

# **Improve perceived performance of your rails application with minimum effort**

by Anton Katunin

# **Disclosure**

**Information in this presentation was  
stolen from other presentations**

**This talk is about**

**Complexity  
and  
Performance**

# Outline

- Complexity
- Composition
- Perceived performance
- Proposed solution





**Complexity**

**Web pages become more complex**



in (4) Welcome! | LinkedIn x

https://www.linkedin.com/ Press | to search linkedin.com

Home Profile Network Jobs Interests Business Services Premium account

Search for people, jobs, companies, and more... Advanced

Mean bid for Ruby: \$133k - Looking for a new job? Companies tell you the comp before you interview.

Keep in Touch

Dynamic ad

Custom settings

Share box

Trending, recommended articles

News feed powered by a relevance engine

Who viewed your profile

Who viewed your updates

Dynamic updates

Dynamic promos

Typeahead search

Get Connected

Notifications

People You May Know

Multiple dynamic ads

Recent activity

Premium account

Dynamic ad

Dynamic updates

Who viewed your profile

Who viewed your updates

Who's Viewed Your Profile

Who's Viewed Your Updates

56 Your profile has been viewed by 56 people in the past day.

10 You have shown up in search results 10 times in the past day.

125 1

Views Likes

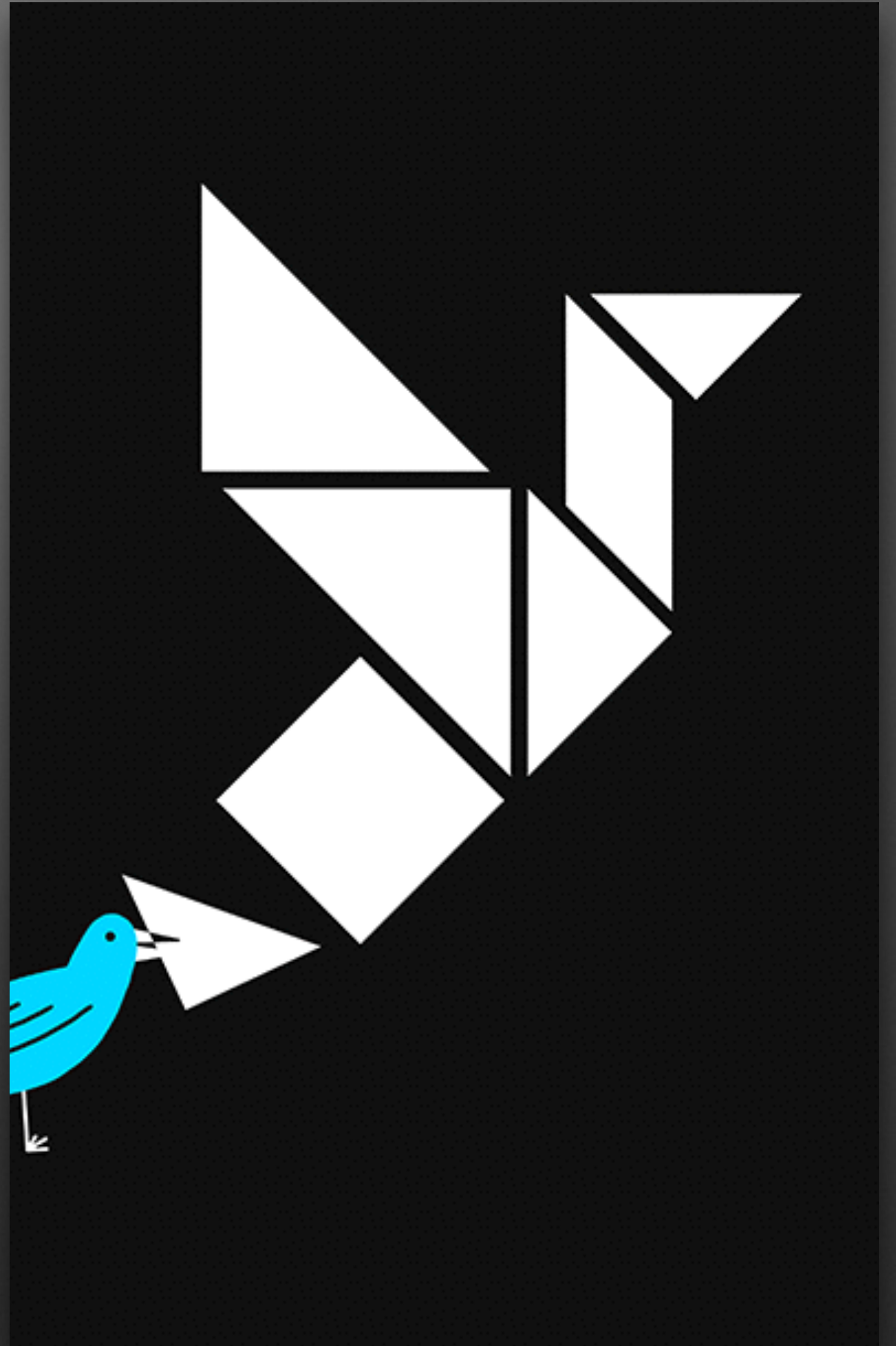


**Putting everything in one controller  
is unmaintainable**

**so what to do?**



# Abstraction and Composition



**“Abstraction is the ability to engage with a concept while safely ignoring some of its details”**

***–Steve McConnell, Code Complete***



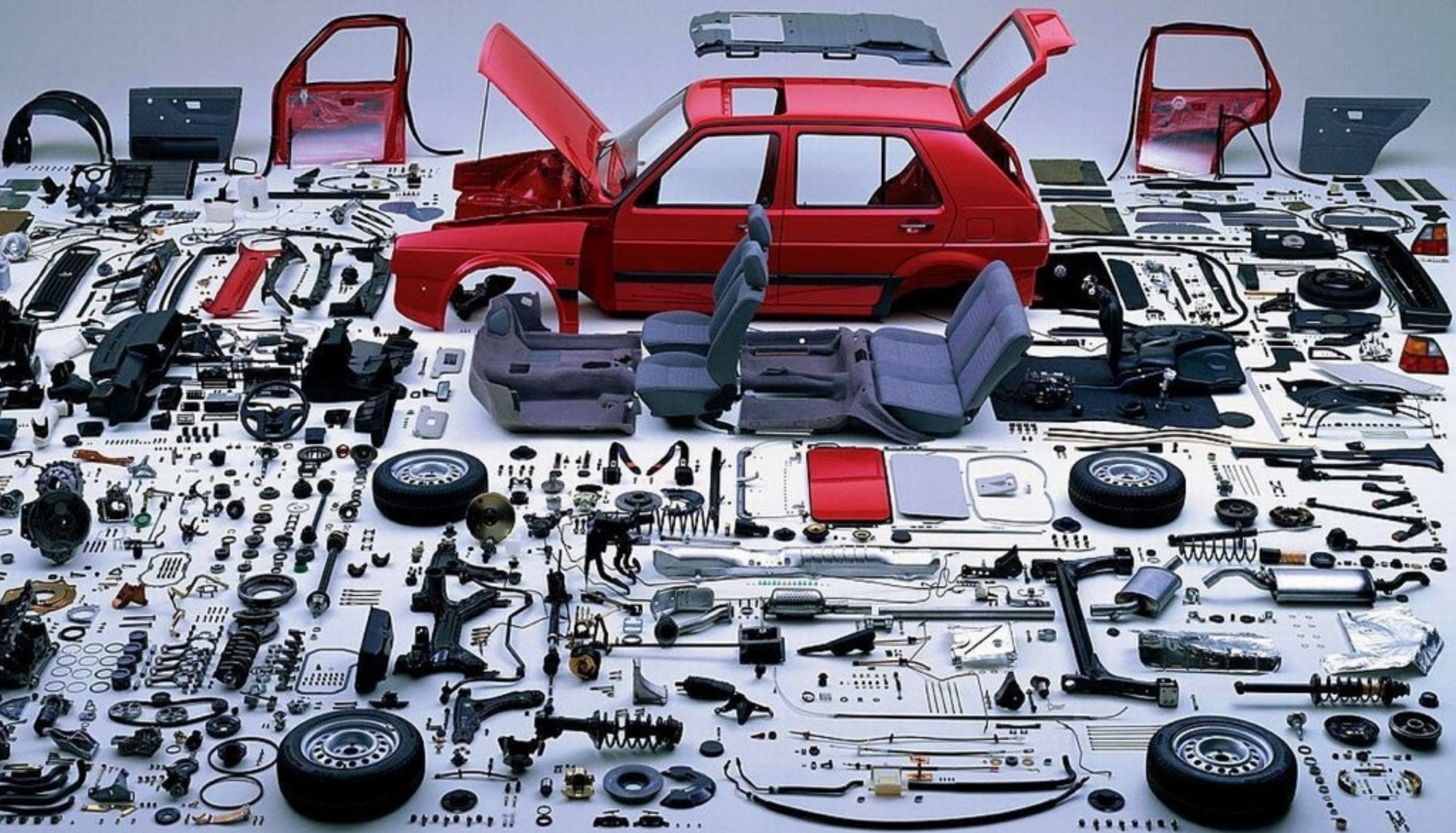
# Abstraction





**Composition: assemble complex behaviour by  
combining simple behaviour**







**Goal is to focus on one concept ignoring the rest  
and assemble it into more complex behaviour**





Search Facebook



Anton

Home



Anton Katunin

Edit Profile

#### FAVORITES

News Feed

Messages

Events

Photos

Alafuzov

Saved

Sale Groups

#### PAGES

Prometheans

Like Pages

Pages Feed

Create Page

Create Ad

#### GROUPS

Secret Ligretto

Australian BMW Mi...

Russians in Australia

ClubMINI VIC

Discover Groups

Create Group

#### APPS

Live Video

Games

On This Day

Suggest Edits

Games Feed

#### FRIENDS

News Feed

Travel

Science & Tech

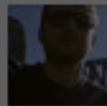
Funny

Sports



Photo/Video

Photo Album



What's on your mind?

Only Me

Post

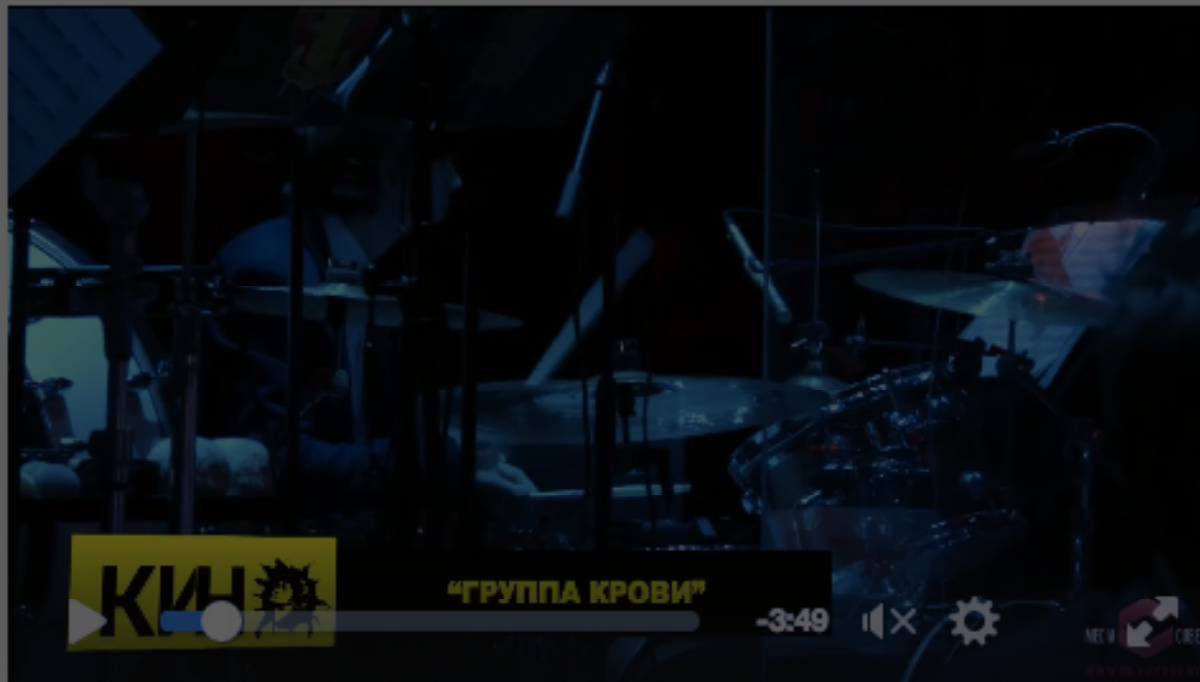


Good morning, Anton!



Yuri Chiorny Ablim shared Фактрум's video to the group:  
Russians in Australia.

August 29 at 9:44pm ·



241,340 Views

Фактрум

March 10 ·

Like Page

VMCI Motorkhana on Sunday

Denial Whirlpool's birthday is today

#### TRENDING

Teddy Bridgewater

17K people talking about this

Chris Brown

730K people talking about this

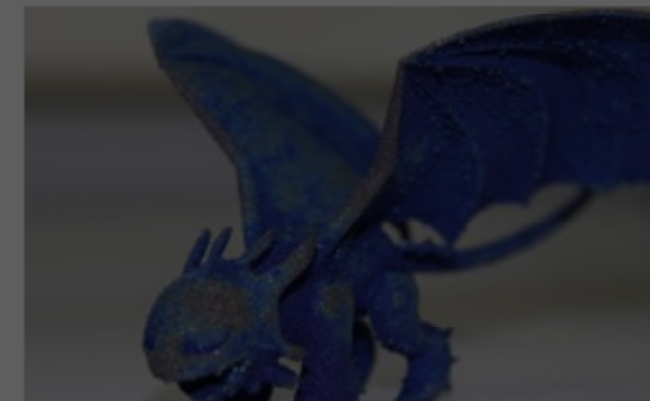
Pauline Hanson

17K people talking about this

See More

#### SUGGESTED PAGES

See All



The Australia and New Zealand Centre for...

Biotechnology · 43 likes

Andrew likes this.

Like Page

English (US) · 中文(简体) · 한국어 · Español ·  
Português (Brasil)



Privacy · Terms · Advertising · Ad Choices · Cookies ·  
More

Facebook © 2016

# **Meantime at Facebook**

## **6 years ago**



facebook Search Home Profile Account

**Changhao Jiang**  
Edit My Profile

**News Feed**

- Messages
- Events
- Photos
- Friends (10)
- Applications
- Games
- Ads and Pages
- Groups (5)
- Local Picks
- More

**Friends Online**

- Christopher Palow
- Eugene Letuchy
- Hong Yan
- Makinde Adeagbo
- Mark Zuckerberg
- Roger Erdong Chen
- Wayne Kao
- Ke Yang
- Venkat Venkataramani
- Xin Qi
- See All

**News Feed** Top News · Most Recent 213

What's on your mind?

**Paul Saab** it's out! <http://github.com/facebook/flashcache>  
facebook's flashcache at master - GitHub  
github.com  
content  
3 hours ago · Comment · Like · Share

Minghui Yang, Joydeep Sen Sarma, Boris Dimitrov and 18 others like this.  
View all 4 comments

**Mike Schroepfer** @Paul/Mohan you guys should whip up a quick note about it.  
about an hour ago

**Ben Maurer** - It'd be interesting to use ARC ([http://en.wikipedia.org/wiki/Adaptive\\_replacement\\_cache](http://en.wikipedia.org/wiki/Adaptive_replacement_cache)) to automatically tune the dirty threshold. The ARC concept would need to be extended a bit (since a missed read is a bit different than a missed opportunity for write coalescing)  
- Why did you choose FIFO as the policy for dealing with dirtying?  
about an hour ago

Write a comment...

**Steven Grimm**  
**Shanghai's Back on Top of the World - TIME**  
www.time.com  
For China's most dynamic, most cosmopolitan and sassiest city, this is a time to celebrate. After decades of hibernation following the founding of Mao Zedong's People's Republic in 1949, Shanghai is returning to its roost as a global center of commerce and culture.  
8 hours ago · Comment · Like · Share

**Facebook Engineering**  
**Cultural Learnings from Russia: Engineering Version**  
I recently attended the RIT++ developer conference in Moscow where I was asked to give a talk on engineering culture at

**Requests** See All

- 9 friend requests
- 1 friend suggestion
- 5 group invitations
- 21 other requests

**Sponsored** Create an Ad

**Try Facebook Ads** ×

Reach the exact audience you want with Facebook's customizable targeting. Click here to learn more about advertising on Facebook.

Like

**EVENTS** See All

- Qiaozhu Mei's birthday Today
- Jingshu Huang's birthday Monday
- Xiong Zhang's birthday Monday
- Julie Tung's birthday Tuesday

**Get Connected**

- Who's on Facebook? Find your friends
- Who's not on Facebook? Invite them now
- Who's here because of you? Track your invites
- Connect on the go Try Facebook Mobile

Chat (23)

BigPipe: Pipelining web pages for high performance



## Page load timeline

1. Initial request (link clicked): Brown in dashboard chart.

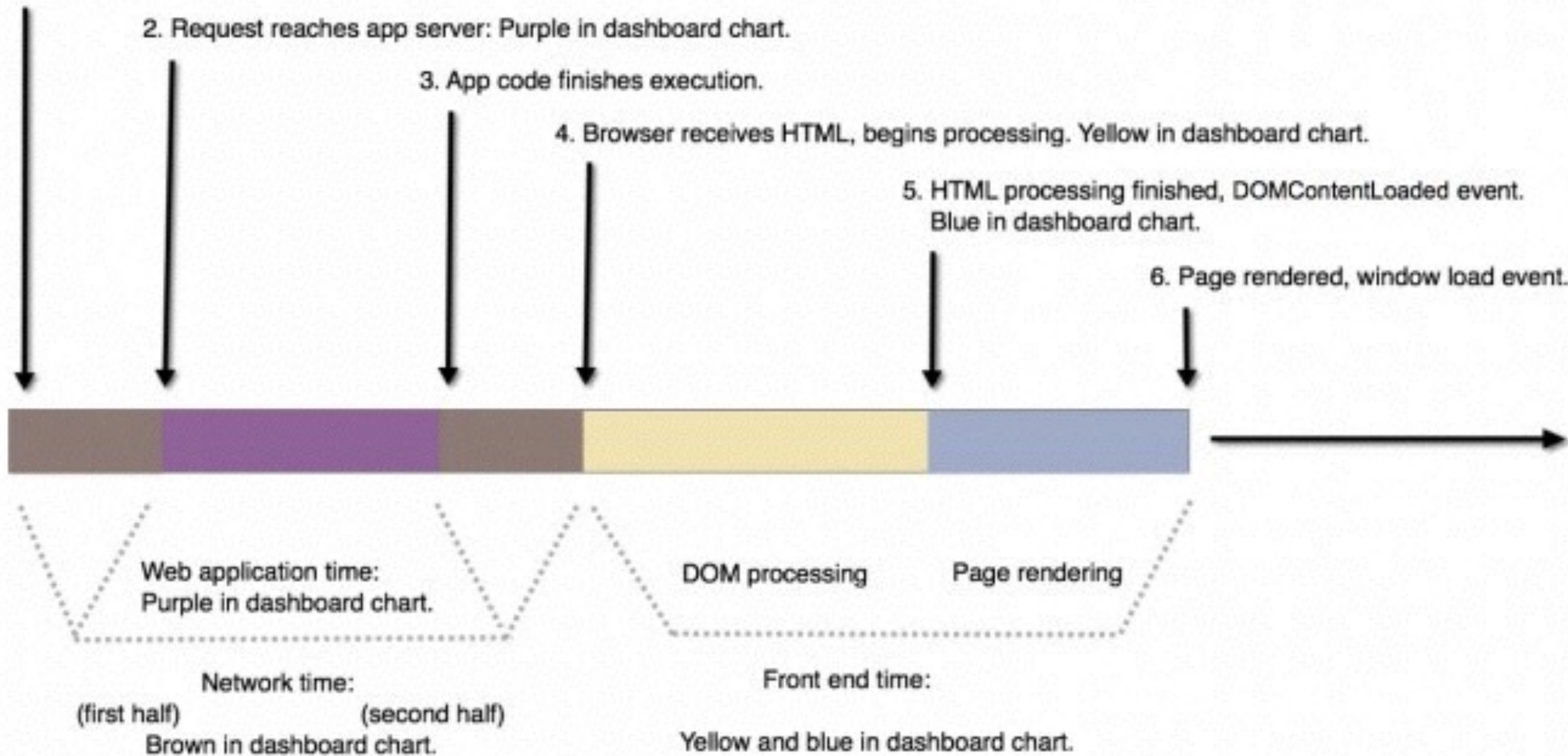
2. Request reaches app server: Purple in dashboard chart.

3. App code finishes execution.

4. Browser receives HTML, begins processing. Yellow in dashboard chart.

5. HTML processing finished, DOMContentLoaded event.  
Blue in dashboard chart.

6. Page rendered, window load event.



**The traditional model is very  
inefficient for modern web sites**

**What can we do?**





# **Go faster by going slower**

**Improve perceived performance**

**“Perceived performance refers to how quickly a software feature appears to perform its task.”**



**Performance is not just milliseconds, frames  
and megabytes. It's also how these  
milliseconds, frames, and megabytes translate  
to **how the user perceives the application****

**Perceived performance = f(  
Expected Performance,  
UX,  
Actual Performance  
)**



# Power of perception



**How to achieve that in Rails?**





**welcome  
pagelet\_rails  
gem**

**Do not reinvent the wheel,  
build on shoulders of giants**





Search Facebook



Anton

Home



Update Status

Add Photos/Video

Create Photo Album

What's on your mind?

pagelet

Post

pagelet

pagelet

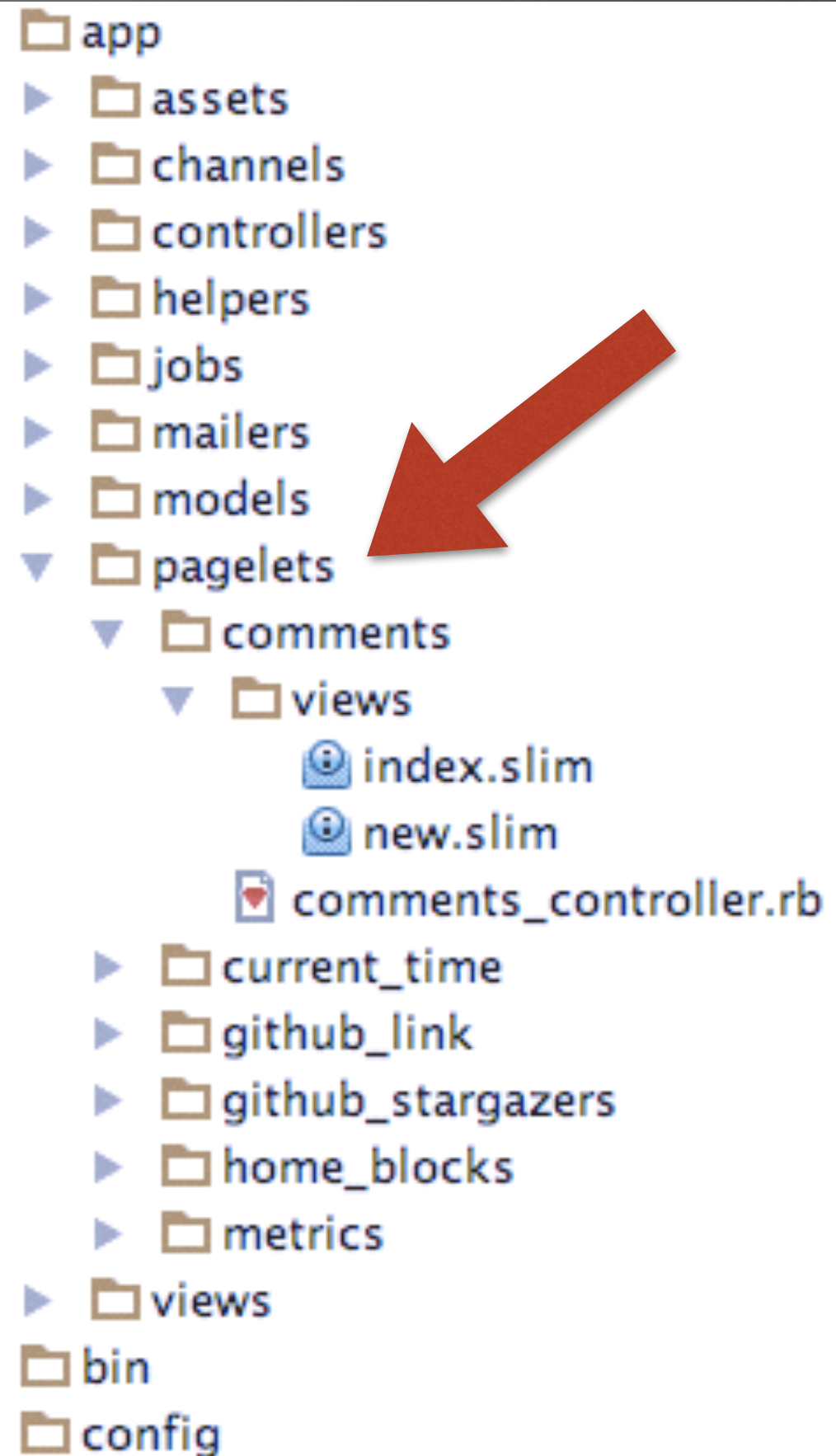
pagelet

pagelet

**Each pagelet as a separate page**

# Pagelet Structure

Controller + Route + Views





## Define Controller

```
class CurrentTime::CurrentTimeController < ApplicationController
  include PageletRails::Concerns::Controller

  pagelet_resource only: [:show]

  pagelet_options placeholder: {height: 131}

  def show
  end
end
```

## Use it in views

```
<%= pagelet :pagelets_current_time %>
```

**Abstraction into pagelets gives enormous power  
and flexibility**

# Rendering modes

- Inline
- Ajax
- Stream





# Streaming mode aka BigPipe

1. Render page with pagelet placeholders
2. Send data to browser
3. Keep connection open
4. Render pagelet
5. Send the rest to the browser  
(in the same connection)



# Remember Rails Streaming?

it is there since Rails 3.2





**Demo time**

**What are other goodies?**

# **HTTP Public cache**

**Use HTTP cache for parts of the page**



# Fragment cache

Cache internally

# **Batch Ajax requests**

**Optimise requests**

# **Customisable placeholders**

**Ask Facebook why that's important**



# **Progressive rendering**

**Render important content first**

# **Partial page updates**

**Don't refresh the page, only pagelet**

# **Super smart caching**

**Render through Ajax only when missing cache**



# **Delay render below the fold**

**Don't render what user won't see**

**More?**

# **Simplified development and testing**



**Minimum DSL or new syntax**


# Asset dependences


# Parallel rendering




**Even better with HTTP2**

**Did I mention reduced  
complexity of your code?**

 Update Status

 Add Photos/Video

 Create Photo Album

What's on your mind?

Post

# Abstraction and Composition



**Make your users happy  
today**







# Thank you

by Anton Katunin  
@antulik

- [https://github.com/antulik/pagelet\\_rails](https://github.com/antulik/pagelet_rails)
- <https://www.facebook.com/notes/facebook-engineering/bigpipe-pipelining-web-pages-for-high-performance/389414033919/>
- <https://engineering.linkedin.com/profile/engineering-new-linkedin-profile>
- <https://www.youtube.com/watch?v=4b1XLka0Ulw>
- <https://www.youtube.com/watch?v=7ubJzEi3HuA#t=489>
- <https://www.youtube.com/watch?v=bGYgFYG2Ccw>