An Introduction of Interator Pattern with Ruby

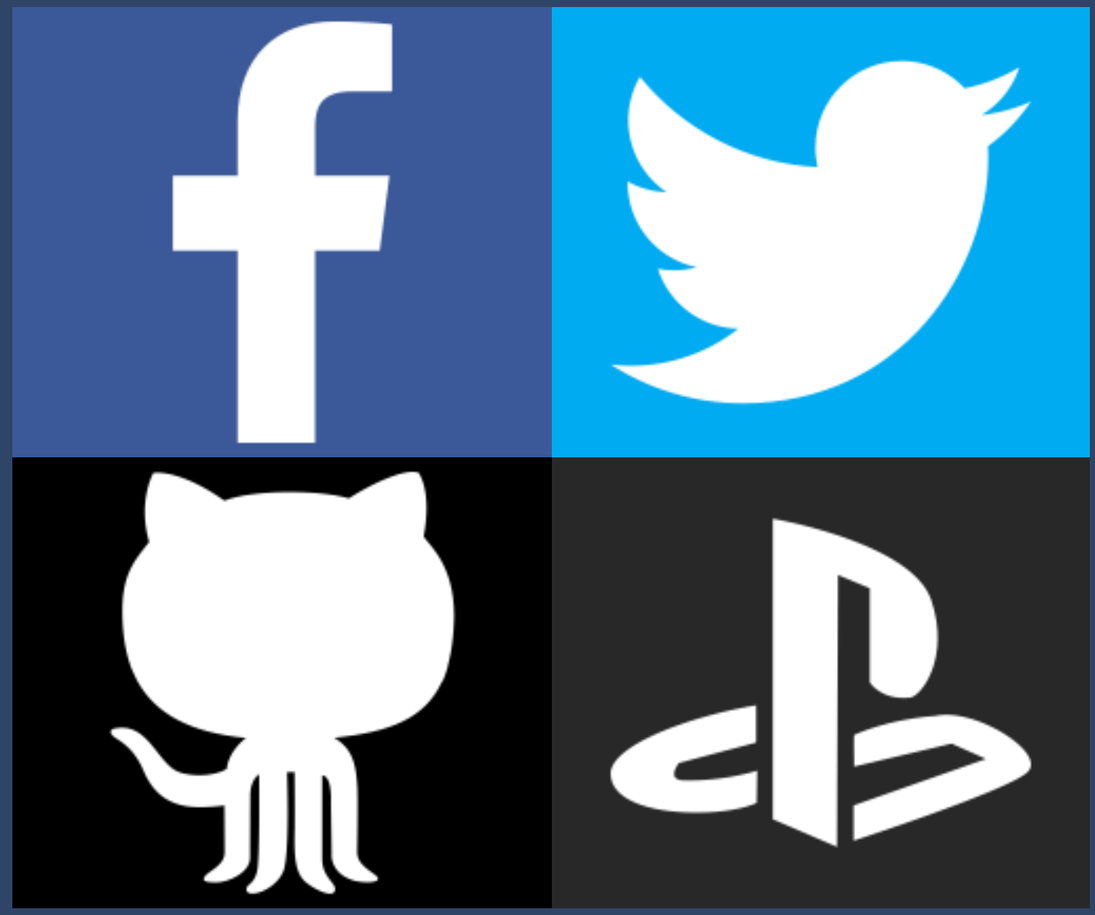
@ ConFoo Montreal 2018-03-07
by Jian Weihang

Bonjour!

簡煒航

Jian Weihang

@tonytonyjan



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Gulf of Thailand
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Laccadive Sea
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DR Congo
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Botswana
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Gulf of Aden
Arabian Sea
Laccadive Sea
Bay of Bengal
Gulf of Thailand
East China Sea
Philippine Sea
Banda Sea
Indian Ocean

```
$ gem install taiwan
```

Tech Leader

ROUND **TAIWAN** ROUND

Ruby Developer
since 2010

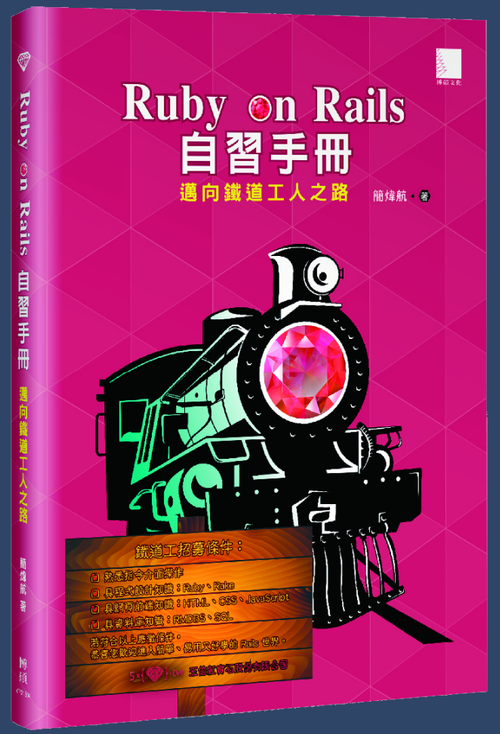
Maintainer
of exif and jaro_winkler

```
└─λ gem query -red exif jaro_winkler | grep --color -E '^exif|^jaro_winkler|Jian Weihang|$'
exif (2.2.0)
    Author: Jian Weihang
    Homepage: https://github.com/tonytonyjan/exif

    Ruby EXIF reader written in C extension.
jaro_winkler (1.5.0, 1.4.0)
    Platforms:
        1.4.0: java
        1.5.0: ruby
    Author: Jian Weihang
    Homepage: https://github.com/tonytonyjan/jaro_winkler

    An implementation of Jaro-Winkler distance algorithm written \ in C
    extension which supports any kind of string encoding.
```

Published a book in 2015



An Introduction of Interator Pattern in Ruby

Outline


RAILS

How to Help Controllers Lose Weight?

The Controller Is a Translator

Good Practice

```
class PostsController < ApplicationController
  def create
    @post = Post.create(post_params)
    redirect_to @post
  rescue
    render :new
  end
end
```

Bad Practice

```
class PostsController < ApplicationController
  def create
    @post = Post.create(post_params)
    @post.send_notification
    redirect_to @post
  rescue
    render :new
  end
end
```

Fat Models and Skinny Controllers

Single Responsibility Principle

```ruby
# Rails 5.1.5
class Post < ActiveRecord::Base
end

Post.new.public_methods.size # => 404
```

```ruby
class AlmightyGod < ActiveRecord::Base
  # hundreds of methods
end
```

```ruby
class Cart < ApplicationModel
  def add_product(product)
  end
end
```

vs.

```ruby
class Product < ApplicationModel
  def add_to_cart(cart)
  end
end
```

```ruby
class Course
  def add_student(student)
  end
end
```

vs.

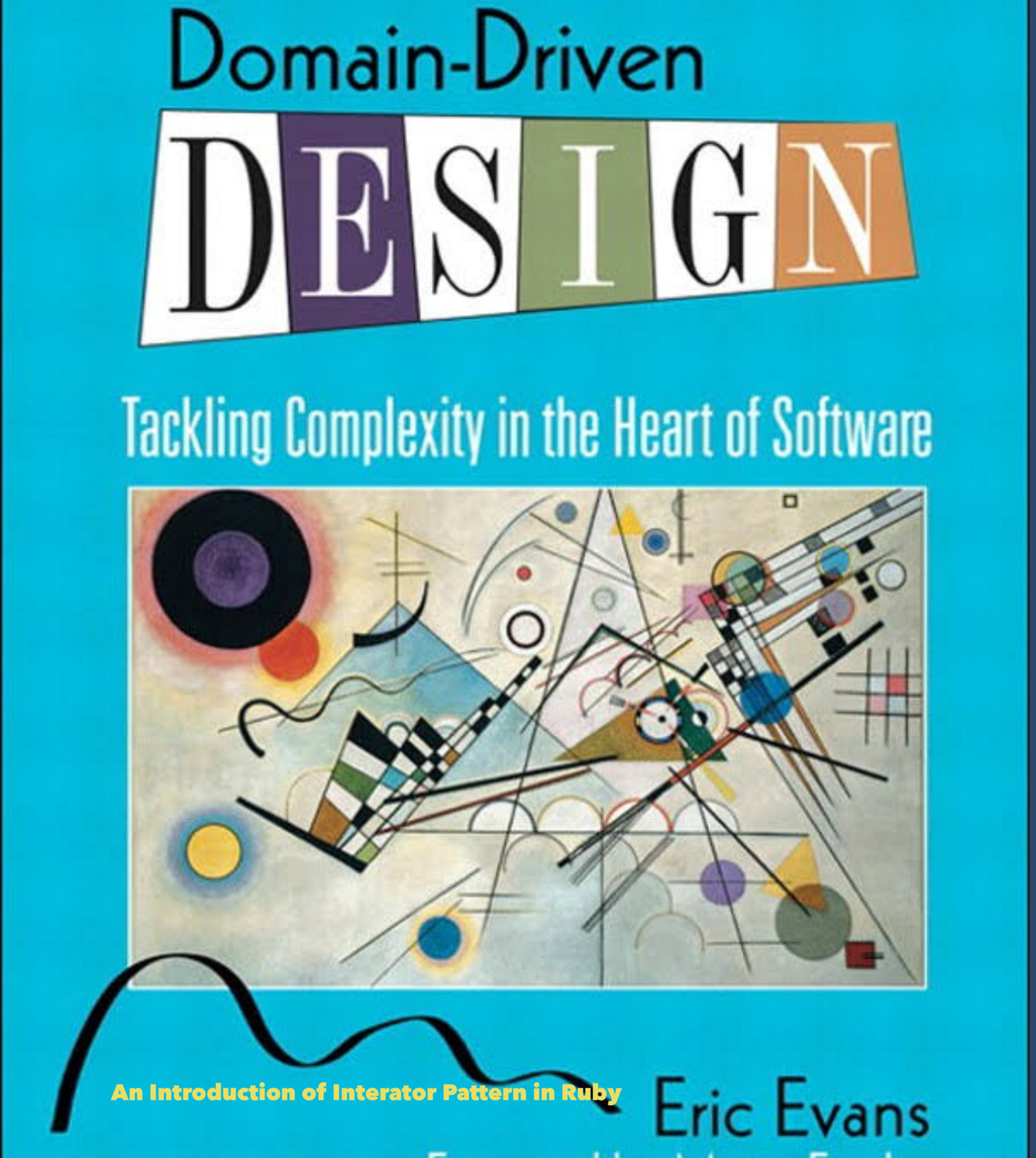
```ruby
class Student
  def join_course(course)
  end
end
```

Model is neither a class nor object.

Model is a layer.

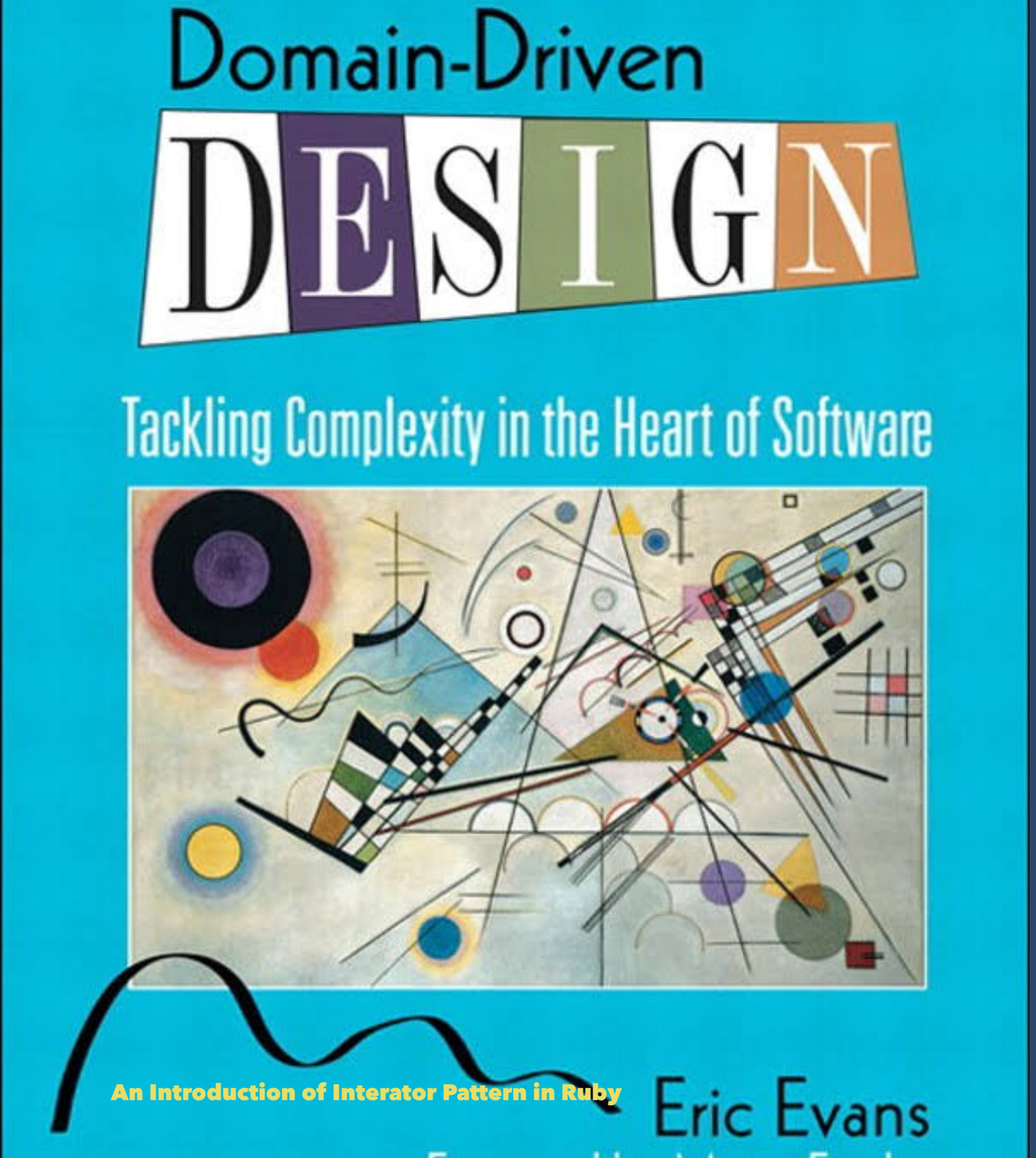
Separation of Concerns

- Presentation Layer
  - views
  - controllers
- Model Layer
  - models



Model Layer

- Domain Objects
- Storage Abstractions
- Services



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- Storage Abstractions
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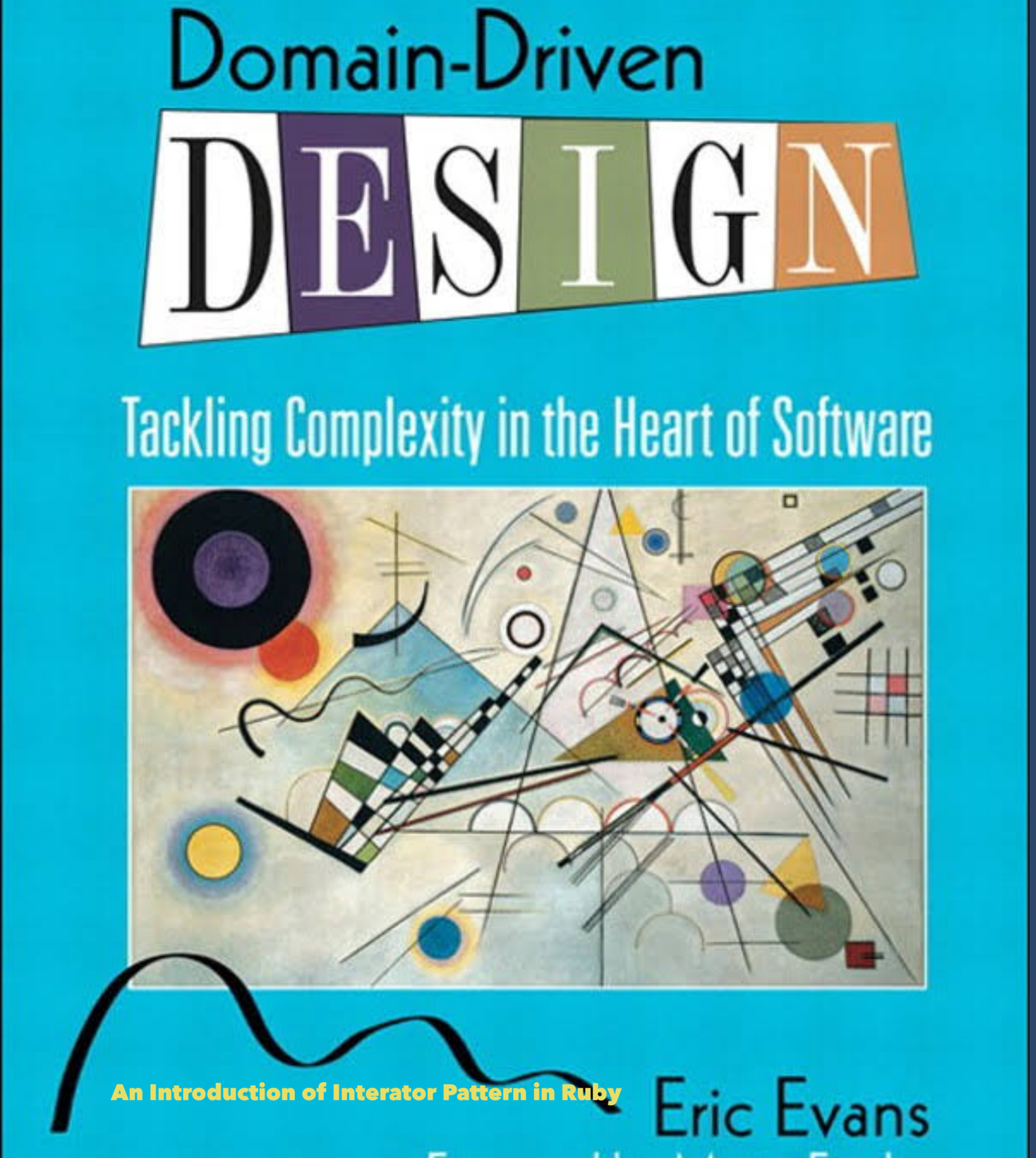
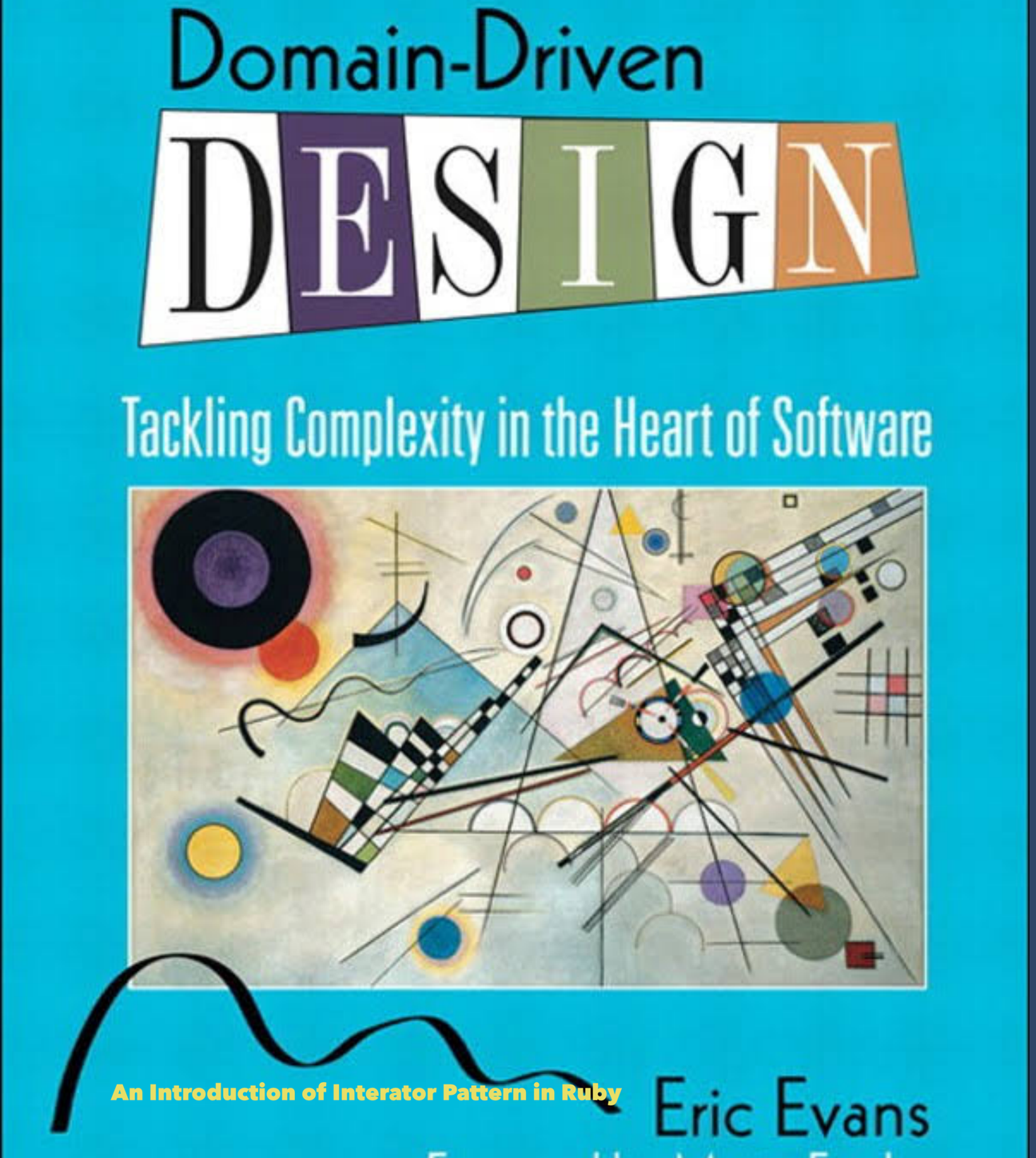


Model Layer

- Domain Objects
- **Storage Abstractions**
- Services



Model Layer

- Domain Objects
- Storage Abstractions
- **Services**

Model Layer

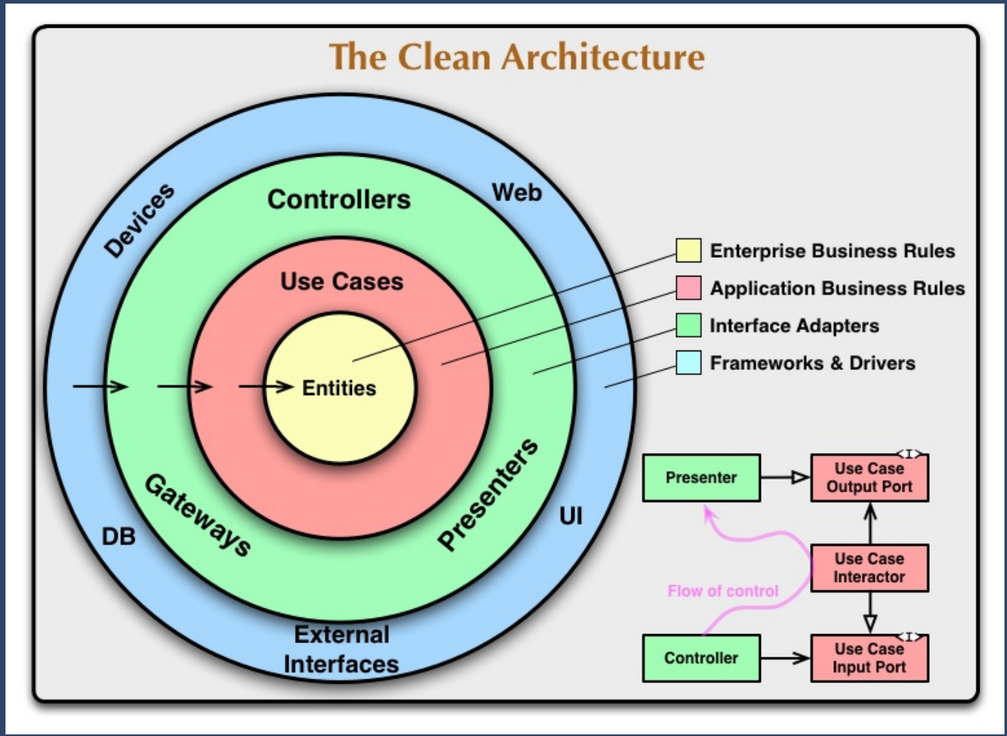
- ActiveRecord::Base
  - Domain Objects
  - Storage Abstractions
- Services
  - ???

What about the Implementation 

Service Object

- a.k.a.
  - Interactor
  - Use Case

Clean Architecture



https://goo.gl/ihgHGB

Minimal Implementation

```ruby
# app/{services|interactors|use_cases}
class AddToCart
  attr_reader :errors

  def initialize(cart, product)
    @cart, @product = cart, product
    @errors = []
  end

  def perform
    # manipulate @cart, @product and @errors ...
  end

  def success?; @errors.empty? end
end
```

Usage

```
class CartController < ApplicationController
  def add_to_cart
    product = Product.find(params[:product_id])
    add_to_cart = AddToCart.new(current_cart, product)
    add_to_cart.perform
    if add_to_cart.successs?
      # ...
    else
      # ...
    end
  end
end
```

Advantages

- Skinny Controller
- Easier to Trace Code
- Easier to Write Test

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```ruby
class AddToCart
  def initialize(cart, product)
    @cart, @product = cart, product
  end

  def perform
    @cart.line_items.push(@product)
  end
end
```

gem 'rspec-mocks'

```
describe AddToCart
  it 'works' do
    line_items = double('line_items')
    cart = double('cart', line_items: line_items)
    product = double('product')

    expect(line_items).to receive(:push).once { product }
    # expect cart.line_items.push(product)

    add_to_cart = AddToCart.new(cart, product)
    add_to_cart.perform
  end
end
```

Abstraction

```
class Interactor
  attr_reader :errors

  def self.perform(*args)
    new(*args).tap { |interactor| interactor.perform }
  end

  def perform
    raise NotImplementedError
  end

  def success?
    @errors.empty?
  end
end
```

Usage

```
class AddToCart < Interactor
  def initialize(cart, product)
    @cart = cart
    @product = product
  end

  def perform
    # logic here.
  end
end
```

Usage

```
class CartController < ApplicationController
  def add_to_cart
    product = Product.find(params[:product_id])
    add_to_cart = AddToCart.perform(current_cart, product)
    if add_to_cart.successs?
      # ...
    else
      # ...
    end
  end
end
```

Third-party Gems

gem "mutations"

```ruby
class UserSignup < Mutations::Command
  required do
    string :email, matches: EMAIL_REGEX
    string :name
  end

  optional do
    boolean :newsletter_subscribe
  end

  def execute
    # logic
  end
end

UserSignup.run(params[:user])
```

gem "interactor"

```
class AuthenticateUser
  include Interactor

  def call
    if user = User.authenticate(context.email, context.password)
      context.user = user
      context.token = user.secret_token
    else
      context.fail!(message: "authenticate_user.failure")
    end
  end
end

AuthenticateUser.call(params)
```

FYI

name	stars	forks	issues	closed
mutation	1,127	69	54	79%
interactor	1,919	110	76	87%

gem "interactor2"

```ruby
class AddToCart < Interactor2
  attr_reader :line_item, :cart # should be any attribute you want to expose

  def initialize(product, cart)
    @cart = cart
    @line_item = cart.line_items.new(product: product)
  end

  def perform
    unless @line_item.save
      fail! 'oops'
    end
  end
end
```

gem "interactor2"

```ruby
class AddToCart < Interactor2
  include ActiveModel::Validations
  attr_reader :line_item, :cart # should be any attribute you want to expose

  validates :product, :cart, presence: true

  def initialize(product, cart)
    @cart = cart
    @line_item = cart.line_items.new(product: product)
  end

  def perform
    unless @line_item.save
      fail! 'oops'
    end
  end
end
```

https://github.com/tonytonyjan/interactor2/

Conclusion

- Consistent Interface
- Self-explaining
- Context Encapsulation
- Decoupling your domain from your framework

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- Consistent Interface
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Thanks for Your Listening

@tonytonyjan

References

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- https://www.wikiwand.com/en/Domain-driven_design
- https://github.com/cypriss/mutations
- https://github.com/collectiveidea/interactor
- https://github.com/tonytonyjan/interactor2

Q&A

Entity-Boundary-Interactor