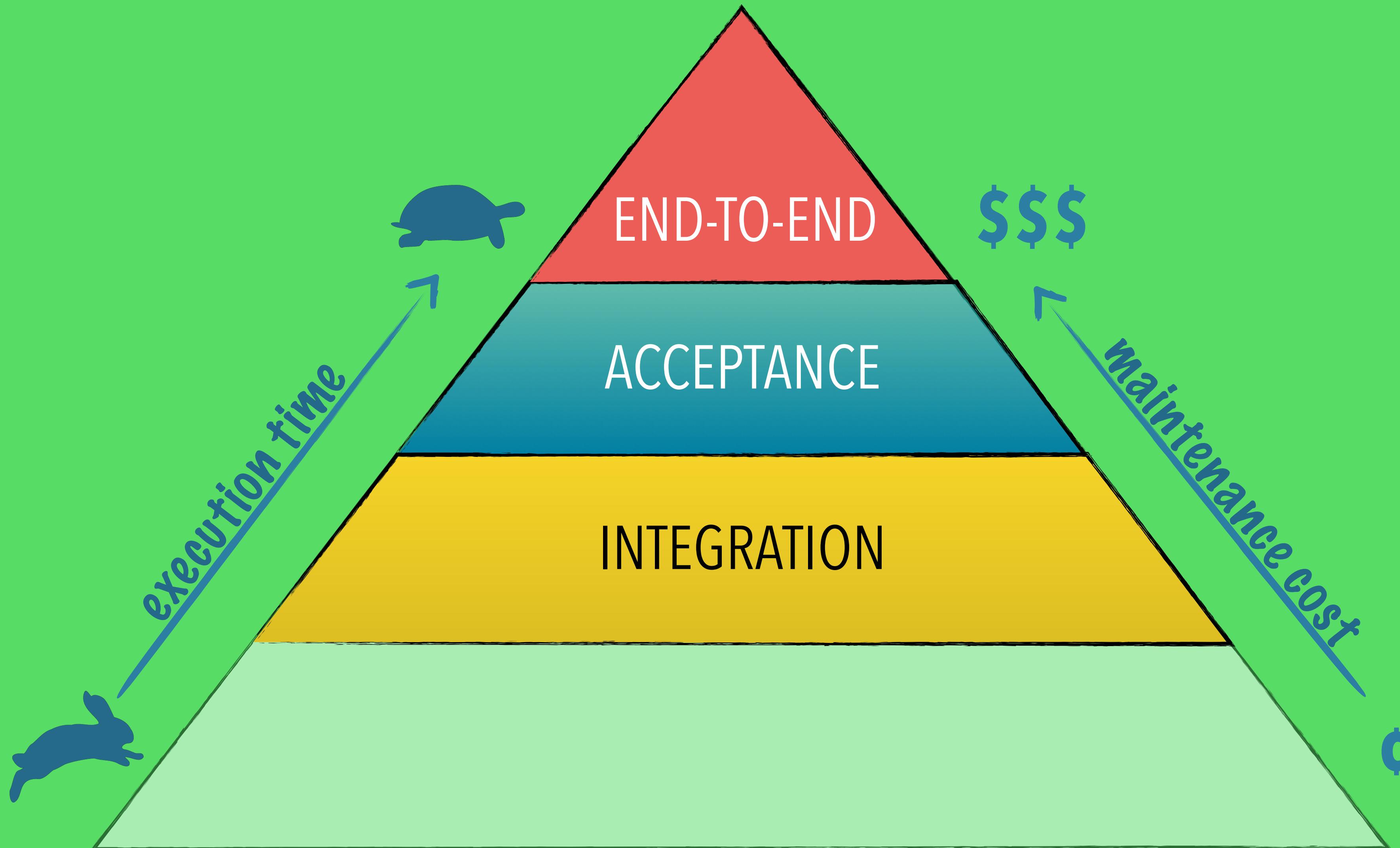
MOVE CODE INTO CLASS

```
1 <?php
2 class TemplateNew {
3     public function execute() {
4         $oConfig = new Config();
5         $configurationIdChecker = new ConfigurationIdChecker();
6
7         /**
8          * @deprecated $_REQUEST['template_format']. Use $_REQUEST['format']
9          * TODO see WEDS-609
10         */
11        $templateFormatParameter = isset($_REQUEST['format']) ? $_REQUEST['format'] : $_REQUEST['template_format'];
12        /**
13          * @deprecated $_REQUEST['template_design']. Use $_REQUEST['design']
14          * TODO see WEDS-609
15         */
16        $templateDesignParameter = isset($_REQUEST['design']) ? $_REQUEST['design'] : $_REQUEST['template_design'];
17        /**
18          * @deprecated $_REQUEST['template_color']. Use $_REQUEST['color']
19          * TODO see WEDS-609
20         */
21        $templateColorParameter = isset($_REQUEST['color']) ? $_REQUEST['color'] : $_REQUEST['template_color'];
22
23        $basePath = substr($oConfig->getBasePath(), 0, -1); // remove ending slash
24        $configurationRoot = $oConfig->getConfigByPath('path/configurations');
25        $templateRoot = ''; // setted up in line 382 (template switch)
26        $sFopConfigRelative = $oConfig->getConfigByPath('path/fop/config');
27        $sFopConfigAbsolute = $basePath . '/' . $sFopConfigRelative;
28        $usedDieCut = (isset($_REQUEST['diecut']) && !empty($_REQUEST['diecut']) && 'D53' == $_REQUEST['diecut'])
29                    ? $_REQUEST['diecut'] : '';
30        $configurationID = (isset($_REQUEST['configurationID'])) ? $_REQUEST['configurationID'] : null;
```

**INTRODUCE
DEPENDENCY
INJECTION**

```
1 <?php
2 class TemplateNew {
3     /** @var TemplateNewConfig */
4     private $config;
5     /** @var IDML */
6     private $idmlParser;
7     /** @var TemplateNewRequest */
8     private $request;
9
10    /**
11     * @param TemplateNewConfig $config
12     * @param IDML $idmlParser
13     * @param TemplateNewRequest $request
14     */
15    public function __construct(TemplateNewConfig $config, IDML $idmlParser, TemplateNewRequest $request) {
16        $this->config = $config;
17        $this->idmlParser = $idmlParser;
18        $this->request = $request;
19    }
20
21    public function execute() {
22        $configurationIdChecker = new ConfigurationIdChecker();
23
24        $templateFormatParameter = $this->request->getFormat();
25        $templateDesignParameter = $this->request->getDesign();
26        $templateColorParameter = $this->request->getColor();
27
28        $basePath = substr($this->config->getBasePath(), 0, -1); // remove ending slash
29        $configurationRoot = $this->config->getConfigByPath('path/configurations');
30        $templateRoot = ''; // setted up in line 382 (template switch)
31        $sFopConfigRelative = $this->config->getConfigByPath('path/fop/config');
```

do we write the right software?



do we write the software right?

**USE TESTS TO
WRITE NEW
CODE**

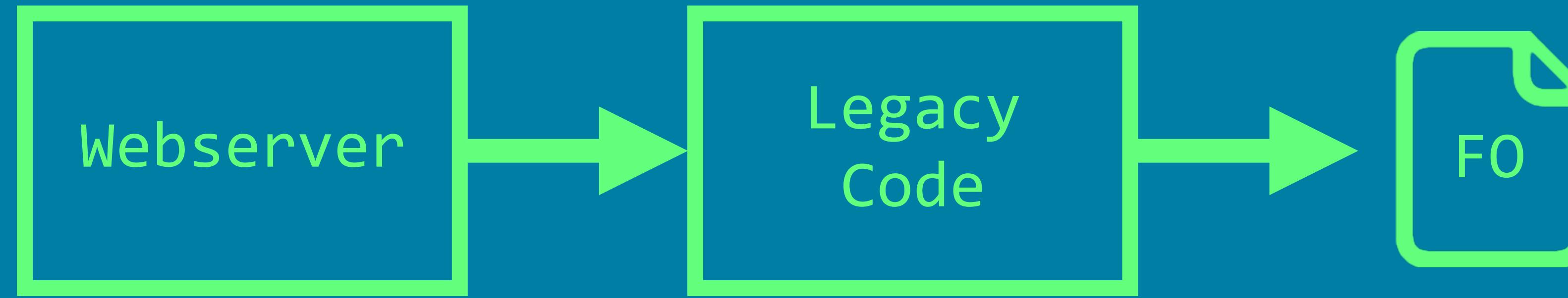
CODE COVERAGE REPORT

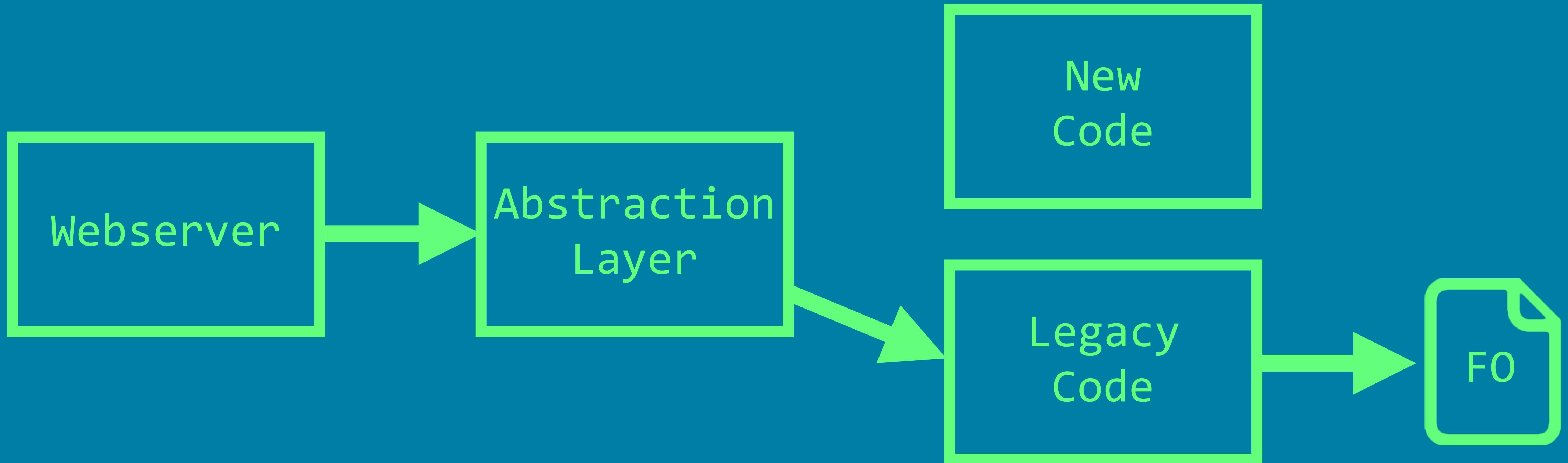
file:///Users/sebastian/projects/kartenmacherei/content/build/coverage/Content/

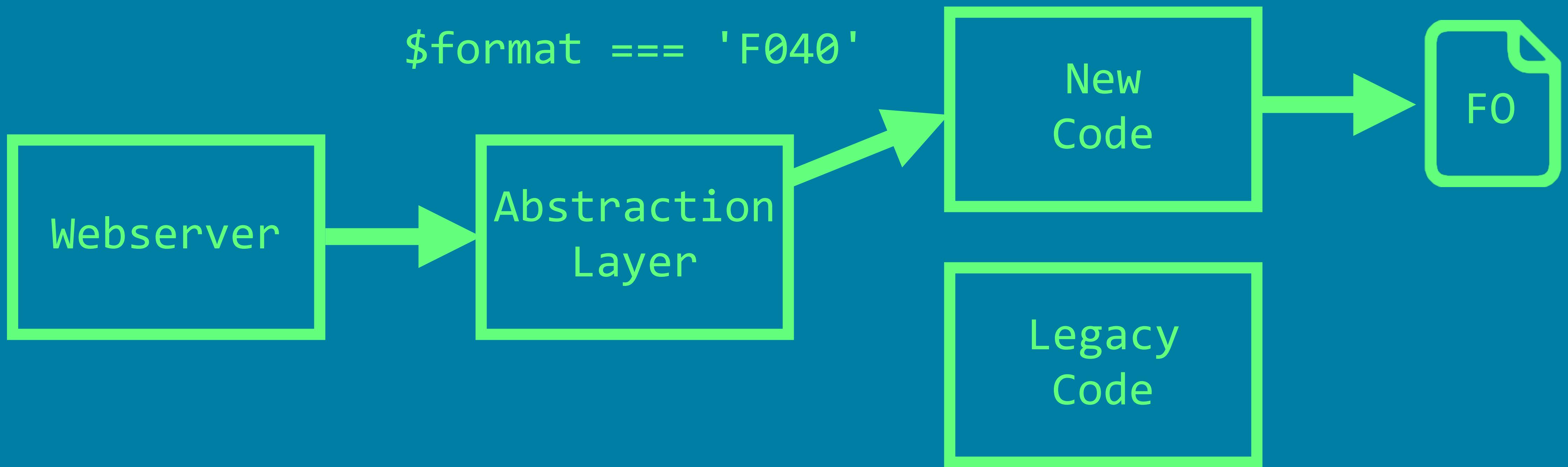
Code Coverage										
	Classes and Traits			Functions and Methods				Lines		
Total	0.00%	0 / 1	<div style="width: 37.50%;"> </div>	37.50%	6 / 16	CRAP	<div style="width: 43.82%;"> </div>	43.82%	957 / 2184	
\replaceContentInFile			<div style="width: 0.00%;"> </div>	0.00%	0 / 1	0	<div style="width: 0.00%;"> </div>	0.00%	0 / 23	
\xml2array			<div style="width: 0.00%;"> </div>	0.00%	0 / 1	0	<div style="width: 0.00%;"> </div>	0.00%	0 / 4	
\calcFactors			<div style="width: 0.00%;"> </div>	0.00%	0 / 1	0	<div style="width: 18.15%;"> </div>	18.15%	45 / 248	
\convert			<div style="width: 100.00%;"> </div>	100.00%	1 / 1	0	<div style="width: 100.00%;"> </div>	100.00%	2 / 2	
\execOutput			<div style="width: 100.00%;"> </div>	100.00%	1 / 1	0	<div style="width: 100.00%;"> </div>	100.00%	5 / 5	
\error			<div style="width: 0.00%;"> </div>	0.00%	0 / 1	0	<div style="width: 0.00%;"> </div>	0.00%	0 / 4	
\redirectTo			<div style="width: 0.00%;"> </div>	0.00%	0 / 1	0	<div style="width: 0.00%;"> </div>	0.00%	0 / 4	
TemplateNew	0.00%	0 / 1	<div style="width: 37.50%;"> </div>	37.50%	6 / 16	15740.35	<div style="width: 47.78%;"> </div>	47.78%	905 / 1894	
__construct			<div style="width: 100.00%;"> </div>	100.00%	1 / 1	1	<div style="width: 100.00%;"> </div>	100.00%	9 / 9	
execute			<div style="width: 0.00%;"> </div>	0.00%	0 / 1	13251.89	<div style="width: 48.52%;"> </div>	48.52%	884 / 1822	
anonymous function			<div style="width: 0.00%;"> </div>	0.00%	0 / 1	5.15	<div style="width: 7.69%;"> </div>	7.69%	1 / 13	
logFinalDebugData			<div style="width: 0.00%;"> </div>	0.00%	0 / 1	12	<div style="width: 0.00%;"> </div>	0.00%	0 / 26	
registerExceptionHandler			<div style="width: 100.00%;"> </div>	100.00%	1 / 1	2	<div style="width: 100.00%;"> </div>	100.00%	3 / 3	
isInSinglePagePdfGroups			<div style="width: 0.00%;"> </div>	0.00%	0 / 1	2	<div style="width: 0.00%;"> </div>	0.00%	0 / 1	
isMultiPagePdfGroup			<div style="width: 100.00%;"> </div>	100.00%	1 / 1	1	<div style="width: 100.00%;"> </div>	100.00%	1 / 1	
isCsvAndStaticContentGroup			<div style="width: 0.00%;"> </div>	0.00%	0 / 1	2	<div style="width: 0.00%;"> </div>	0.00%	0 / 1	
isOneSpreadedTableCard			<div style="width: 0.00%;"> </div>	0.00%	0 / 1	2	<div style="width: 0.00%;"> </div>	0.00%	0 / 1	
isCardInCover			<div style="width: 100.00%;"> </div>	100.00%	1 / 1	1	<div style="width: 100.00%;"> </div>	100.00%	1 / 1	
hasGlueSpots			<div style="width: 100.00%;"> </div>	100.00%	1 / 1	1	<div style="width: 100.00%;"> </div>	100.00%	1 / 1	
isPhotoCalenderFormat			<div style="width: 100.00%;"> </div>	100.00%	1 / 1	1	<div style="width: 100.00%;"> </div>	100.00%	1 / 1	
isInTableCardGroups			<div style="width: 0.00%;"> </div>	0.00%	0 / 1	2	<div style="width: 0.00%;"> </div>	0.00%	0 / 1	
getNumberOfPagesForMultipagePdf			<div style="width: 0.00%;"> </div>	0.00%	0 / 1	6	<div style="width: 0.00%;"> </div>	0.00%	0 / 3	

```
file:///Users/sebastian/projects/kartenmacherei/content/build/coverage/Content/
```

```
274     $isCalenderFormat = false;
275
276     /*
277      * check is card a photocalender
278      */
279     if ($this->isPhotoCalenderFormat($requestParameters->getFormat())) {
280         $isCalenderFormat = true;
281         $rawPath = $this->config->getConfigByPath('path/blankPdfCalendar');
282         $lastCalenderPagePath = str_replace('%TEMPLATE%', $requestParameters->getFormat(), $rawPath);
283         $calendarPdfFilename = 'calendar.pdf';
284     }
285
286     /*
287      * generate calendar automatically. For this we are gonna calculate a lot of placeholders used by notes made in
288      * Indesign
289      *
290      * @see https://kartenmacherei.atlassian.net/browse/KAR-1734
291      */
292     if (($isInitialRendering || $isTranslationTool) && $isCalenderFormat) {
293         require_once __DIR__ . '/../../web/kam/modules/admin/Calendar.php';
294         $calendar = new Calendar($locale, $requestParameters->getStartDate());
295         $calendarValues = $calendar->getCalendarValues($requestParameters->isDebugEnabled());
296     }
297
298     $this->logger->debug('1: ' . (time() - $startTime) . 's <br>' . PHP_EOL);
299
300     if ($redirectUrl->isUseable()) {
301         echo sprintf('<meta http-equiv="refresh" content="%s; URL=%s">', $lockTimeInSeconds, $redirectUrl->asString());
302     }
303
304     $configurationPathWeb = '/configurations/' . substr($configurationID, 0, 2) . '/' . substr(
305             $configurationID,
306             2,
307             2
308         ) . '/' . $configurationID . '/';
309
310     $lacquer = false;
```







**BRANCH BY
ABSTRACTION**

SUMMARY

**MEANINGFUL TESTS
ARE A VALUABLE
SOURCE OF
DOCUMENTATION**

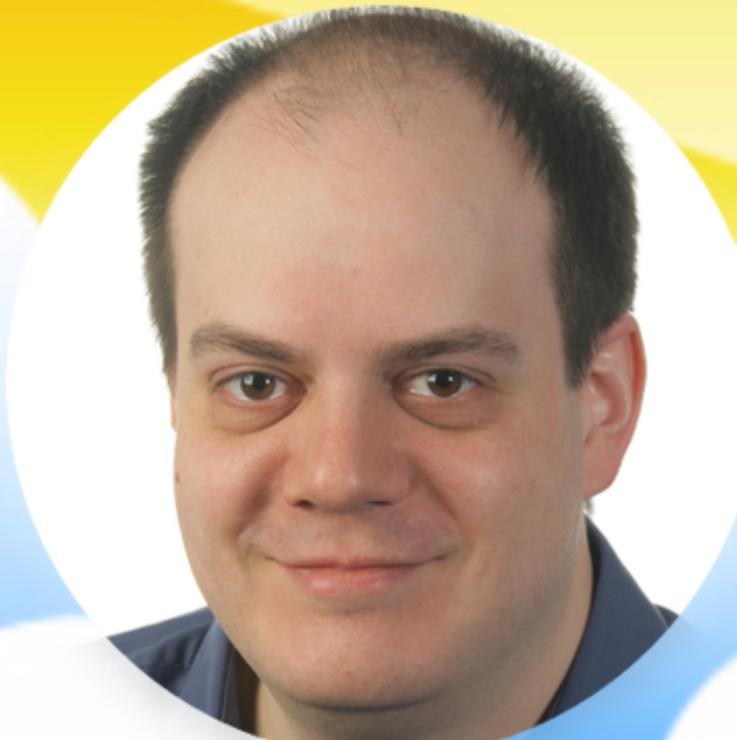
**INTEGRATION TESTS
ALLOW YOU
TO WRITE NEW,
CLEAN CODE**

USE
BRANCH BY ABSTRACTION
TO GRADUALLY MOVE
FUNCTIONALITY
TO NEW CODE

**WRITE
UNIT TESTS
FOR NEW CODE**

**TESTING
CLEAN CODE
IS EASY**

THANK YOU!



 @s_bergmann
 @thePHPcc



 @belanur
 @inside_kam