

API-First Architecture Transformation at Etsy

Stefanie Schirmer
@linse

API-First Architecture Transformation at Etsy

Stefanie Schirmer
@linse

Whoever you are, find whatever you're into

[Search](#)

From the shop **BigStuffed**

Recently favorited



Handknitted lace shawl - rainbow...
KnittyStories **€69.00**



Glow in the dark scale mail neck...
Silmarilclothing **Sold**



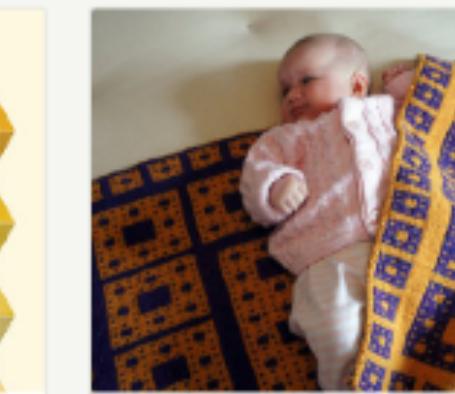
Miniature Crystal Terrarium Nec...
JasmineDragonStudio **Sold**



Raven Tshirt Grey Crow Bird Got...
celticfantasy **€22.65**



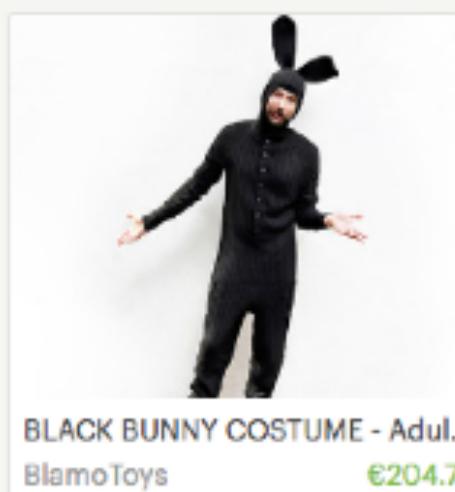
Hedron Geometric Art Print
LuckySkye **€13.59**



SIERPINSKI Double-Knitting Bab...
cooperativepress **€7.54**

[See more >](#)

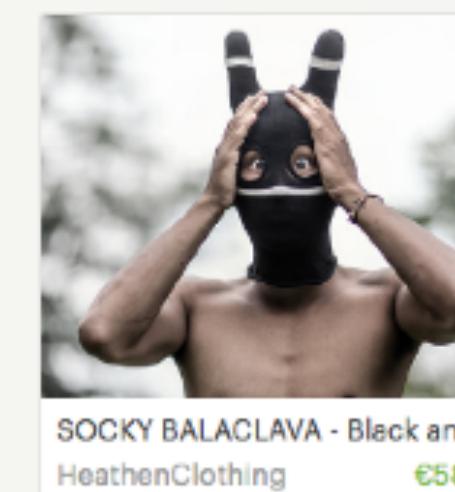
Our picks for Stefanie



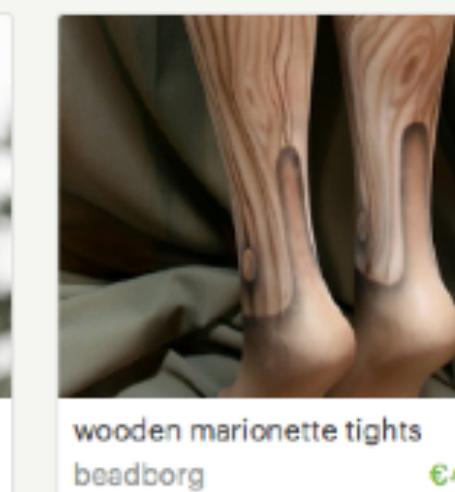
BLACK BUNNY COSTUME - Adul...
BlamoToys **€204.75**



Plague Doctor mask in black lea...
TomBanwell **€194.78**



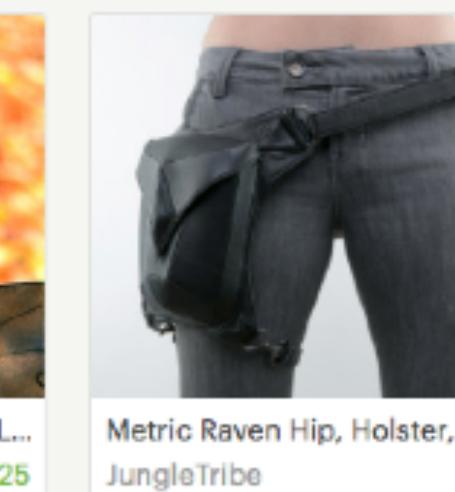
SOCKY BALACLAVA - Black and ...
HeathenClothing **€58.99**



wooden marionette tights
beadborg **€43.49**



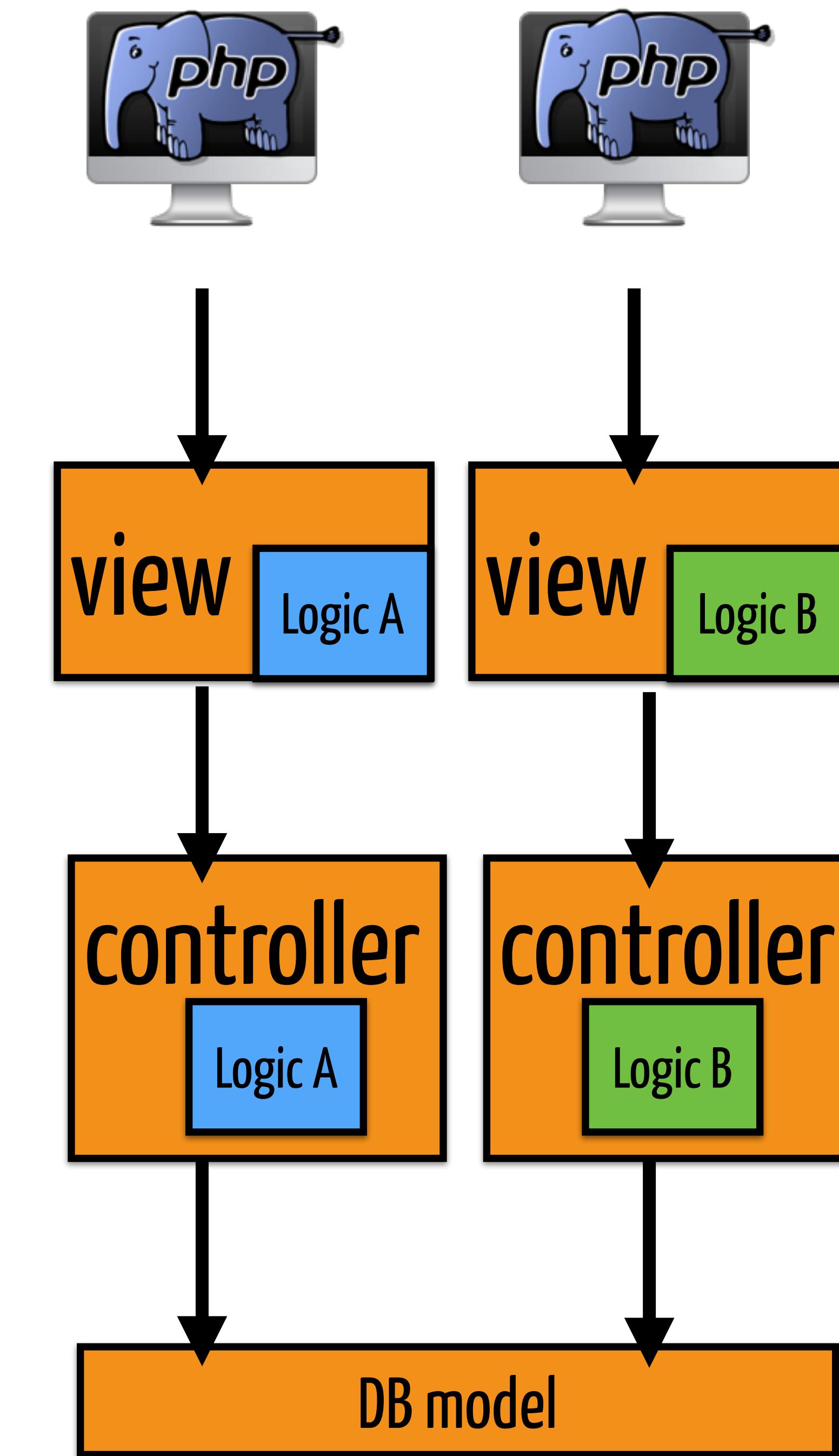
Black Pixie Hood. Cosplay Hat. L...
HandiCraftKate **€190.25**

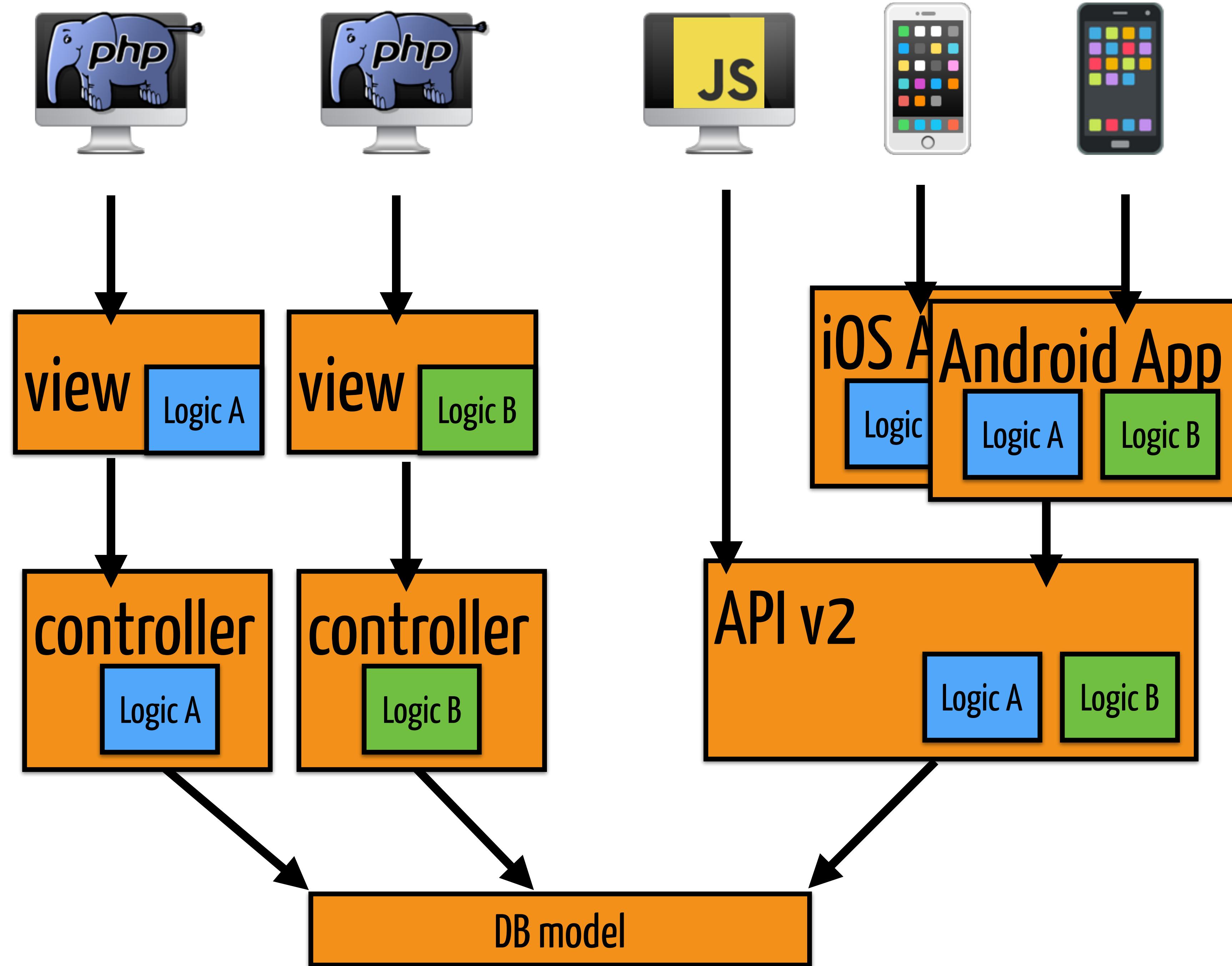


Metric Raven Hip, Holster, Waist...
JungleTribe **€316.18**

[See more >](#)

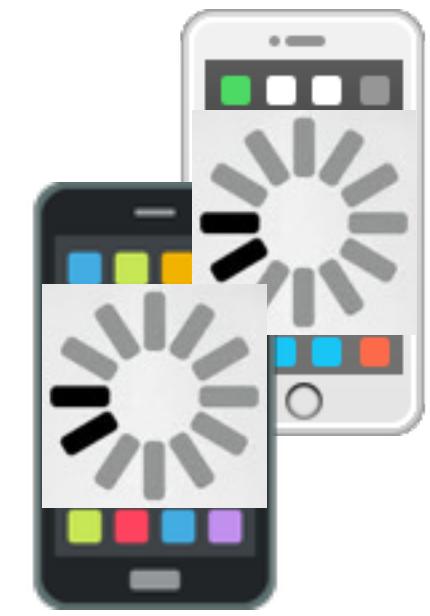
1: Cross-platform consistency?



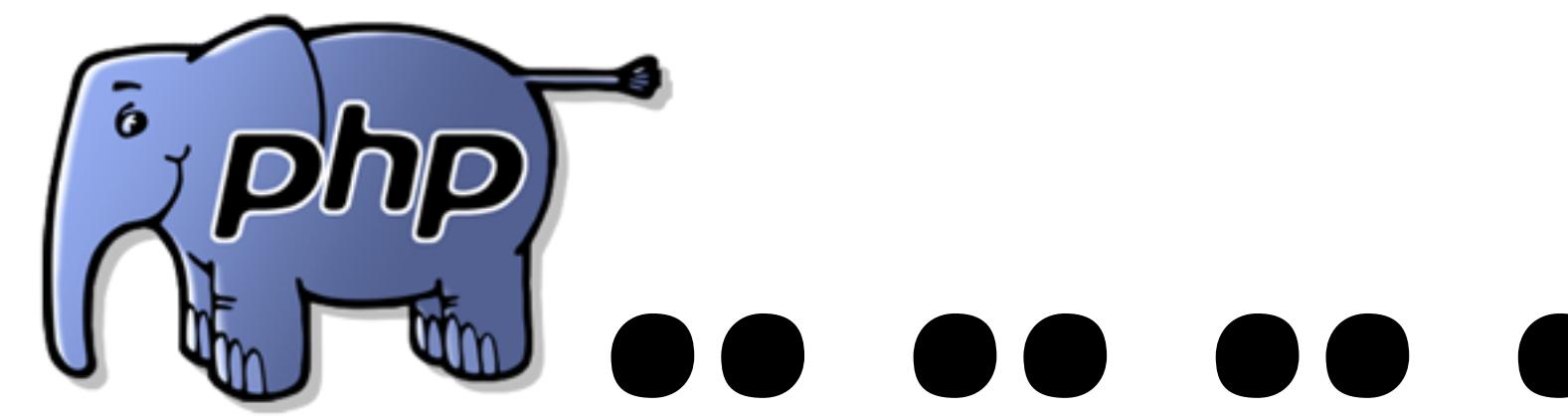


2: Performance?

time to glass



non-concurrent PHP



**“We desperately need to figure out a scheme for
allowing concurrency or else we’re going to have
performance problems forever.”**

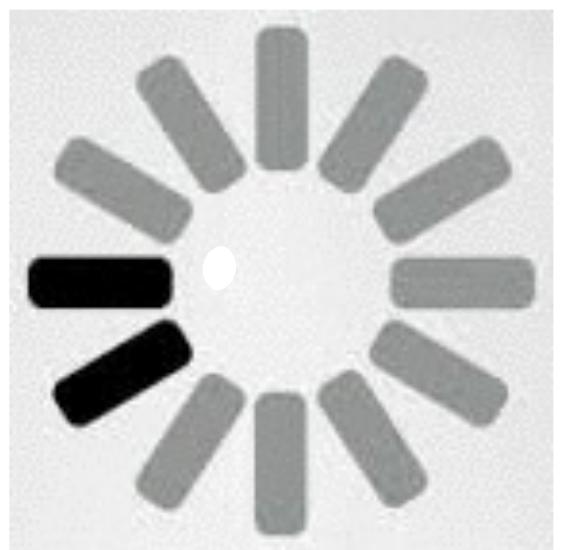
- Andrew Morrison (Etsy)

3: Who has control?

tied to DB schema



user controls request





API platform

v2 → v3



v3!

Ideas we kept

keep it **REST** (as in v2)

declaration of endpoints **in code**

input validation



v3!

New ideas

decouple endpoints from framework

auto-generate routes, clients: PHP, JS

meta-endpoints that consume our API



v3!

New ideas

decouple endpoints from framework

auto-generate routes, clients: PHP, JS

meta-endpoints that consume our API



CURL



Paul Wright

@wrighty

Follow

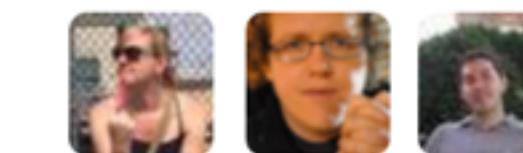
curl_multi_info_read() is my new event loop.

RETWEETS

3

LIKES

3



7:54 AM - 17 May 2013



3

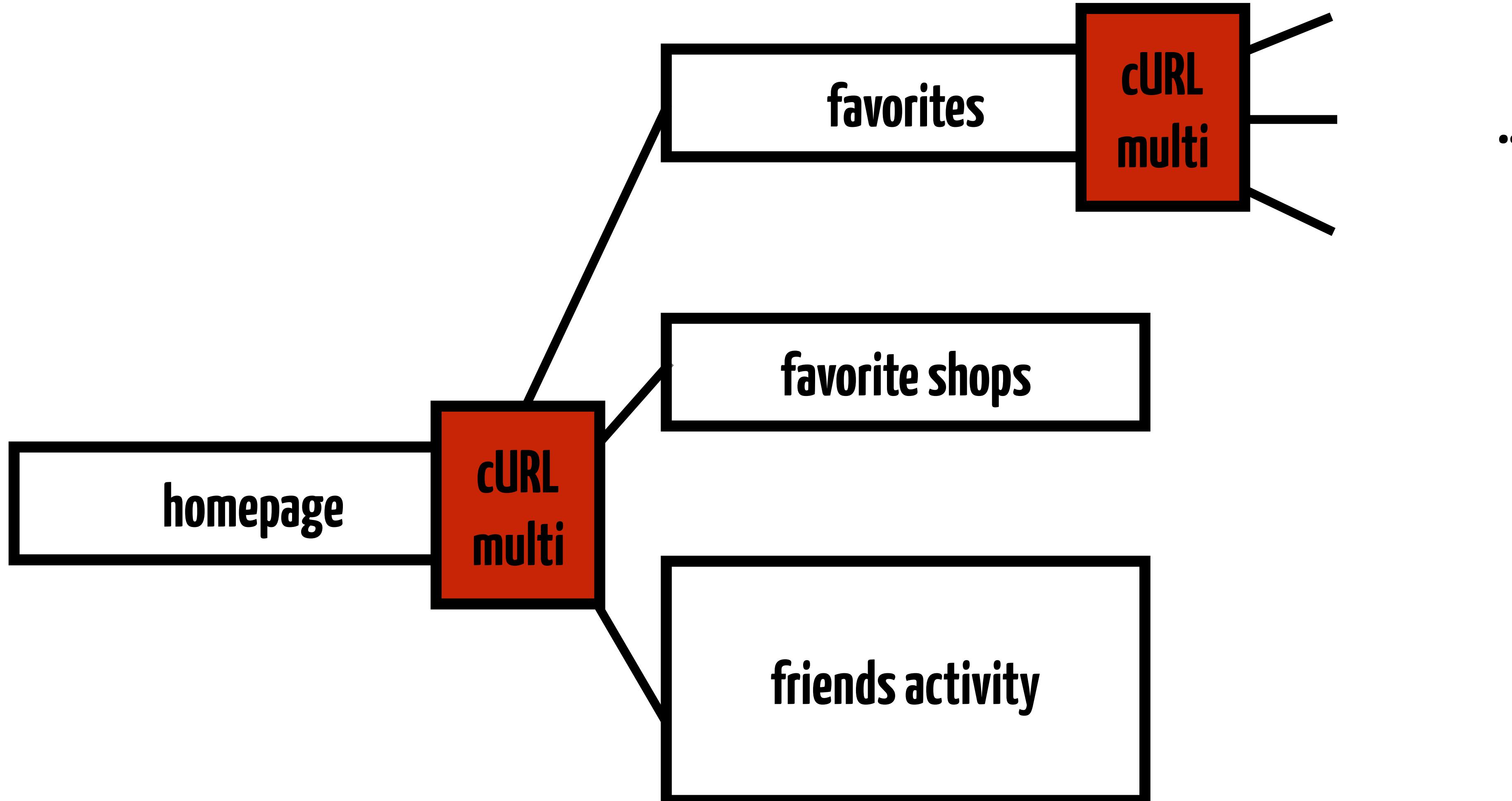


3



3

...



...

...

```
public static function desc() {
    return 'Endpoint for SellOnEtsy app shop home.';
}

public static function route() {
    return "GET /home";
}

...

public static function handle(Api_Client $client, Api_Input $input, Api_Response $response) {
    $proxies = [
        'shop_about' => $client->shop->aboutGet(),
        'faq' => $client->shop->FAQGet(),
        'seller_details' => $client->shop->sellerDetailsGet(),
    ];
    return Curl_Callback_Orchestrator::runAndExtract($proxies, __CLASS__);
}
```

~
~
~

How we built it

Etsy API Perspectives

<https://www.etsy.com/api/v3/ajax/public/teams>
/member/
/shop/

A vintage wooden telephone booth stands in a desert landscape. The booth has a blue sign that reads "Telephone". A large, gnarled Joshua tree stands behind the booth. In the background, there are rolling hills and mountains under a clear blue sky. Power lines are visible across the scene.

Etsy API Services



Ajax
Atlas
Internal
EtsyApps
OpenAPI

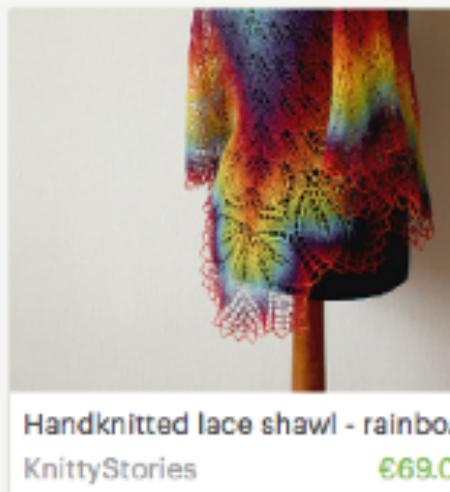
...

Whoever you are, find whatever you're into

[Search](#)

From the shop **BigStuffed**

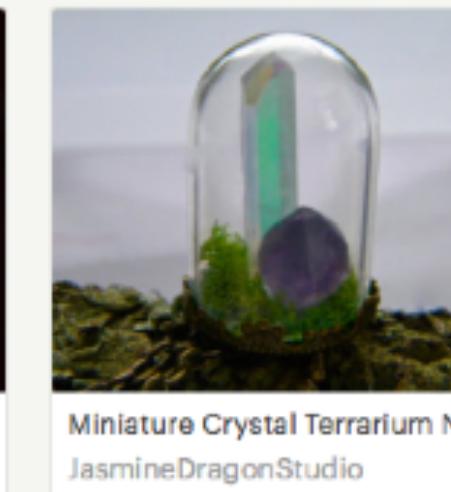
Recently favorited



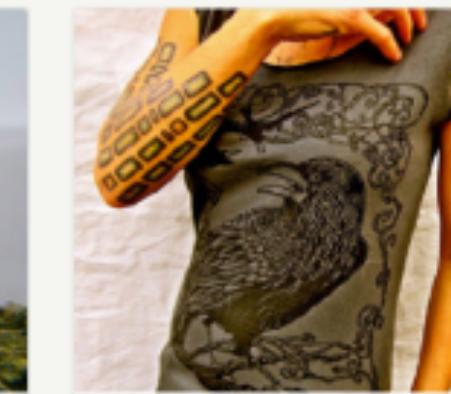
Handknitted lace shawl - rainbow...
KnittyStories **€69.00**



Glow in the dark scale mail neck...
Silmarilclothing **Sold**



Miniature Crystal Terrarium Nec...
JasmineDragonStudio **Sold**



Raven Tshirt Grey Crow Bird Got...
celticfantasy **€22.65**



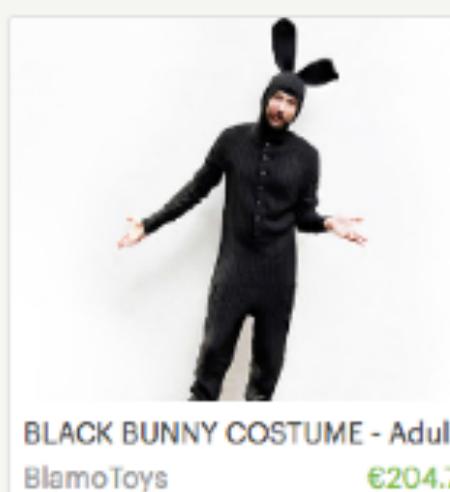
Hedron Geometric Art Print
LuckySkye **€13.59**



SIERPINSKI Double-Knitting Bab...
cooperativepress **€7.54**

[See more >](#)

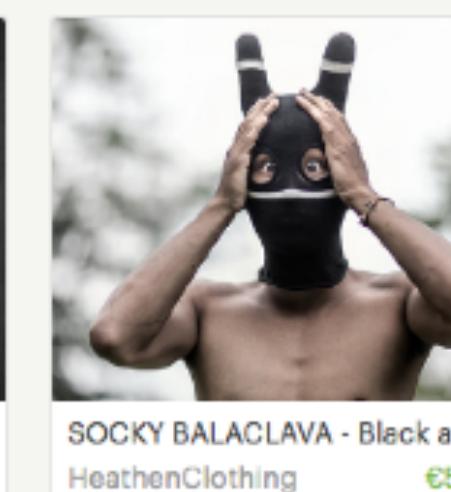
Our picks for Stefanie



BLACK BUNNY COSTUME - Adul...
BlamoToys **€204.75**



Plague Doctor mask in black lea...
TomBanwell **€194.78**



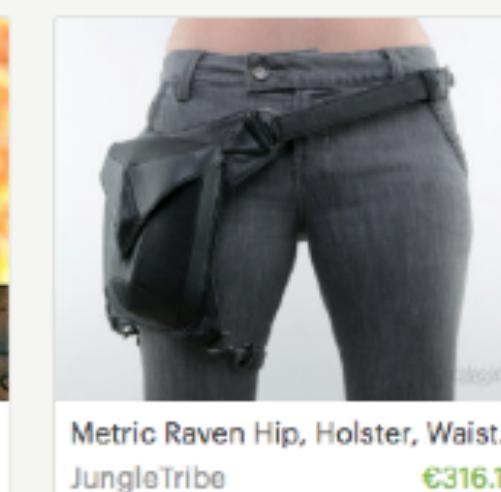
SOCKY BALACLAVA - Black and ...
HeathenClothing **€58.99**



wooden marionette tights
beadborg **€43.49**



Black Pixie Hood. Cosplay Hat. L...
HandiCraftKate **€190.25**



Metric Raven Hip, Holster, Waist...
JungleTribe **€316.18**

[See more >](#)

Whoever you are, find whatever you're into

What are you shopping for?

Search

From the shop BigStuffed

Recently favored



See more >

Our picks for Stefanie



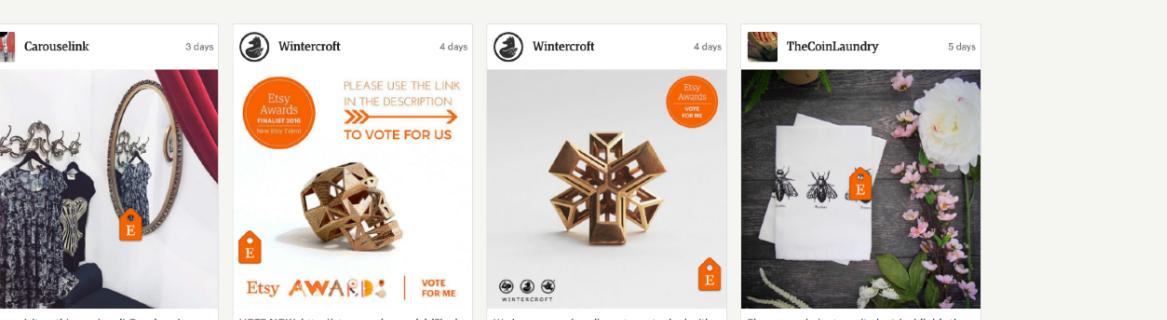
See more >

New from your favorite shops



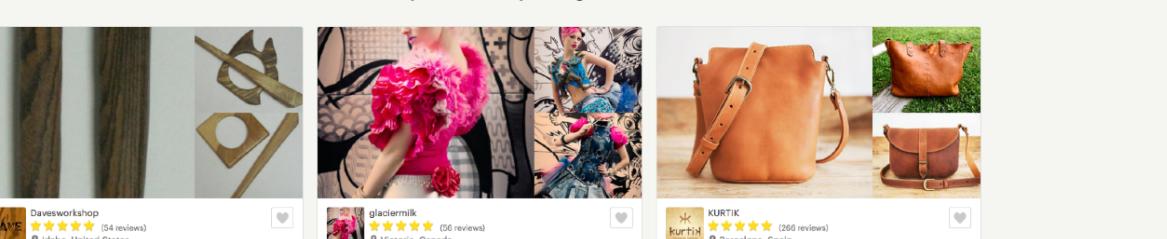
See more >

Updates from shops you like

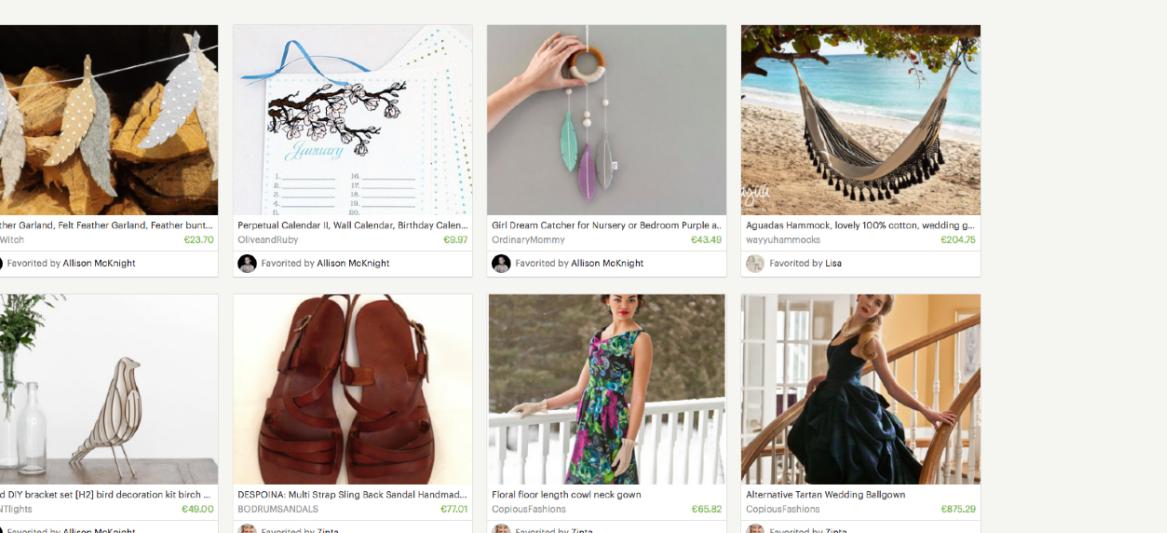


See more >

Shops worth exploring



From people you follow



See more activity >

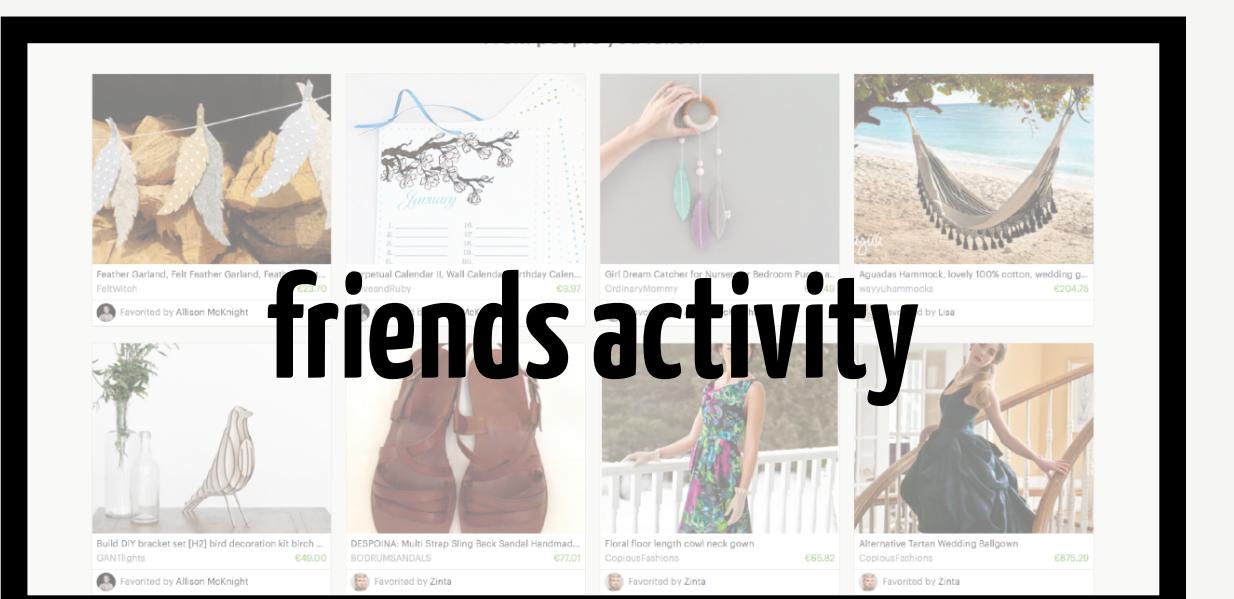
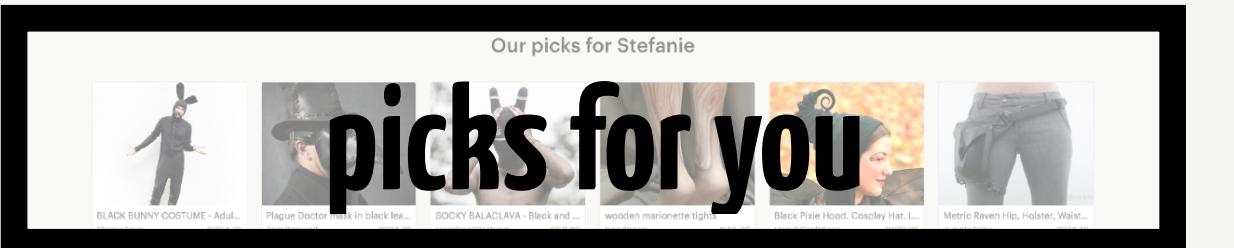
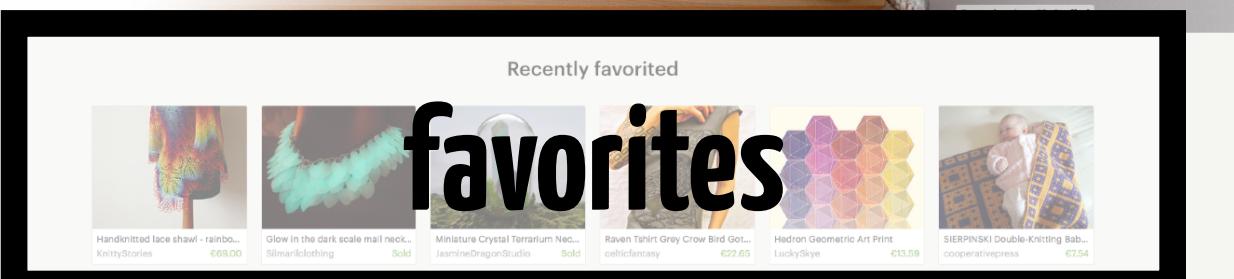
Fresh from the blog

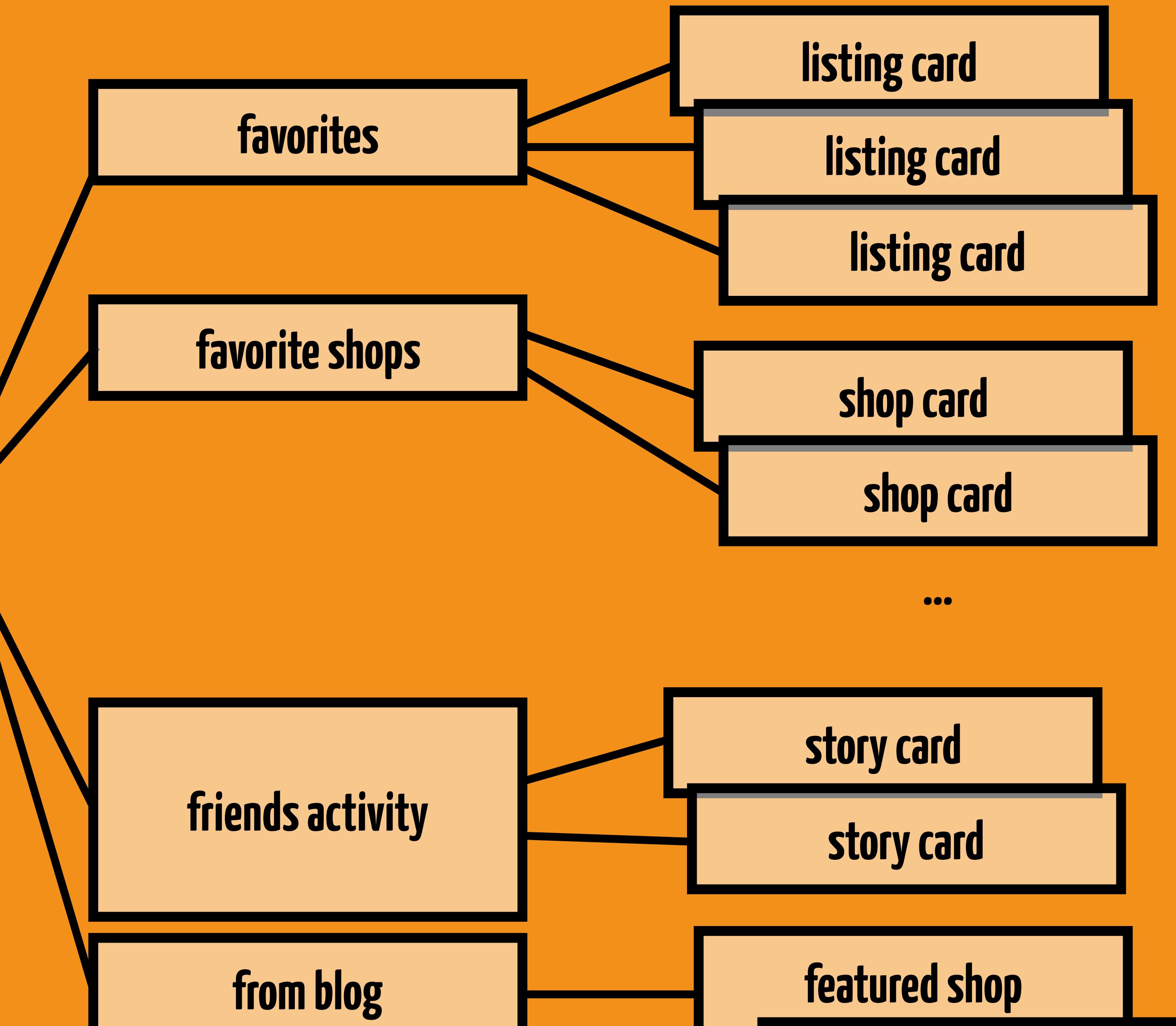
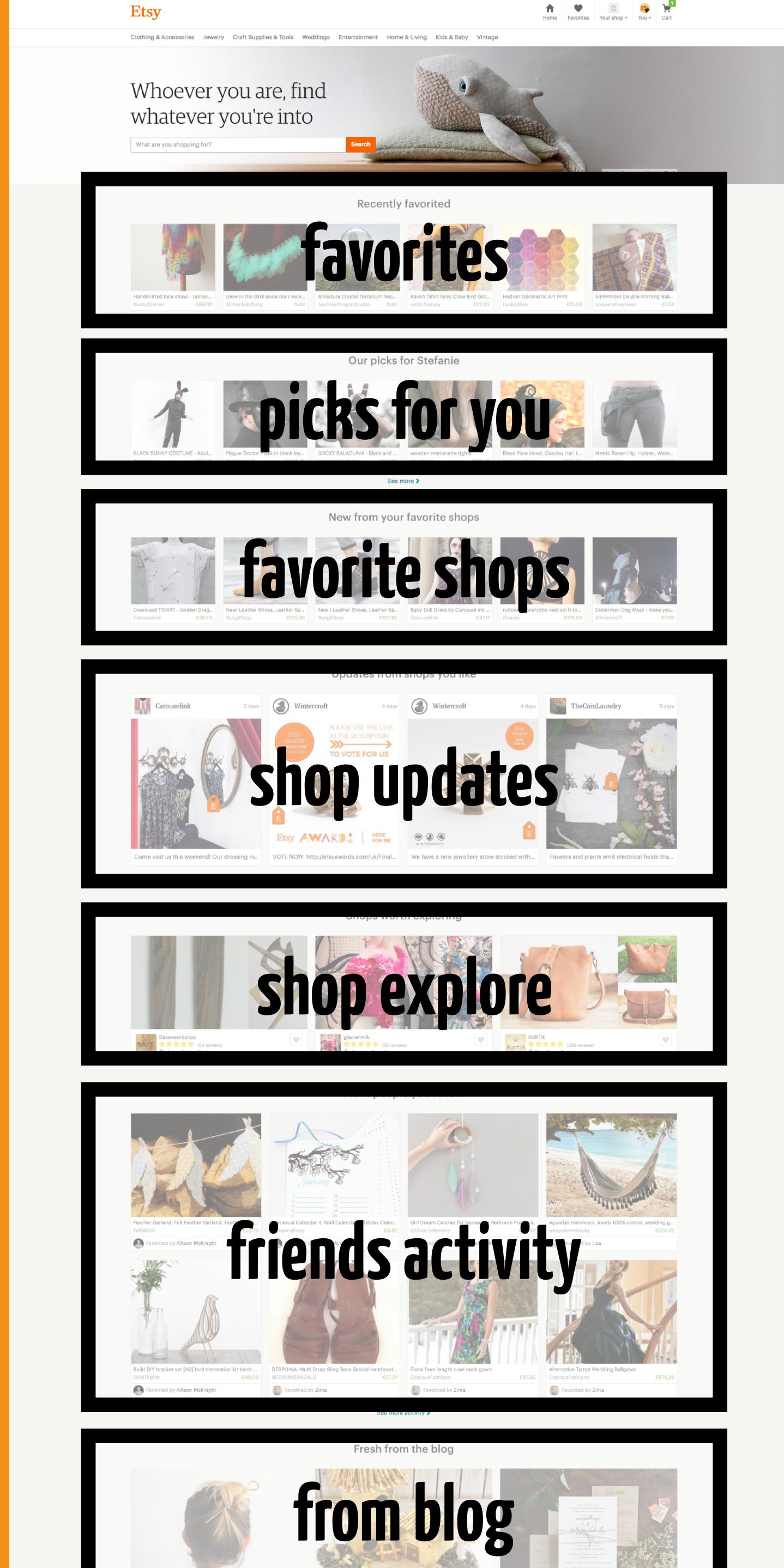


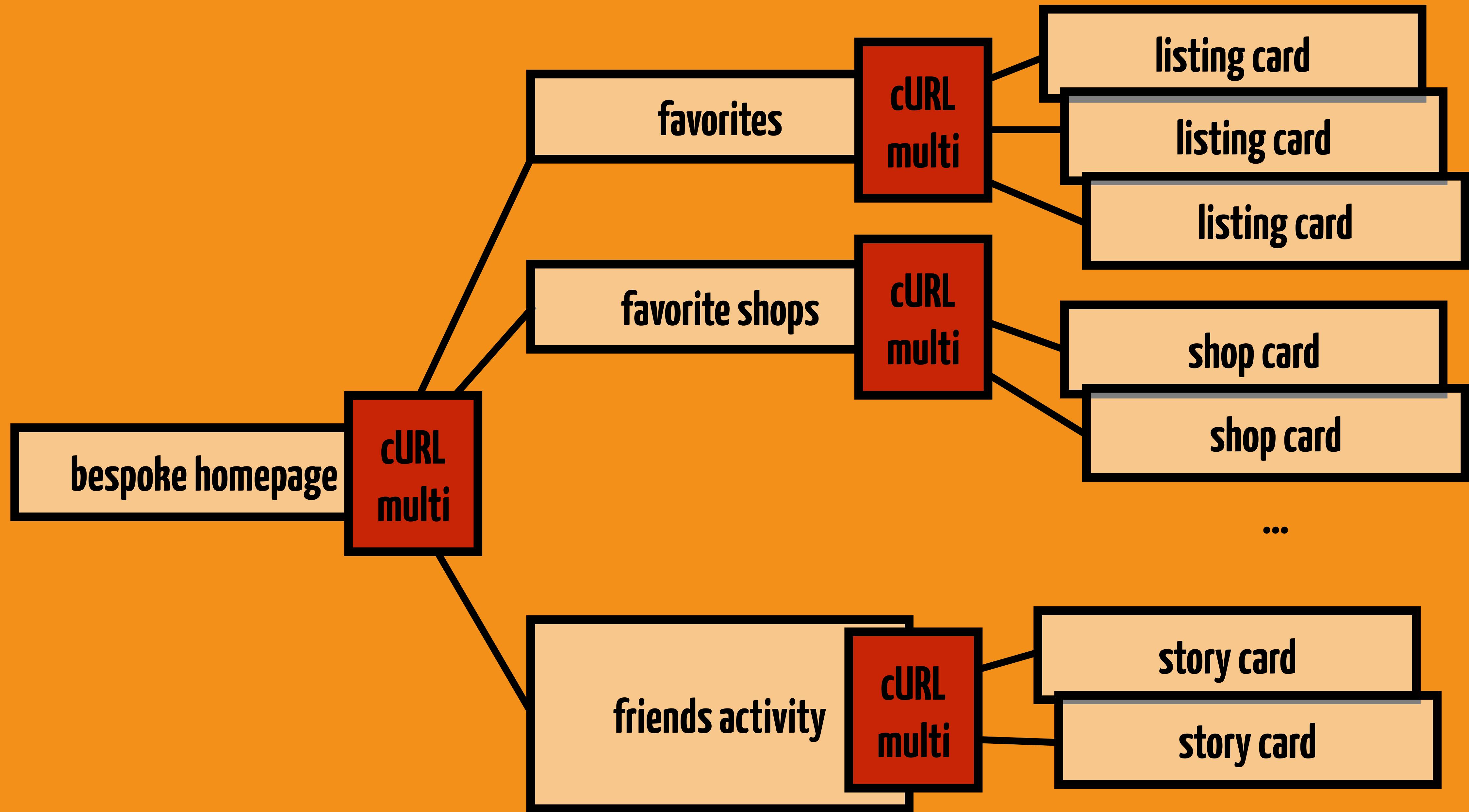
Whoever you are, find whatever you're into

What are you shopping for?

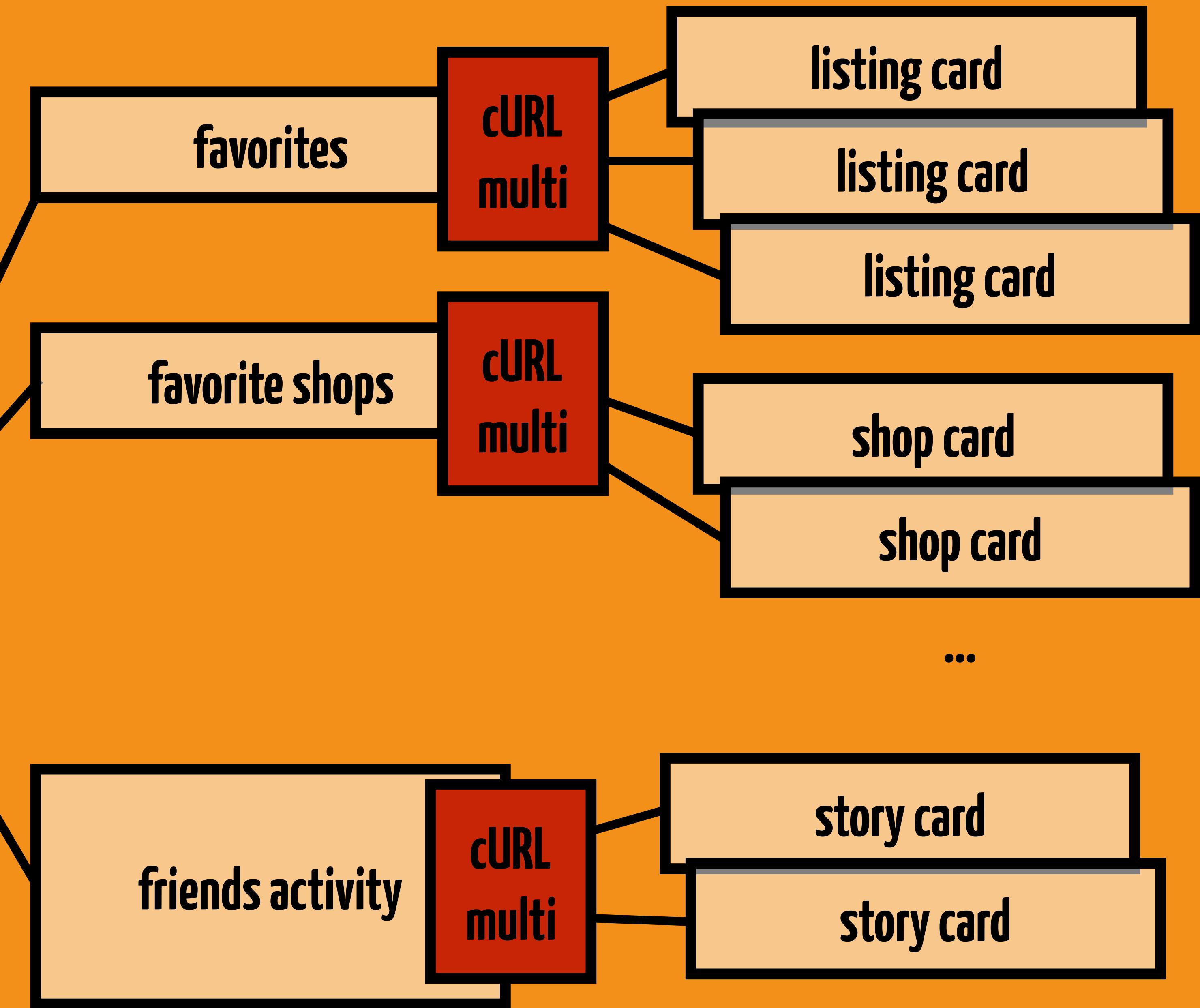
Search



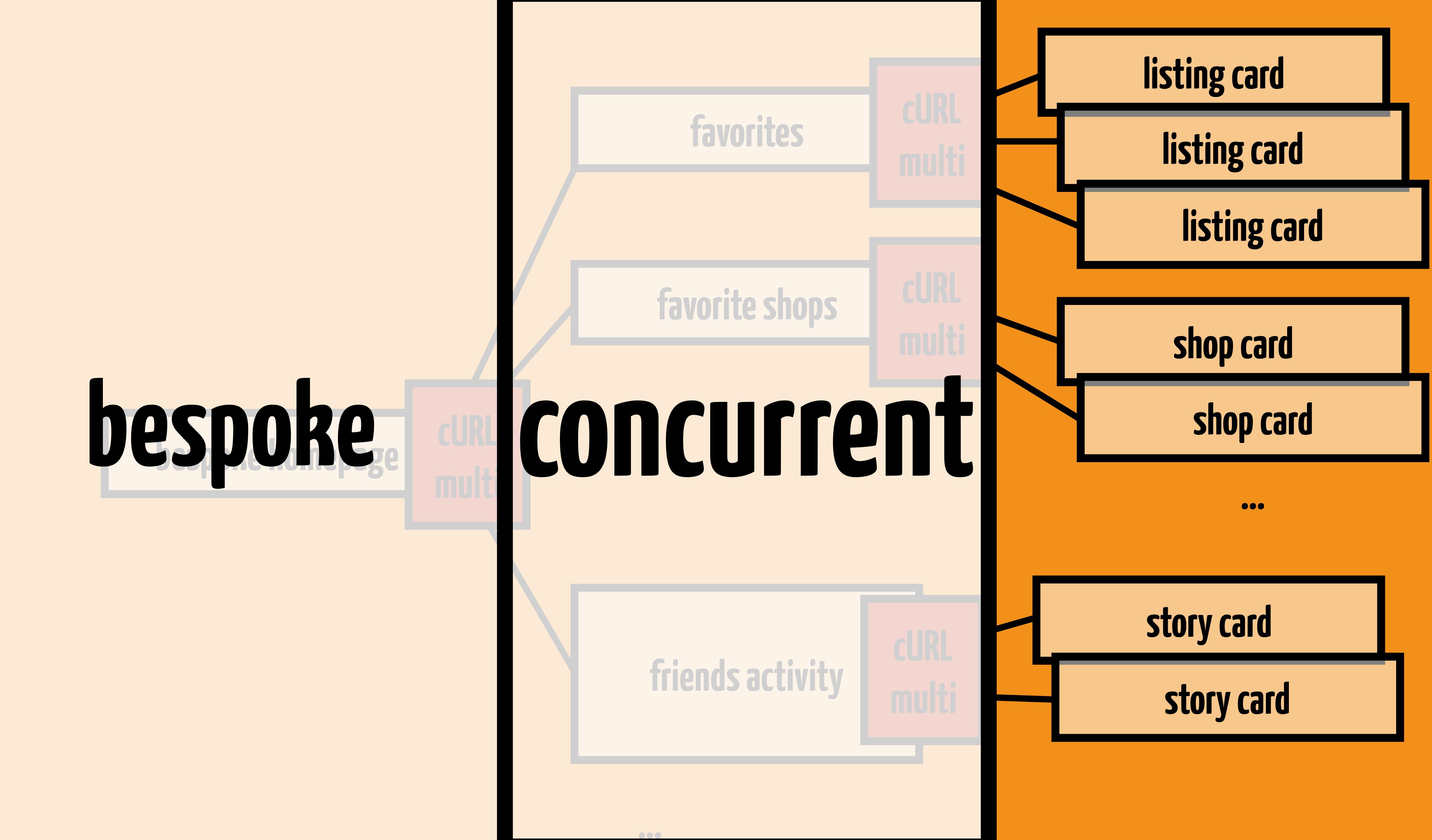




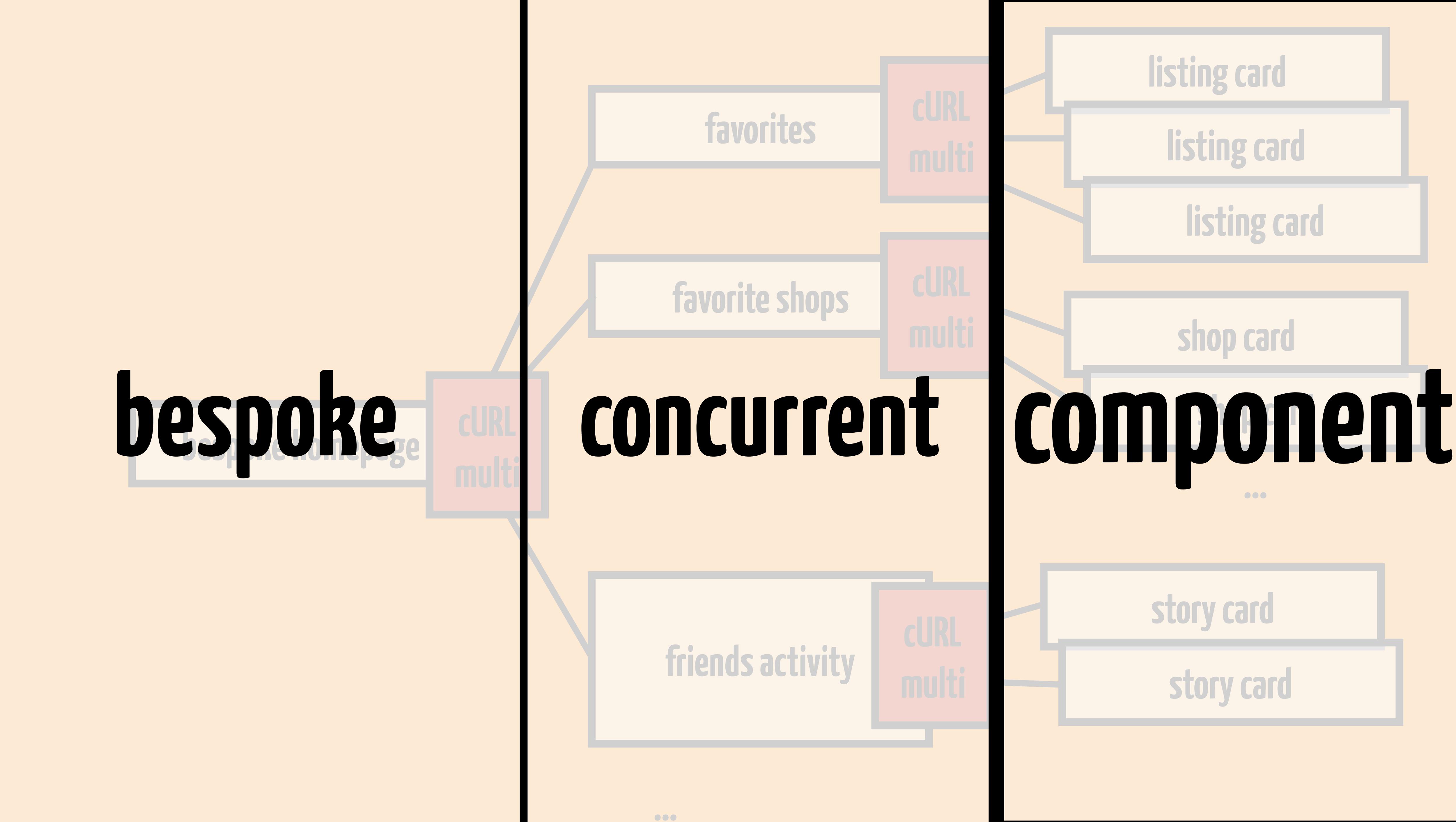
bespoke



bespoke concurrent



bespoke concurrent component



domänen spezifische Sprache von
Endpunkten language dédi

＊ イン固有言語

DSL of Etsy endpoints

Jezyk dziedzinowy

بيان مختص بـ امدنـه

route()

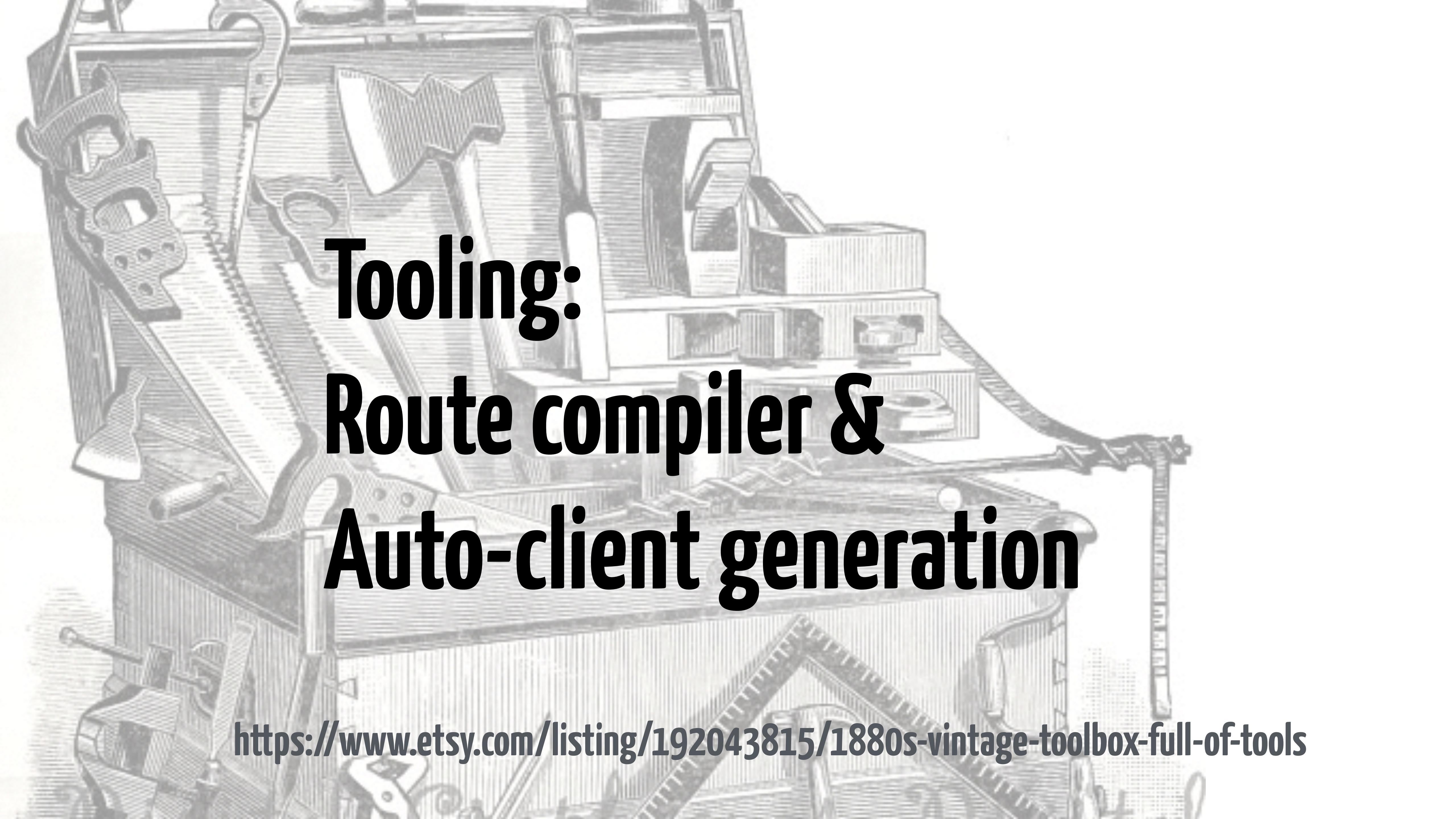
desc()

resultType()

handle(\$client, \$input, \$response)

required

optional
declareInput(\$input)
includedServices()
cacheTtlSeconds()



Tooling: **Route compiler &** **Auto-client generation**

<https://www.etsy.com/listing/192043815/1880s-vintage-toolbox-full-of-tools>

Architecture implications

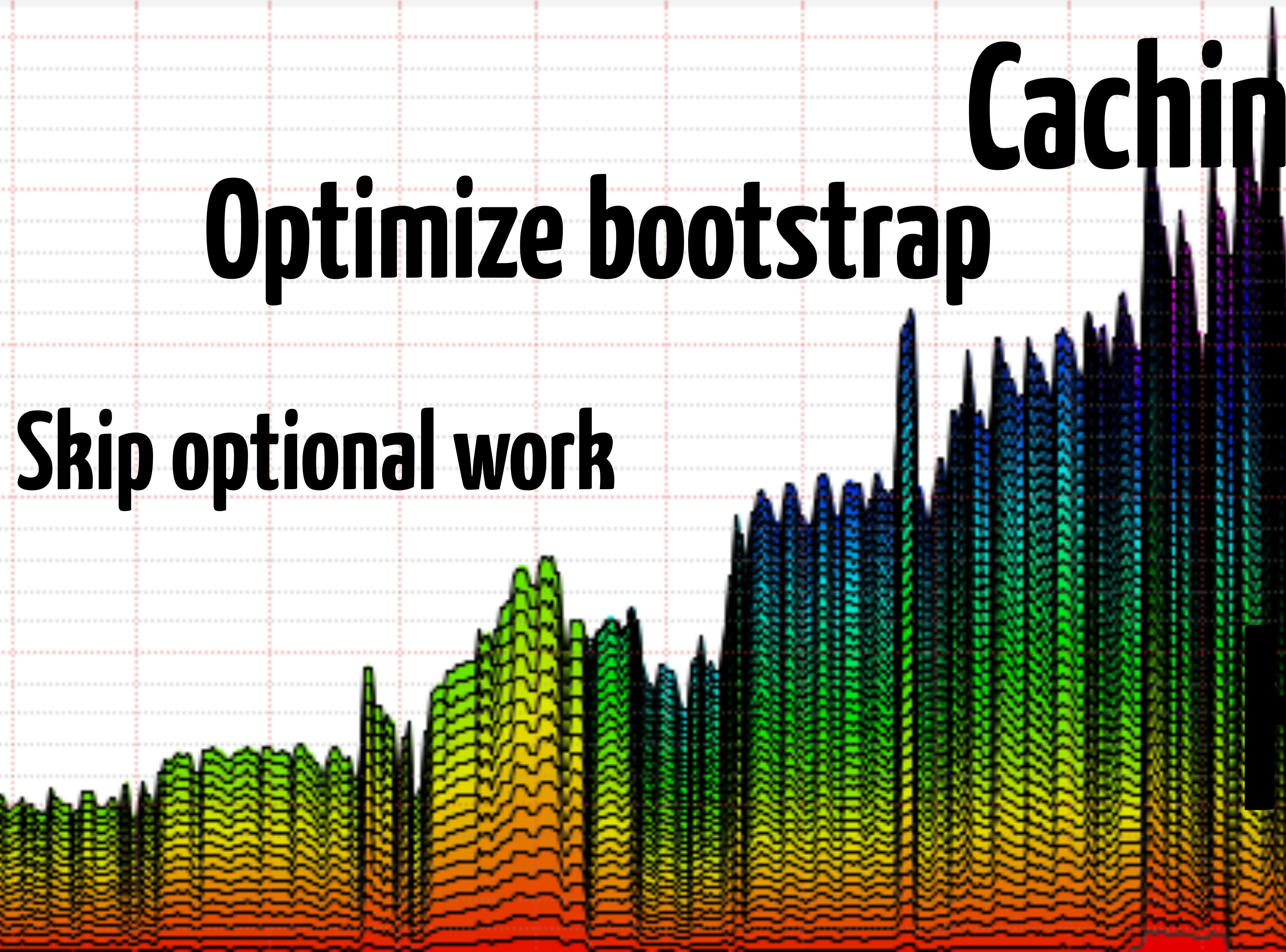


**pain point of shared nothing:
bootstrap**

Problem:

PHP time to request





Optimize bootstrap

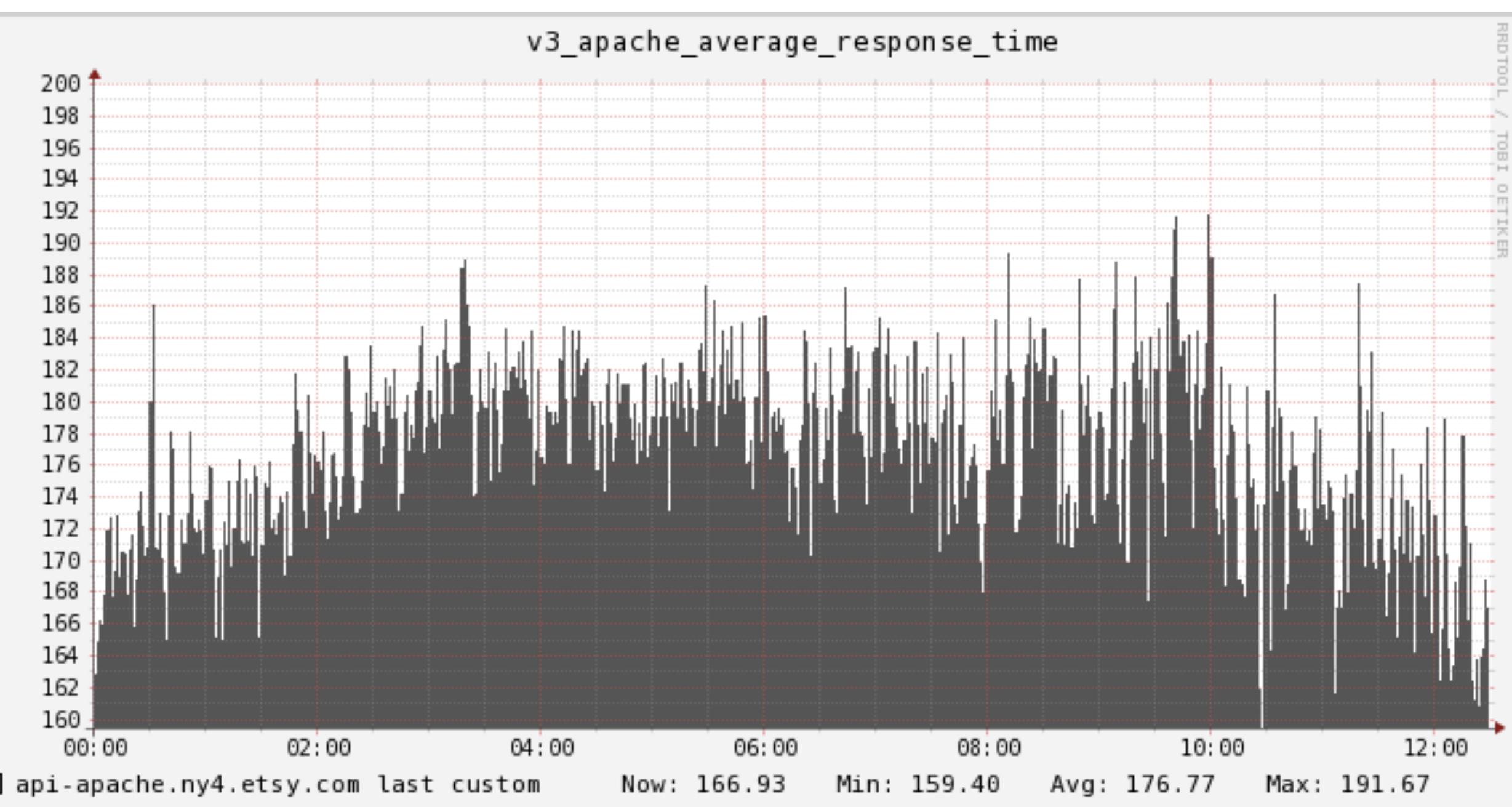
Skip optional work

Caching

HHVM

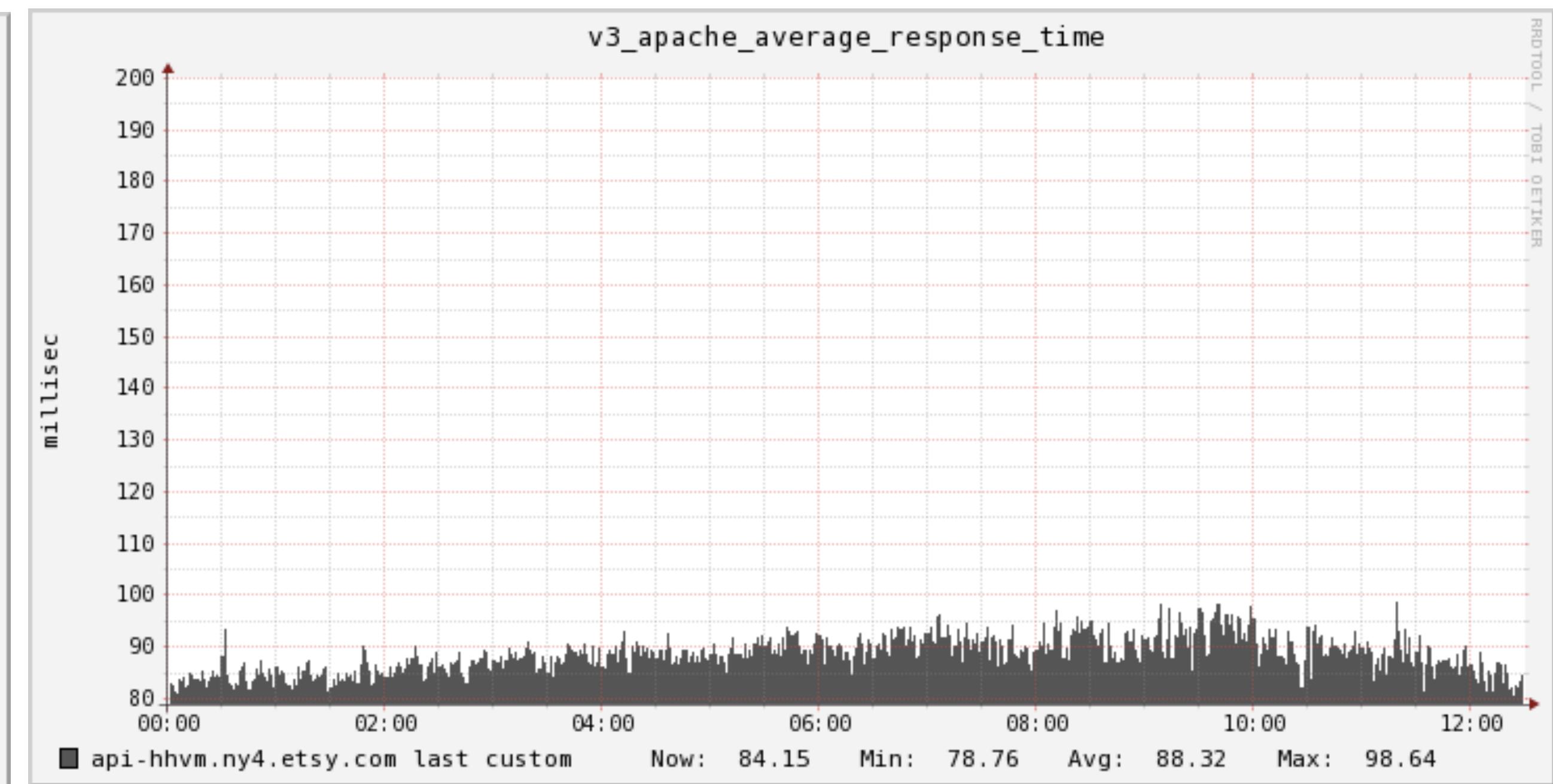
PHP 5 / Zend

Average Response Time
12 Hour



HHVM

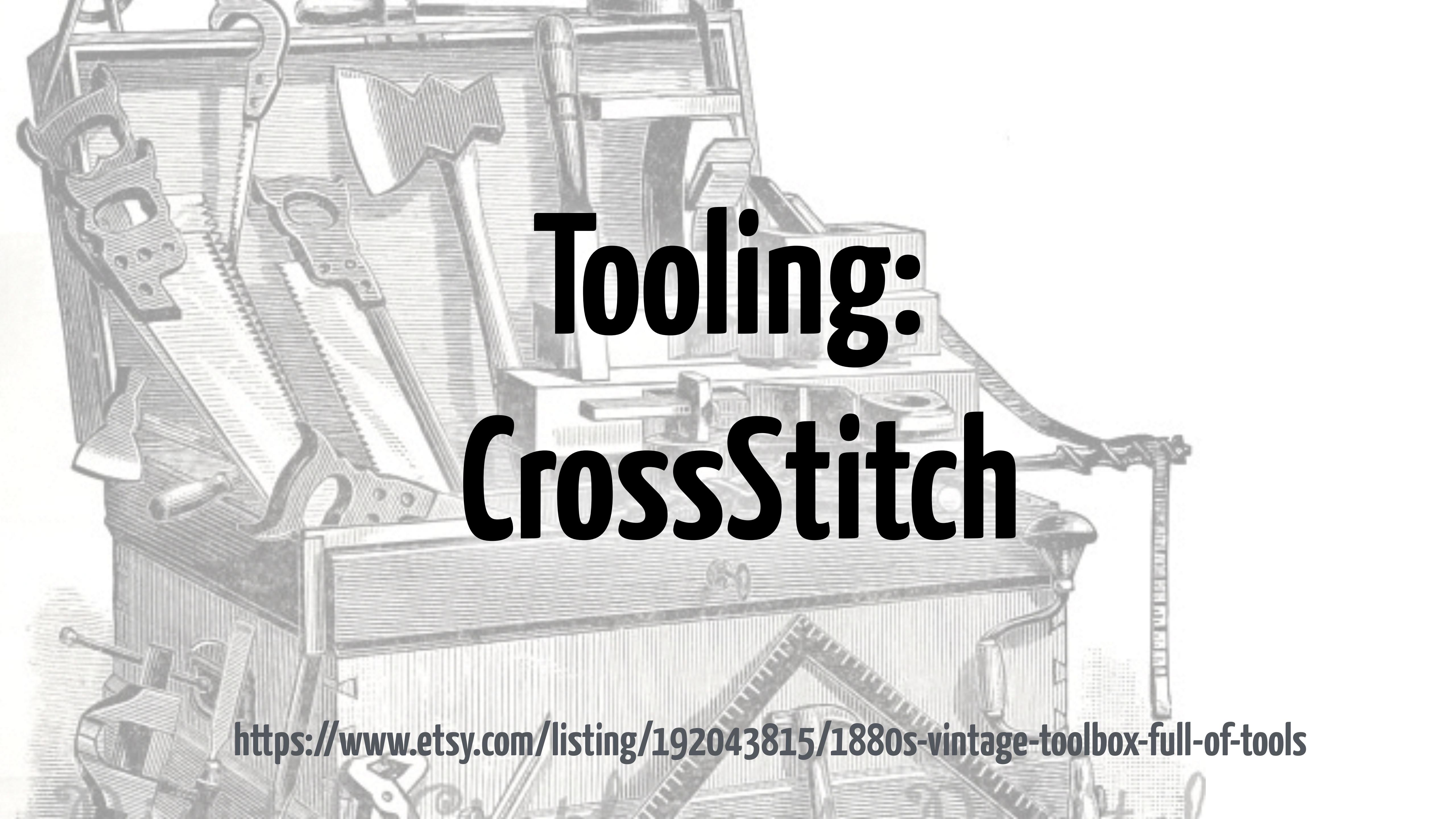
Average Response Time
12 Hour





**Where wouldn't
this work?**

Operations: Tooling



Tooling: CrossStitch

<https://www.etsy.com/listing/192043815/1880s-vintage-toolbox-full-of-tools>

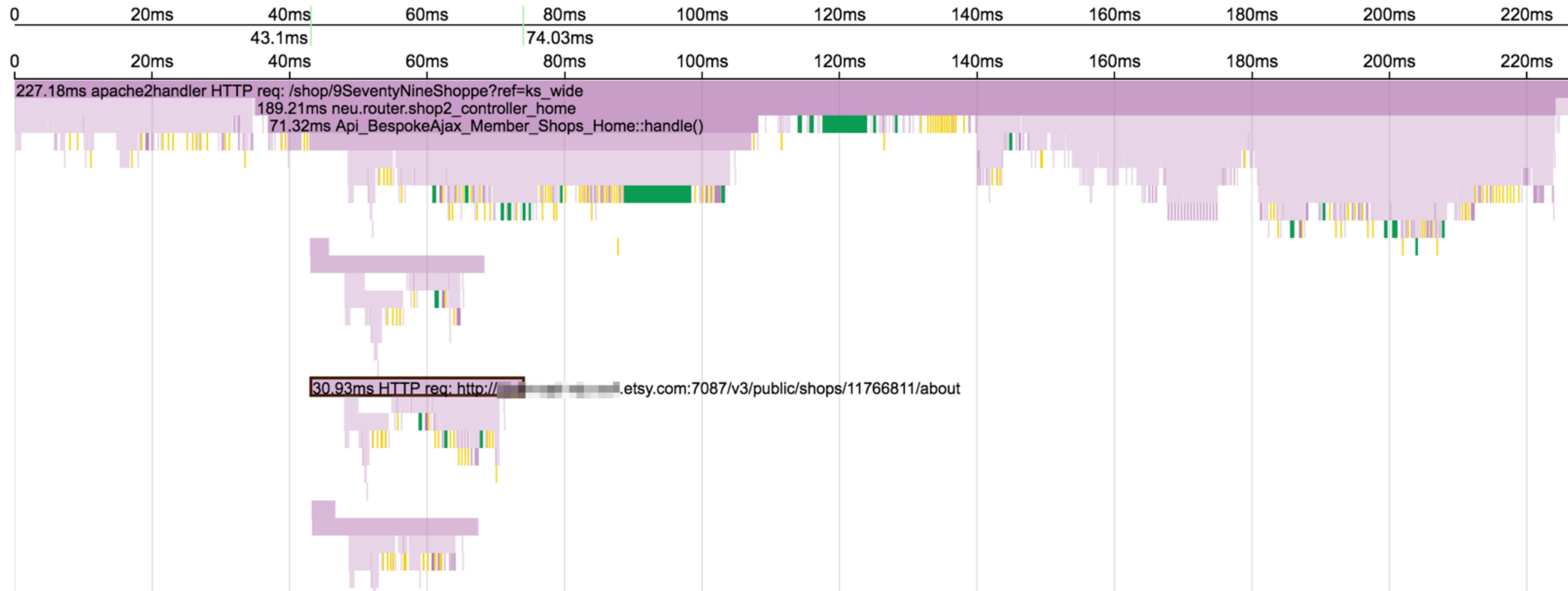
CrossStitch - Waterfall

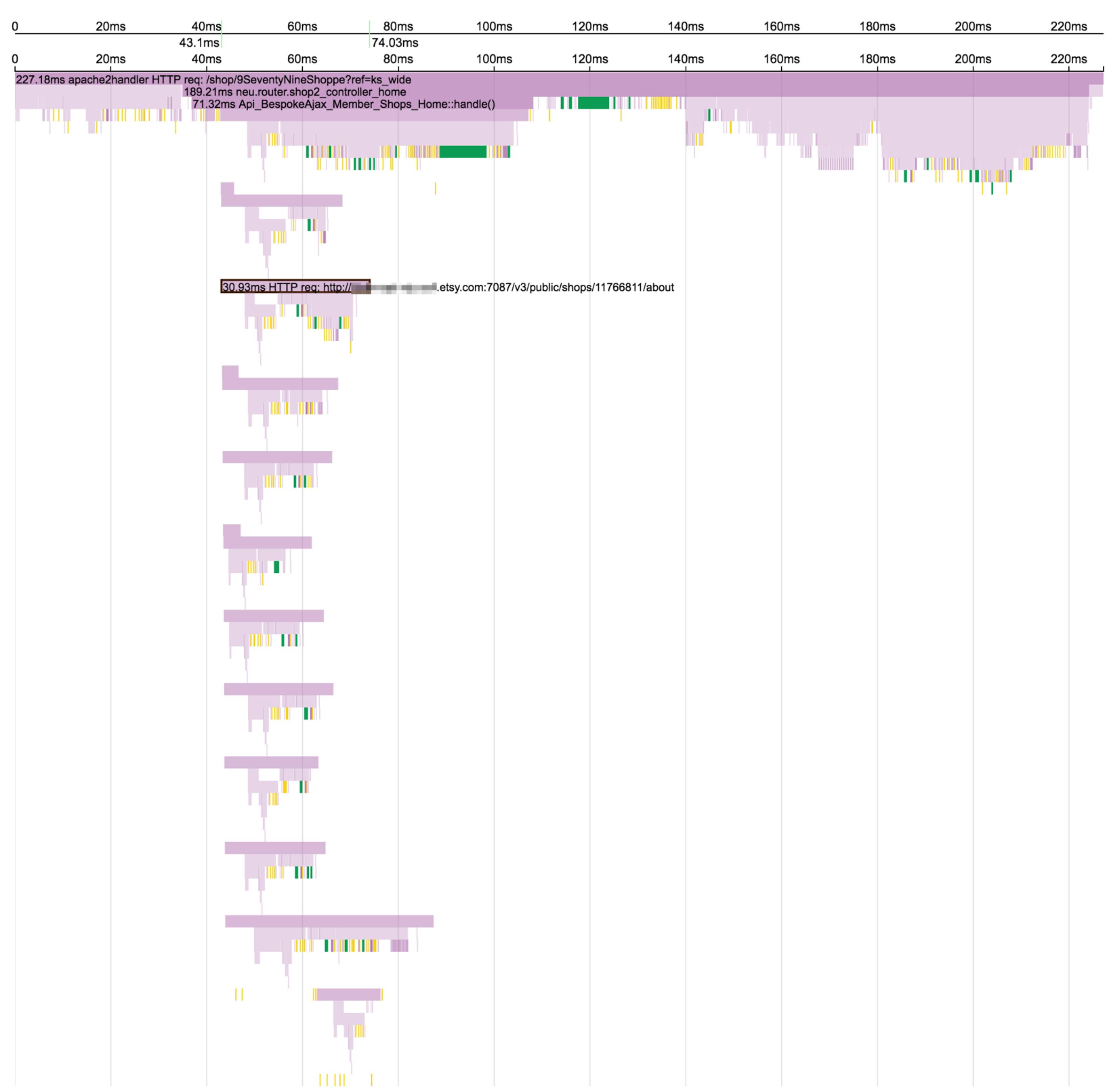
Legend

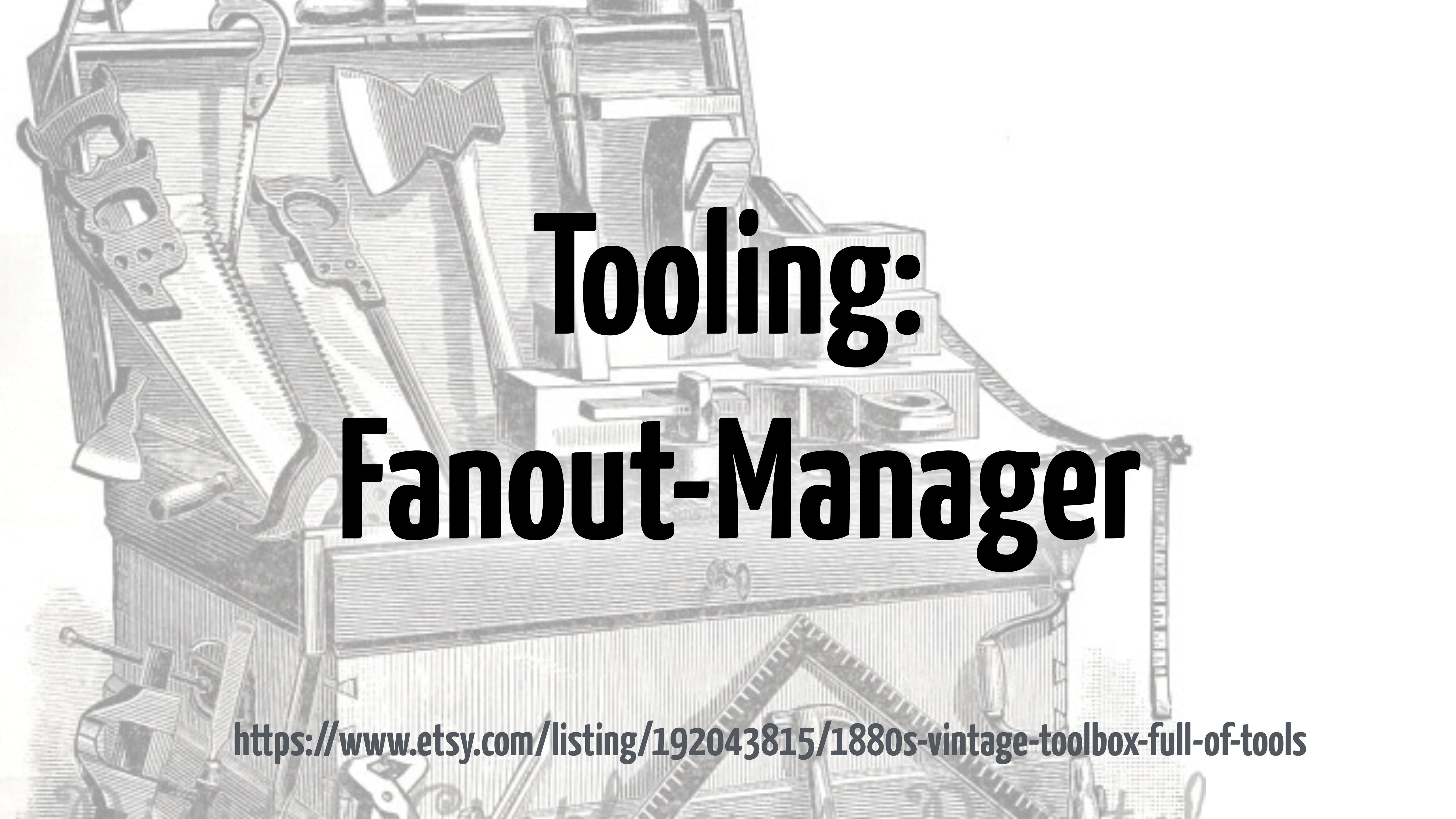
- HTTP (17, 566.39ms)
- Memcached (216, 36.53ms)
- DB Query (38, 35.38ms)
- Thrift Query
- Gearman Job
- Redis
- Arizona

```
30.93ms HTTP req: http://████████.etsy.com:7087/v3/public/shops/11766811/about{
  "span_id": "cwBrWkhSJrb7Xbgg5R-IQGycbebD",
  "service": null,
  "binary_annotations": [
    {
      "curl.url": "http://████████.etsy.com:7087/v3/public/shops/11766811/about",
      "endpoint": "████████.etsy.com/10.96.81.23:80"
    },
    {
      "curl.method": "GET",
      "endpoint": "████████.etsy.com/10.96.81.23:80"
    }
  ]
}
```

[Download PNG](#) | [View Trace In Zipkin](#)

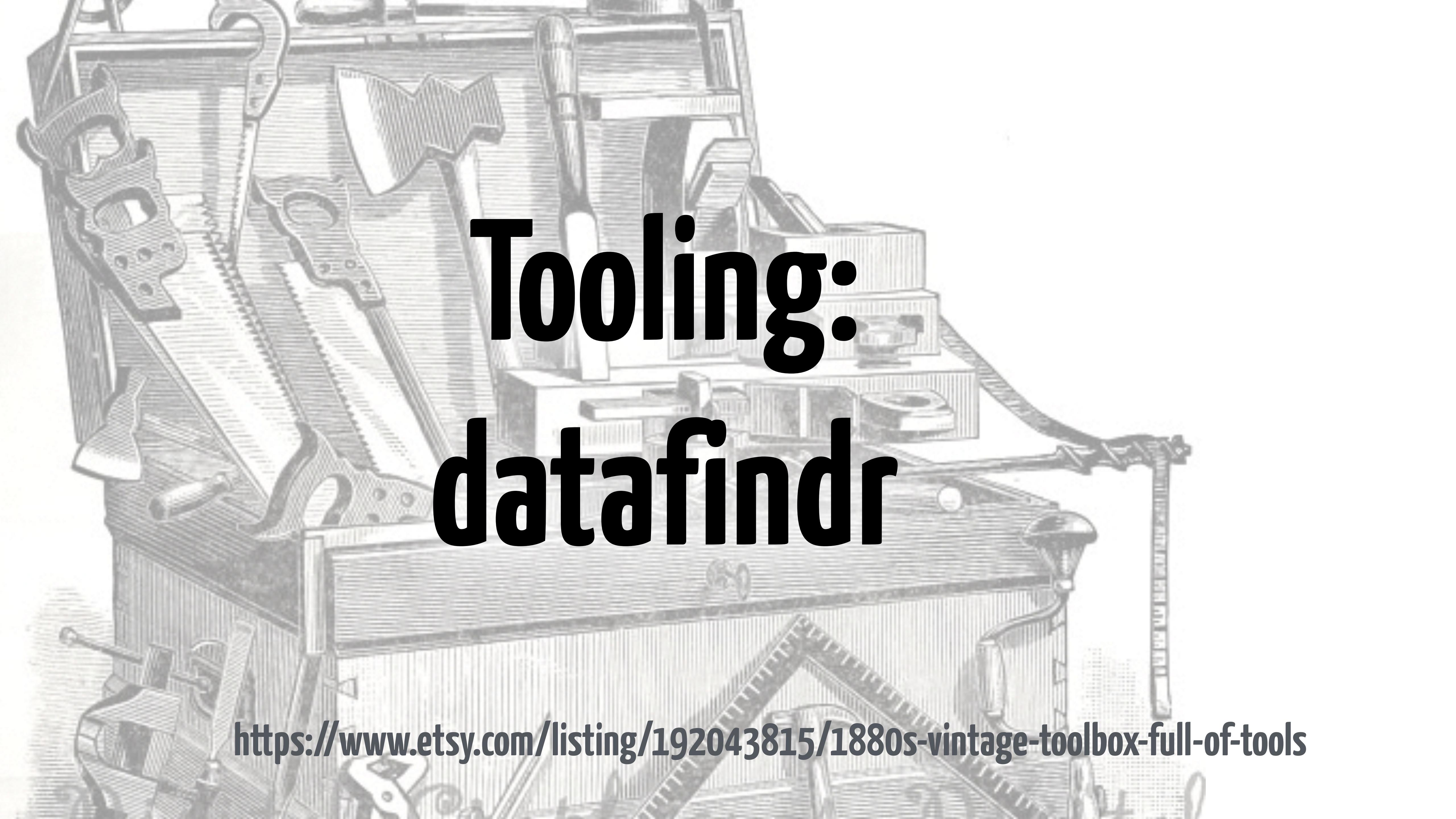






Tooling: Fanout-Manager

<https://www.etsy.com/listing/192043815/1880s-vintage-toolbox-full-of-tools>



Tooling: datafindr

<https://www.etsy.com/listing/192043815/1880s-vintage-toolbox-full-of-tools>

ENDPOINTS

- › Public
- › Member
- › Shop
- › Application
- › BespokeOpenApi
- › AppUser
- › BespokeEtsyApps
- › Admin
- › BespokeAjax
- › BespokeAtlas
- › Infrastructure
- › BespokeCraftAjax

RESOURCES

- › Public
- › Shop
- › Member
- › ServerDrivenLayout
- › Admin
- › Search
- › Staff
- › Infrastructure

Public / Teams / List

Public

List of active teams.

GET /api/v3/ajax/public/teams

Arguments

	name	type	required	default
	keyword	String		

Resource

Returns resource: [Public / Team](#)

Quantity: one

	name	type
	group_id	ID
	name	String
	group_type	String
	status	String
	avatar_url	String
	short_description	String
	long_description	String
	is_juried	Boolean
	is_private	Boolean

Example Request

Locale: Country: United States

Language: English

Currency: USD

GET request parameters:

keyword:

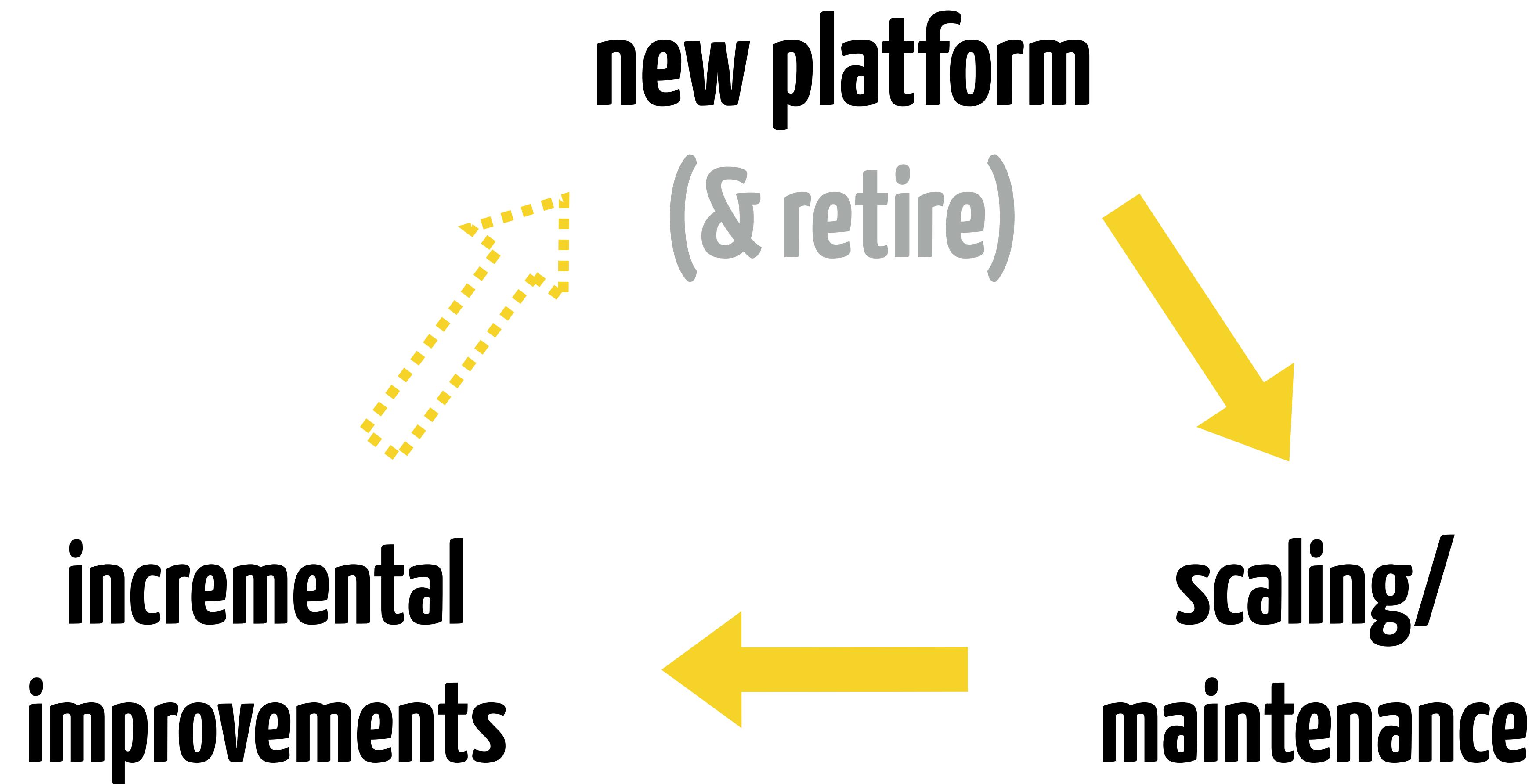
curl /api/v3/ajax/public/teams

Example Response

```
[
  {
    "group_id": 29885,
    "name": "paranormal experiences",
    "group_type": "NORMAL",
    "status": "ACTIVE",
    "create_date": 1465830325,
    "avatar_url": "https://img0.etsystatic.com/123/0/29885/iga_170x100.4080",
    "membership_count": 9,
    "active_thread_count": 2,
    "last_post_date_formatted": "6 hours ago",
    "last_poster_real_or_login_name": "amanda wood",
    "is_juried": false,
    "is_private": false,
    "is_closed": false,
    "url": "/teams/29885/paranormal-experiences",
    "new_thread_url": "/teams/29885/paranormal-experiences/discuss/new/",
    "active_member_count": 9,
    "short_description": "paranormal experiences\r\n what paranormal experi",
    "long_description": "paranormal experiences\r\n what paranormal experi"
  }
]
```

Developer adoption

Phases of adoption



How did we “sell” it?

..too fast to keep up!

**White space
gets filled with code**

Better documentation!!



<https://www.etsy.com/listing/275337876/eclectic-elements-documentation-half>

Pockets of patterns



homepage team: make API **type errors** more prominent to enforce guarantees.

iOS team: **contract** between set of items an **endpoint** will **return**, set of items that the **app** knows how to **format**.

code organization: compiler in same space as endpoints ⚡_⚡

inventory team: we can compose **endpoints**, but for composable **views** we still have to repeat things.
Can we **lift** composability into the view?

android team: can we **mock** a typed resource?
Can we **automatically traverse** it?

Trust + Guidance



Conclusion

What did we learn?

What did we learn?

Did we succeed?

“We desperately need to figure out a scheme for
allowing concurrency or else we’re going to have
performance problems forever.”

- Andrew Morrison (Etsy)

Where we are **now**:

**Responsibility
division between
device and server**

Thank you <3

I'm Stefanie Schirmer

@linse

<https://codeascraft.com> -> post series on the API