Coding with Confidence

Adding TDD to Your Toolset

image: un-sharp @ flickr

why test?

reduce defects

verify expectations

why test first?

"The metric I, and others I know, have used to judge unit testing is: *does it find bugs?*"

Bill Moorier

kinda.

"When you write unit tests ... you scrutinize, you think, and often you prevent problems without even encountering a test failure."

Michael Feathers

Test-Driven Development

Test-Driven Design

1. Design the API

2. Make it work

3. Make it clean

↑ cohesion

↓ coupling

“As long as you don't change that component's external interfaces, you can be comfortable that you won't cause problems that ripple through the entire system”

The Pragmatic Programmer

avoid complicated solutions to simple problems

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regressions

mess

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"Consider a building with a few broken windows. If the windows are not repaired, the tendency is for vandals to break more windows"

The Atlantic Monthly (1982)

fear

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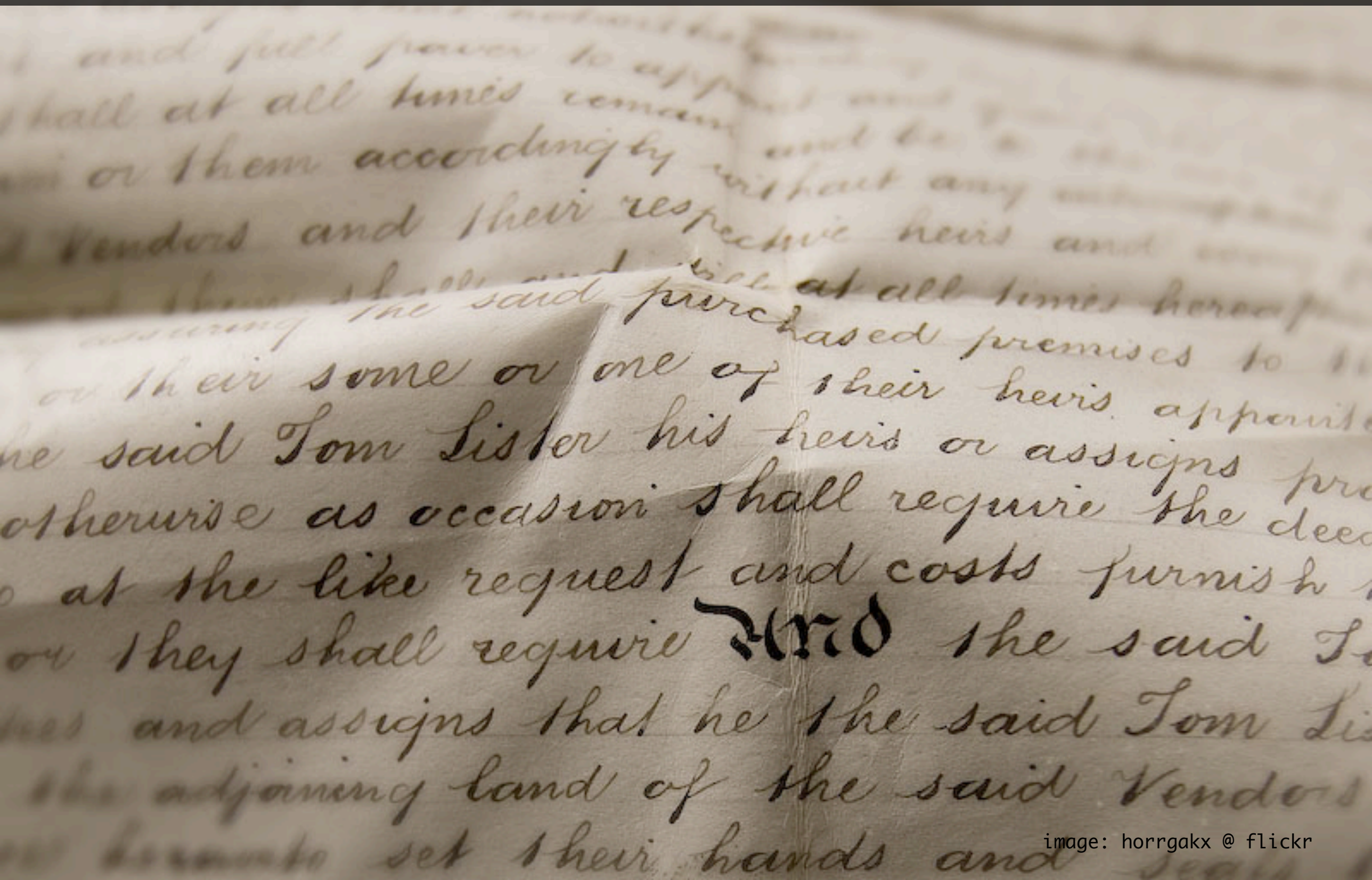
“Test-driven development is a way of managing fear during programming”

Kent Beck

documentation



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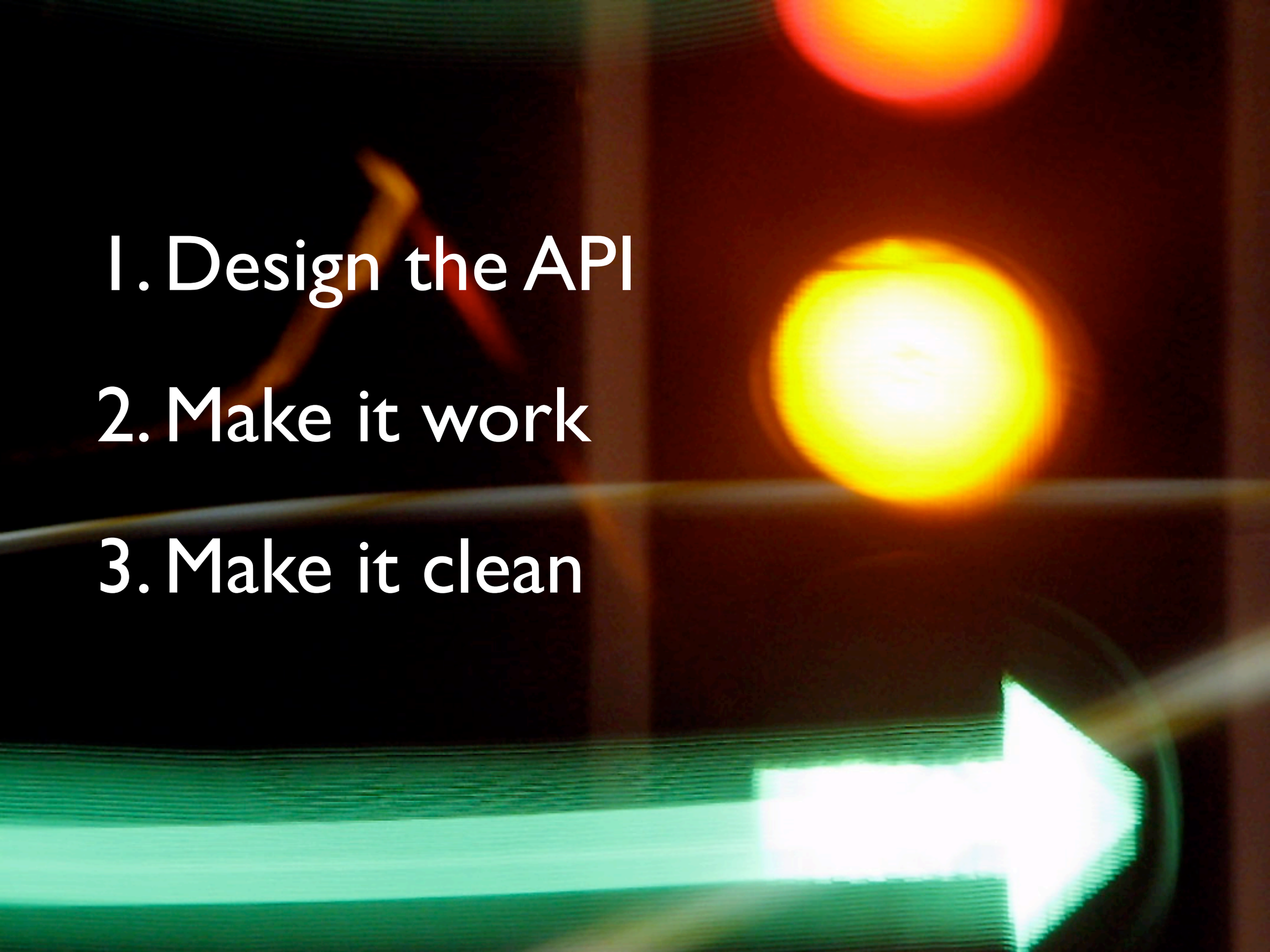
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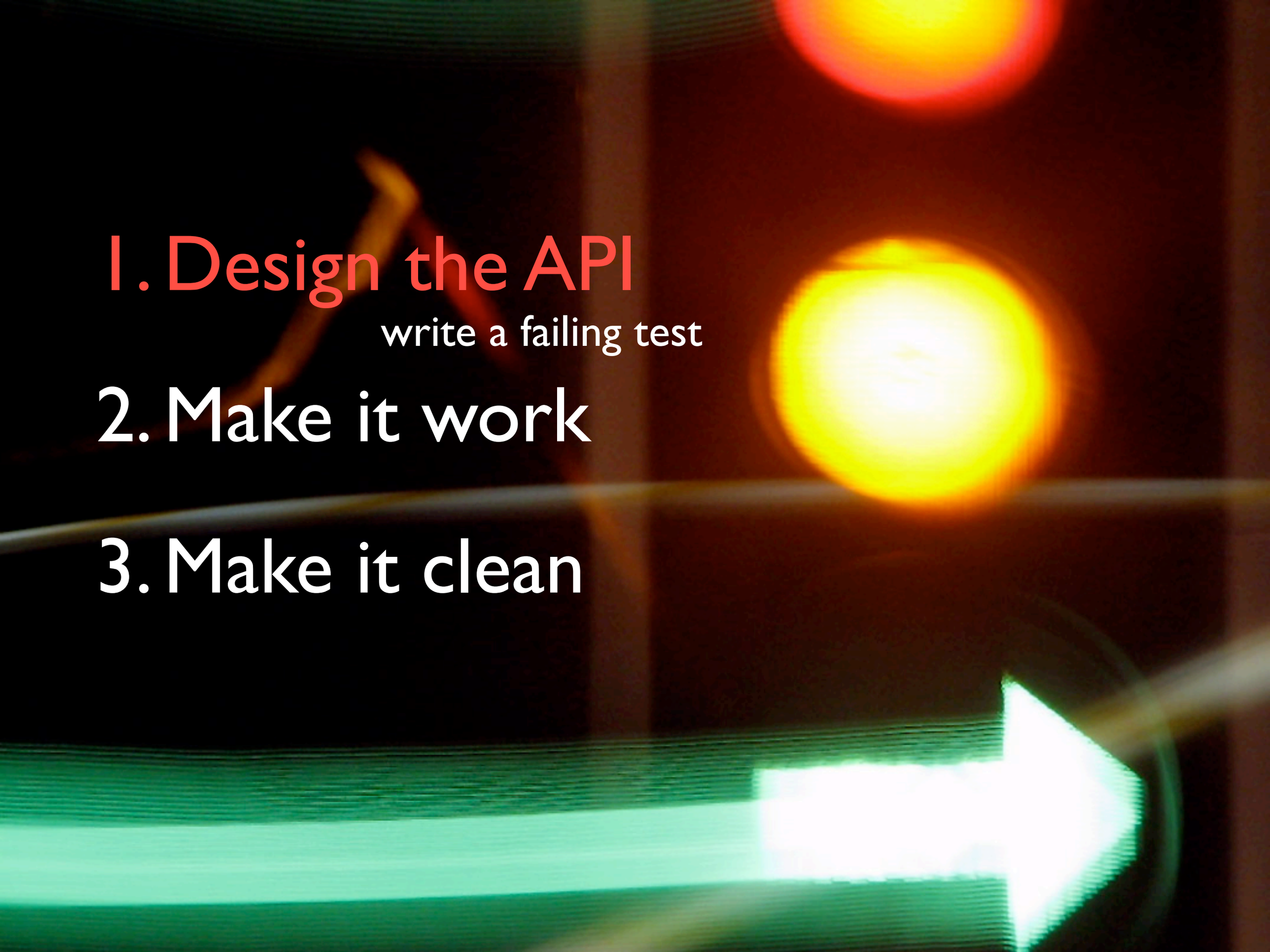
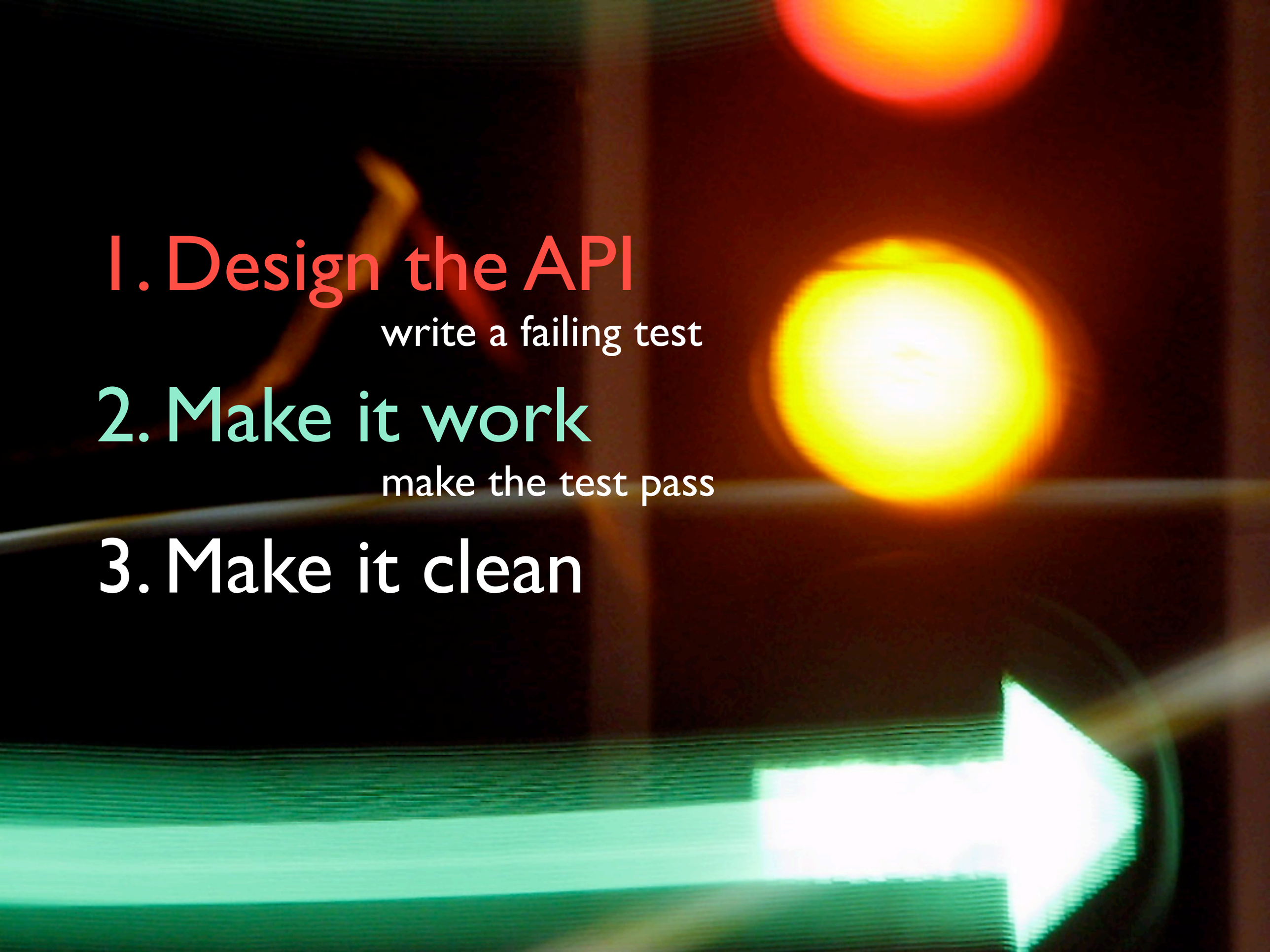
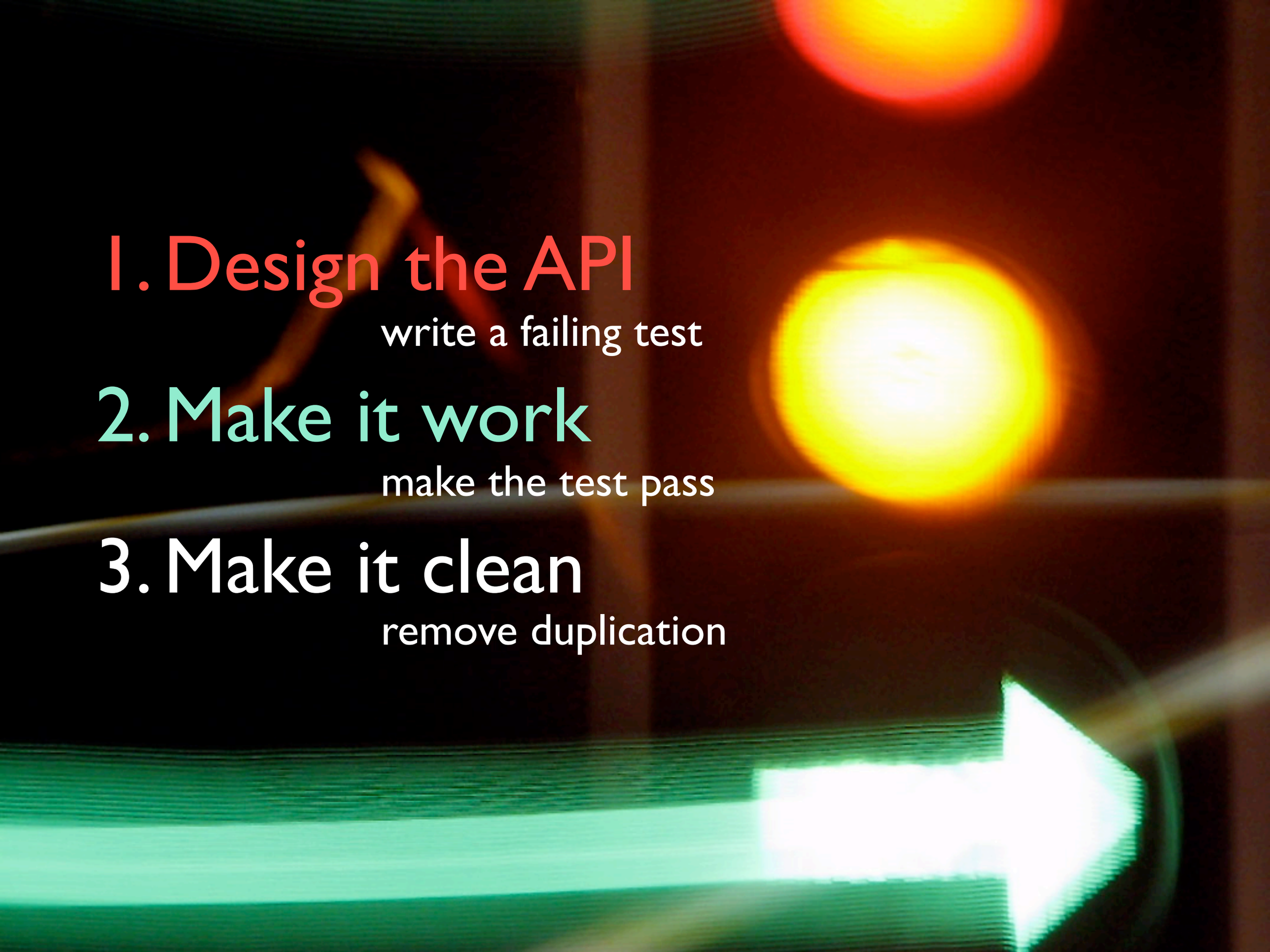

1. Design the API
write a failing test
2. Make it work
3. Make it clean

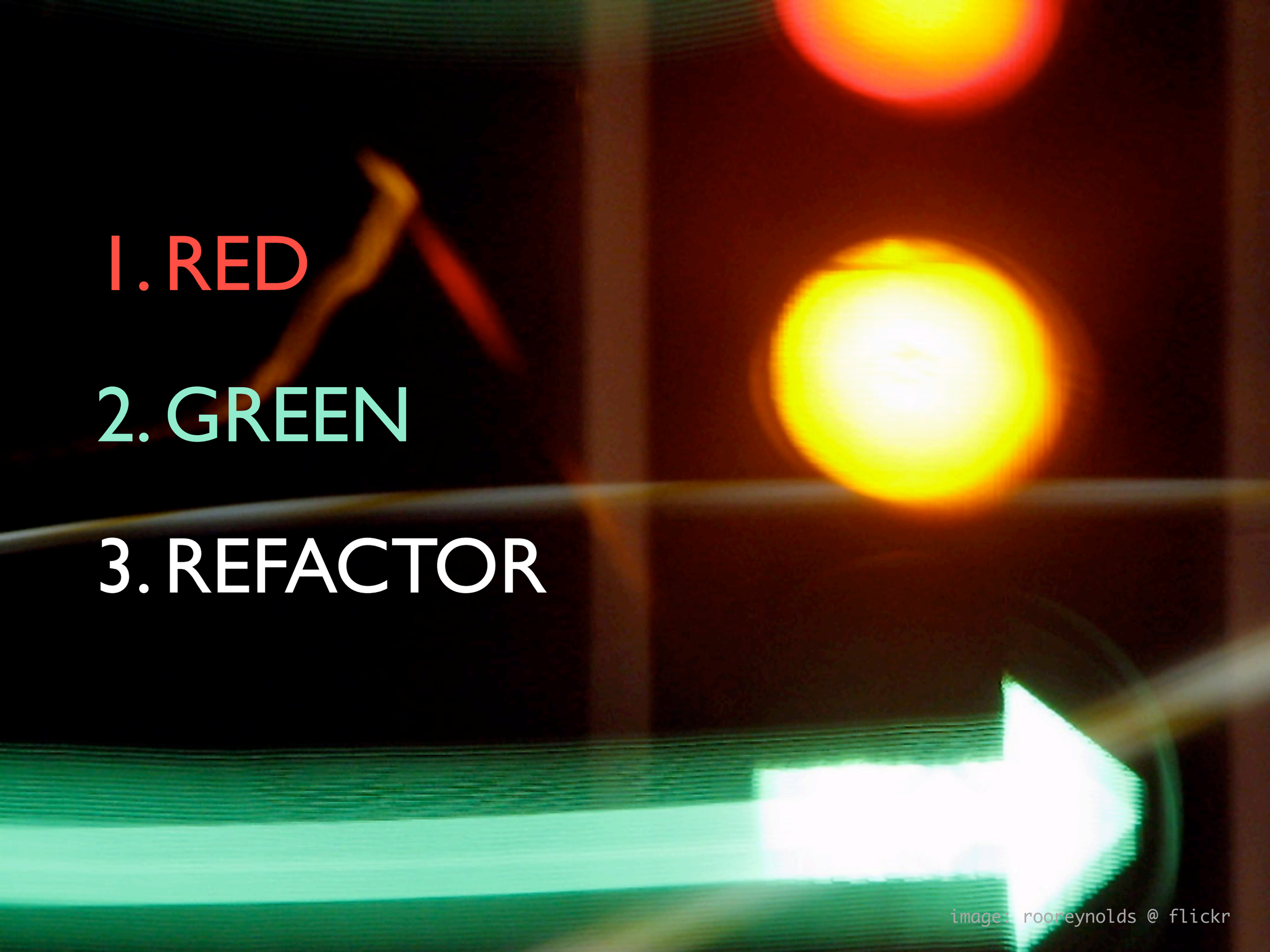

1. Design the API
write a failing test
2. Make it work
make the test pass
3. Make it clean


1. Design the API
write a failing test
2. Make it work
make the test pass
3. Make it clean
remove duplication

1. RED

2. GREEN

3. REFACTOR



```ruby
class FabricatedTest < Test::Unit::TestCase

  def setup
    File.touch('tempfile')
  end

  def teardown
    FileUtils.rm('tempfile')
  end

  def test_should_know_the_number_of_items
    bag = Bag.new(3)
    assert_equal 3, bag.item_count
  end

end
```

anatomy

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Test case

anatomy

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Test case

Test setup
(run every test)

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Test case

Test setup
(run every test)

Test teardown
(run every test)

Test

Assertion

anatomy

image: mediageek @ flickr

Pitfalls

```ruby
class User
  attr_accessor :name
end

class UserTest < Test::Unit::TestCase

  def test_should_be_able_to_set_name
    user = User.new
    user.name = 'Patrick'
    assert_equal 'Patrick', user.name
  end

end
```

testing language features

```ruby
class UserTest < Test::Unit::TestCase

  def test_valid
    user = User.new

    assert !user.valid?
    assert user.errors.on(:name)
    assert user.errors.on(:username)
  end

end
```

multiple assertions

```ruby
class Line

  def initialize(content)
    @content = content
  end

  private
  def extract(pattern)
    @content.match(pattern)[1]
  end

end
```

```ruby
class LineTest < Test::Unit::TestCase

  def test_extract_should_return_captured_value
    line = Line.new('This is content')
    assert_equal 'is', line.send(:extract, /(is)/)
  end

end
```

testing private methods

```ruby
class UserTest < Test::Unit::TestCase

  def setup
    @content = '{"user_name":"reagent","user_id":"12345"}'
  end

  def test_should_be_able_to_extract_the_username
    user = User.new(@content)
    assert_equal 'reagent', user.username
  end

  def test_should_be_able_to_extract_the_user_id
    user = User.new(@content)
    assert_equal '12345', user.id
  end

end
```

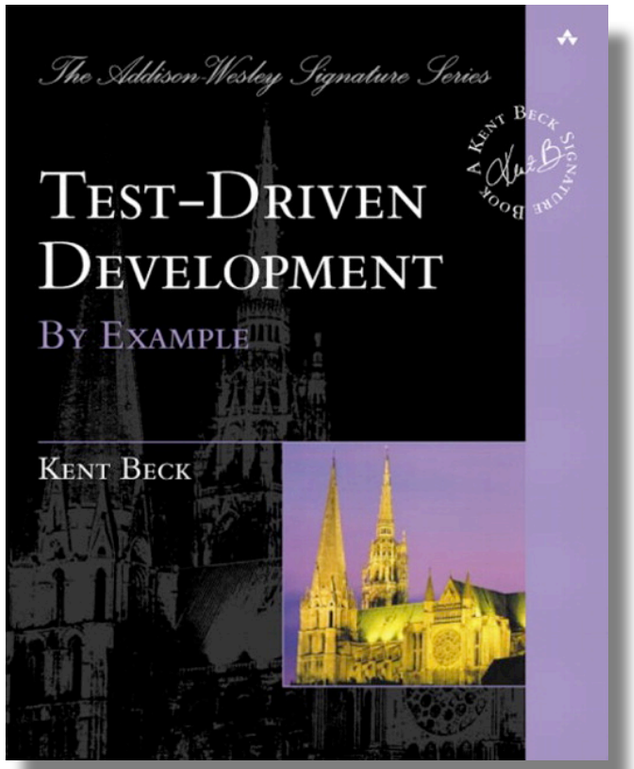
lack of context

```ruby
class User
  attr_writer :name

  def name
    @name.strip
  end
end

class UserTest < Test::Unit::TestCase

  def test_should_remove_whitespace_from_name
    user = User.new
    user.name = ' Patrick '

    assert_equal 'Patrick', user.name
  end

end
```

testing the happy path

TDD is a tool

TDD is not a religion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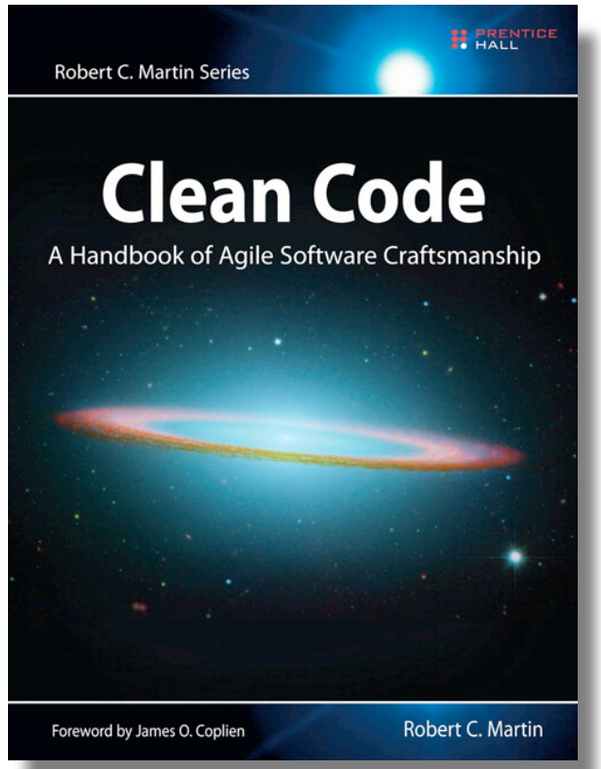
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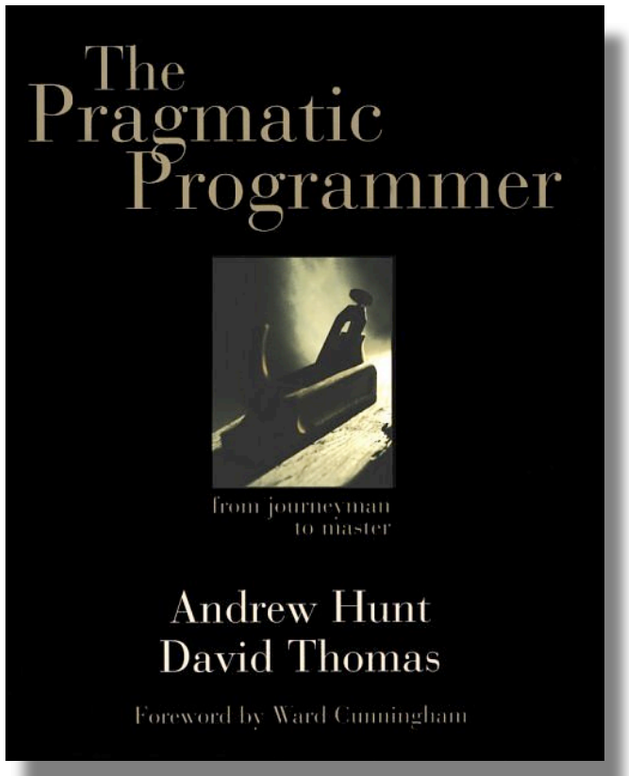
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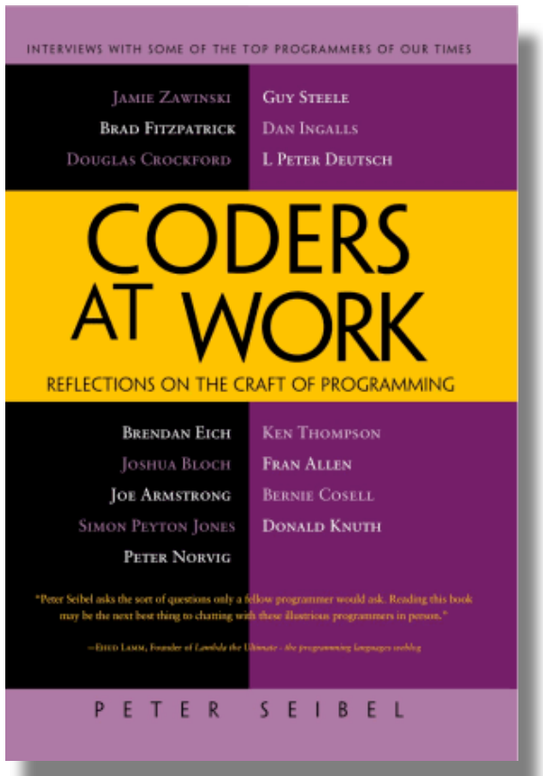
Andrew Hunt
David Thomas
Foreword by Ward Cunningham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