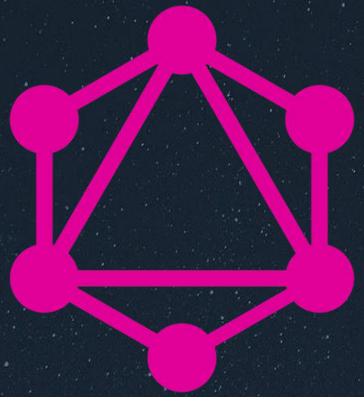
WiXEngineering

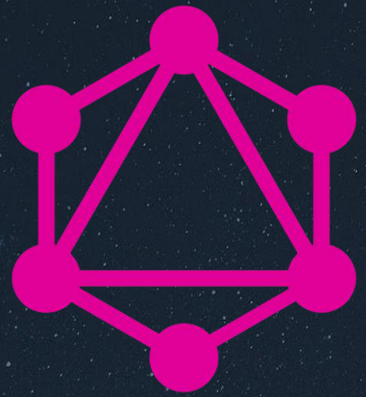


GraphQL

API по-новому

Владимир Цукур / Joker<?>

WiXEngineering



GraphQL

API, *не БД!*

Владимир Цукур / Joker<?>

Владимир Цукур

Ведущий инженер,
гилд мастер @
WiXEngineering

Партнер @
EASYHUNT

Программный комитет @
JEEConf, XP Days

flushdia

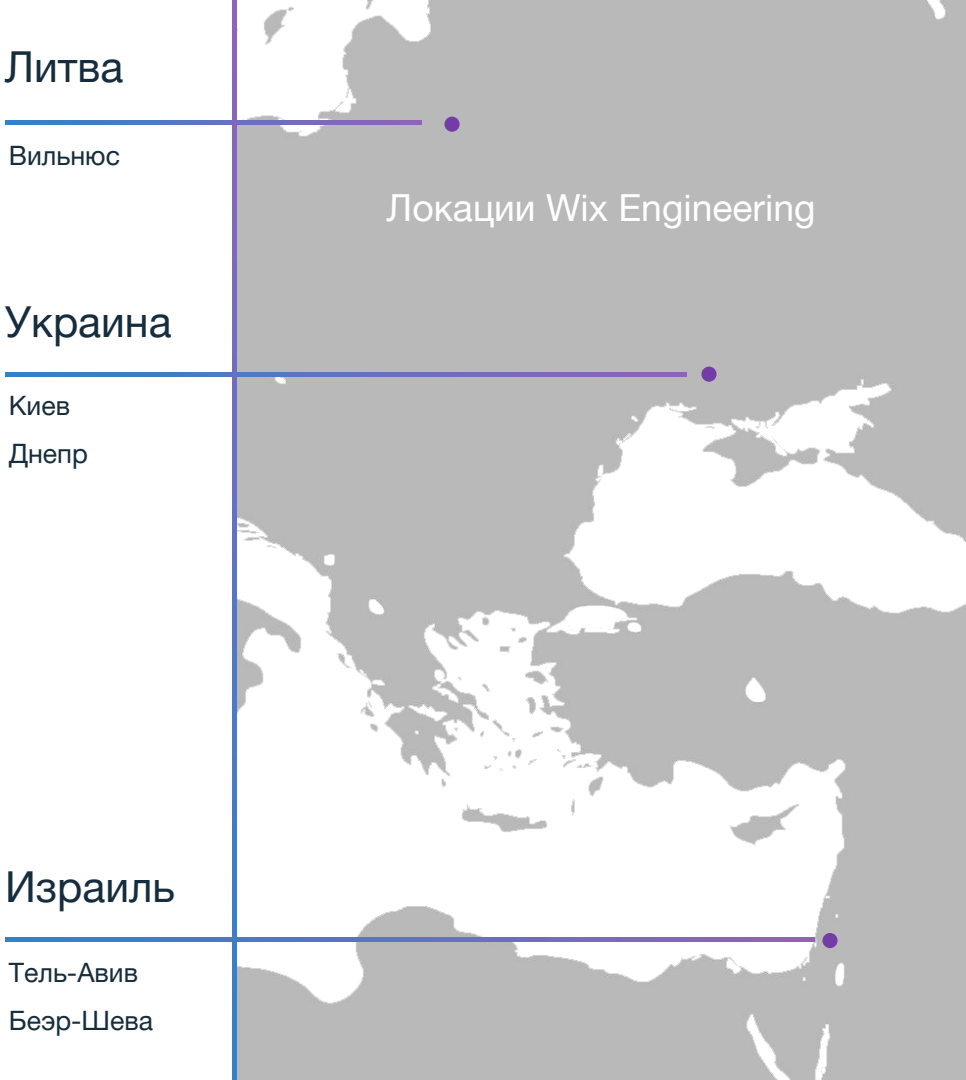
vtsukur

WiX

~ **110M** пользователей*

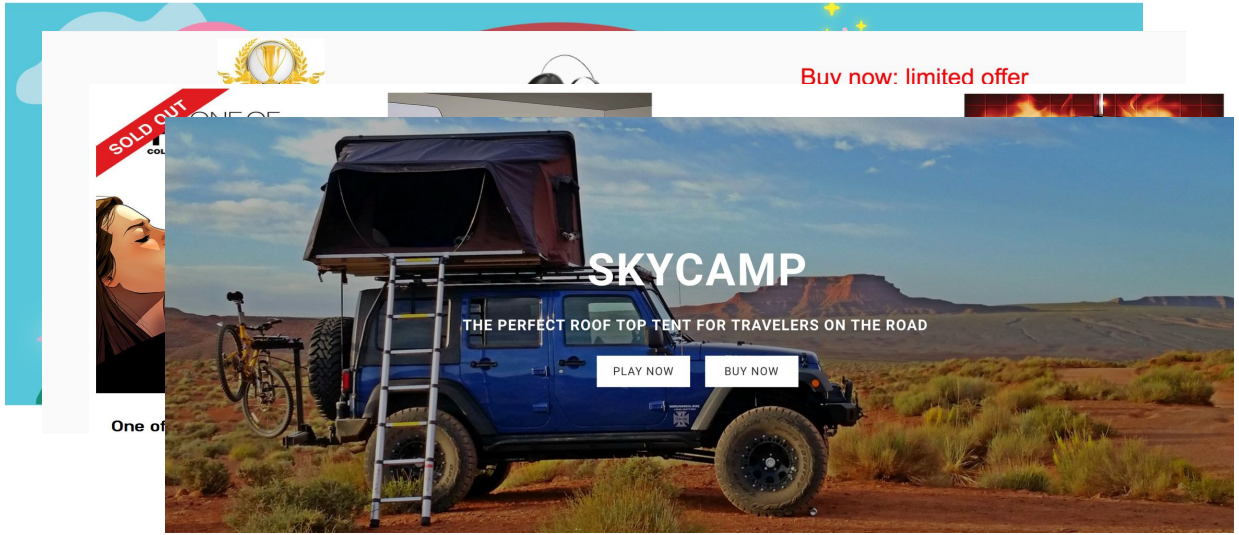
~ 700 инженеров
~ 1800 сотрудников

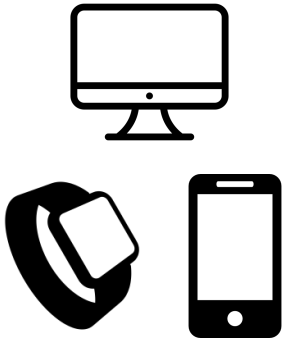
~ 500 микросервисов



Unicorn®
ADOPTIONS

Home About Adopt a Unicorn Contact


Buy now: limited offer
SOLD OUT
One of
SKYCAMP
THE PERFECT ROOF TOP TENT FOR TRAVELERS ON THE ROAD
PLAY NOW
BUY NOW



API

```
GET /products/:id
{
    title
    price
    images
    description
    info
    ...
}
```

Your fabulous Unicorn adoption combo pack contains:
A 12" Dreamy Eyes (White) Unicorn Soft Toy
A blank Unicorn adoption certificate - name your Unicorn!
A confirmation letter
A Unicorn badge
A Unicorn key ring
A Unicorn face mask (self assembly)
A Unicorn bookmark
A Unicorn colouring in sheet
A A4 Unicorn poster
2 x Unicorn postcards
3 x Unicorn stickers

Unicorn Adoption Combo Pack with Dreamy Eyes 12" (White) Soft Toy

£26.99

Quantity

1

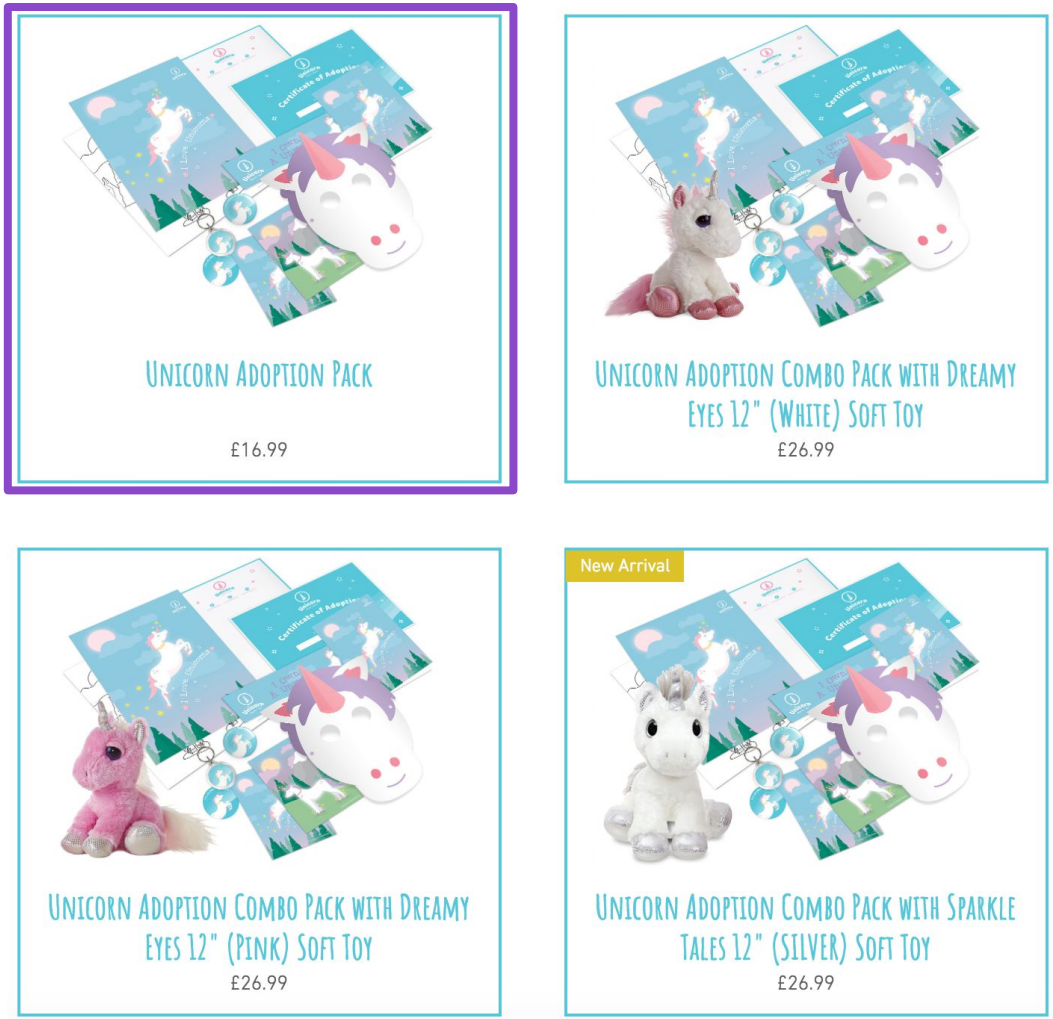
ADD TO CART

Product info

Spread Unicorn love amongst your friends and family by purchasing a Unicorn adoption combo pack today. You'll receive your very own fabulous adoption pack and a 12" Dreamy Eyes (White) cuddly toy. It makes the perfect gift for loved ones. Go on, you know you want to, adopt today!

Refund policy

```
GET /products
[
  {
    title
    price
    images(1)
    description
    info
    ...
  }
]
```

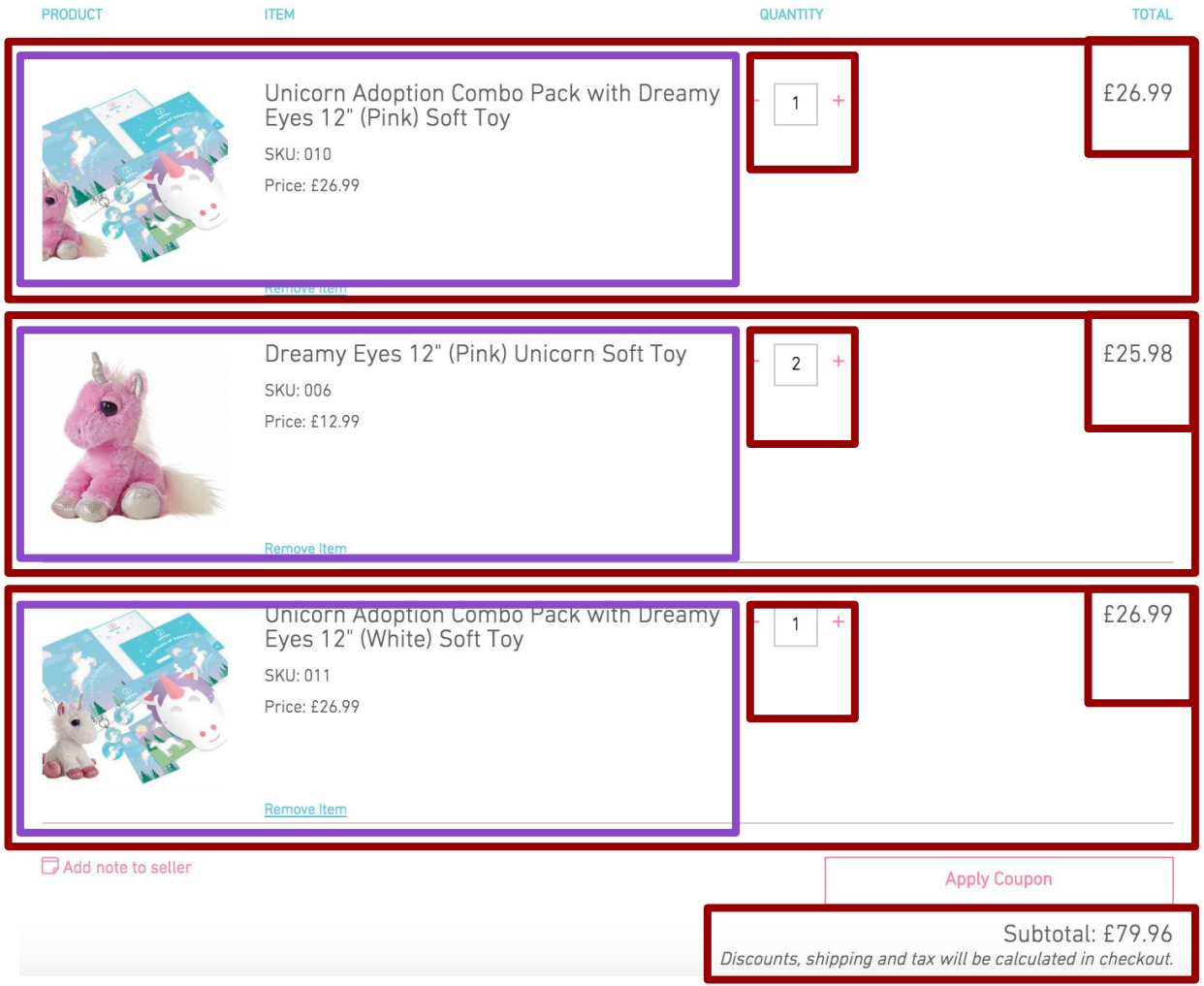


```
{
  "id": "59eb83c0040fa80b29938e3f",
  "title": "Combo Pack with Dreamy Eyes 12\" (Pink) Soft Toy",
  "price": 26.99,
  "info": "Spread Unicorn love amongst your friends and family by purchasing a Unicorn adoption combo pack today. You'll receive your very own fabulous adoption pack and a 12\" Dreamy Eyes (Pink) cuddly toy. It makes the perfect gift for loved ones. Go on, you know you want to, adopt today!",
  "description": "Your fabulous Unicorn adoption combo pack contains:\nA 12\" Dreamy Eyes (Pink) Unicorn Soft Toy\nA blank Unicorn adoption certificate - name your Unicorn!\nA confirmation letter\nA Unicorn badge\nA Unicorn key ring\nA Unicorn face mask (self assembly)\nA Unicorn bookmark\nA Unicorn colouring in sheet\nA A4 Unicorn posters\n2 x Unicorn postcards\n3 x Unicorn stickers",
  "images": [
    "http://localhost:8080/img/918d8d4cc83d4e5f8680ca4edfd5b6b2.jpg",
    "http://localhost:8080/img/f343889c0bb94965845e65d3f39f8798.jpg",
    "http://localhost:8080/img/dd55129473e04f489806db0dc6468dd9.jpg",
    "http://localhost:8080/img/64eba4524a1f4d5d9f1687a815795643.jpg",
    "http://localhost:8080/img/5727549e9131440dbb3cd707dce45d0f.jpg",
    "http://localhost:8080/img/28ae9369ec3c442dbfe6901434ad15af.jpg"
  ]
}
```

01

OVER-fetching

```
GET /carts/:id
{
    items [
        {
            product
            quantity
            total
        }
    ]
    subTotal
}
```



GET /carts/1

GET /products/59eb838e3f

GET /products/59eb838e40

GET /products/59eb88c400

```
{
  "id": 1,
  "items": [
    {
      "product": "/products/59eb838e3f",
      "quantity": 1,
      "total": 26.99
    },
    {
      "product": "/products/59eb838e40",
      "quantity": 2,
      "total": 25.98
    },
    {
      "product": "/products/59eb88c400",
      "quantity": 1,
      "total": 26.99
    }
  ],
  "subTotal": 79.96
}
```

02

- UNDER-fetching
- доп. запросы

GET /carts/1?projection=with-products


```
{
    "id": 1,
    "items": [
        {
            "product": {
                "id": "59eb838e3f",
                "title": "Combo Pack with Dreamy Eyes 12\" (Pink) Soft Toy",
                "price": 26.99,
                "image": "http://localhost:8080/img/918d8d4cc83d4e5f8680ca4edfd5b6b2.jpg",
                "sku": "010"
            },
            "quantity": 1,
            "total": 26.99
        },
```


...

Unicorn Adoption Combo Pack with Dreamy Eyes 12" (Pink) Soft Toy

SKU: 010

Price: £26.99

GET /carts/1?projection=with-products

GET /carts/1?projection=краткая

GET /carts/1?projection=

GET /carts/1?projection=

03

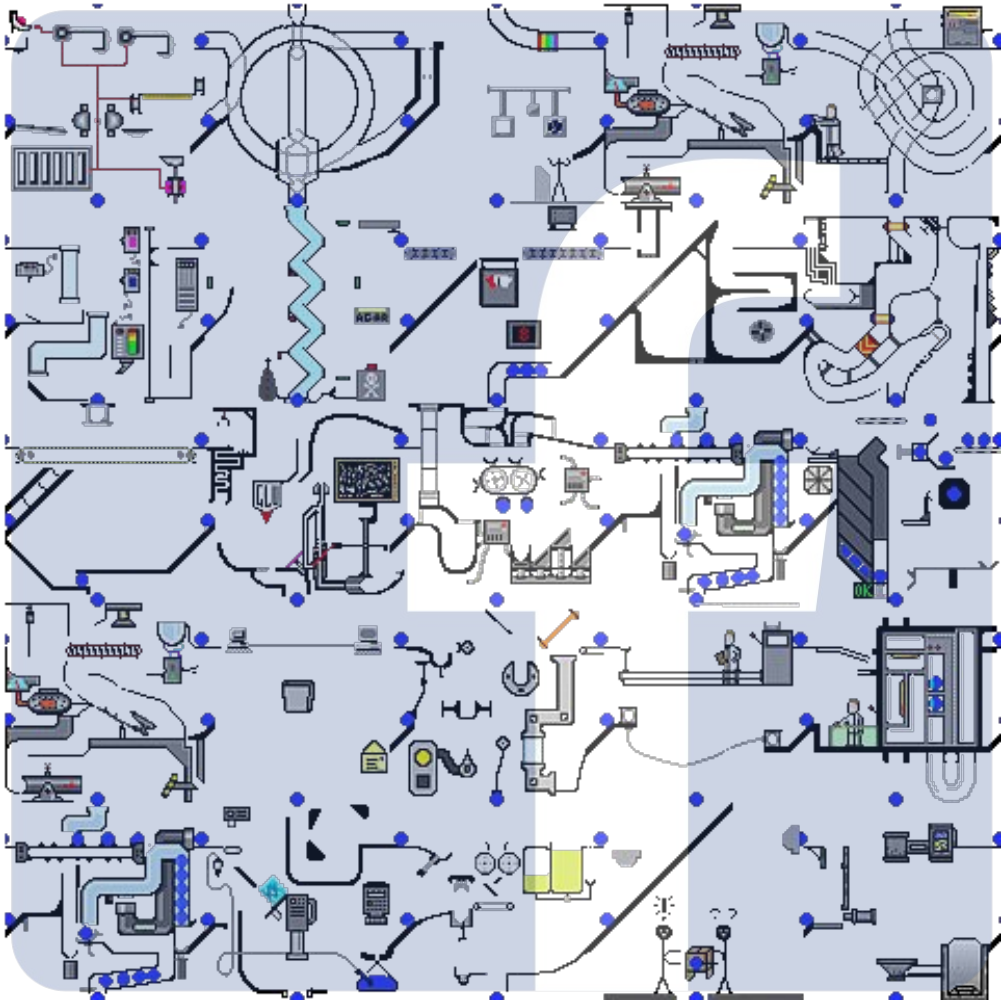
- **городим огород :(***
- **тяжелее работать :(**

```
{
  "id": "59eb83c0040fa80b29938e3f",
  "title": "Combo Pack with Dreamy Eyes 12\" (Pink) Soft Toy",
  "price": 26.99,
  "info": "Spread Unicorn love amongst your friends and family by purchasing a Unicorn adoption combo pack today. You'll receive your very own fabulous adoption pack and a 12\" Dreamy Eyes (Pink) cuddly toy. It makes the perfect gift for loved ones. Go on, you know you want to, adopt today!",
  "description": "Your fabulous Unicorn adoption combo pack contains:\nA 12\" Dreamy Eyes (Pink) Unicorn Soft Toy\nA blank Unicorn adoption certificate - name your Unicorn!\nA confirmation letter\nA Unicorn badge\nA Unicorn key ring\nA Unicorn face mask (self assembly)\nA Unicorn bookmark\nA Unicorn colouring in sheet\nA A4 Unicorn posters\n2 x Unicorn postcards\n3 x Unicorn stickers",
  "images": [
    "http://localhost:8080/img/918d8d4cc83d4e5f8680ca4edfd5b6b2.jpg",
    "http://localhost:8080/img/f343889c0bb94965845e65d3f39f8798.jpg",
    "http://localhost:8080/img/dd55129473e04f489806db0dc6468dd9.jpg",
    "http://localhost:8080/img/64eba4524a1f4d5d9f1687a815795643.jpg",
    "http://localhost:8080/img/5727549e9131440dbb3cd707dce45d0f.jpg",
    "http://localhost:8080/img/28ae9369ec3c442dbfe6901434ad15af.jpg"
  ]
}
```

04

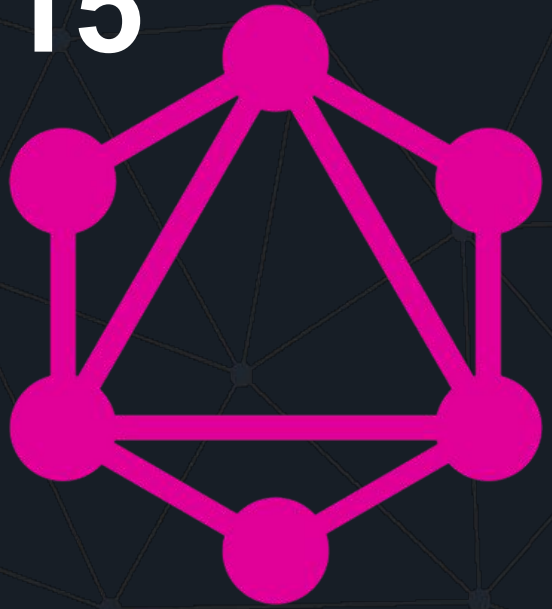
Как @deprecate-ить и удалять устаревшее?

2012

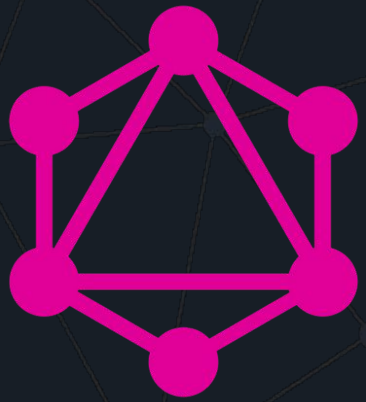


SALVE SATANAS! REGGIE SATANAS! SALVE SATANAS! REGGIE SATANAS! SALVE SATANAS! REGGIE SATANAS! SALVE SATANAS!

2015



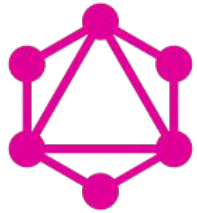
GraphQL



GraphQL

"... is a query language for APIs and a runtime for fulfilling those queries with your existing data"

1. Описываем схему

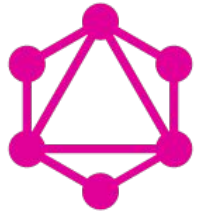


```
type User {
  name: String
  friends: [User]
  city: City
}
```

```
type City {
  name: String
  population: Int
  citizens: [User]
}
```

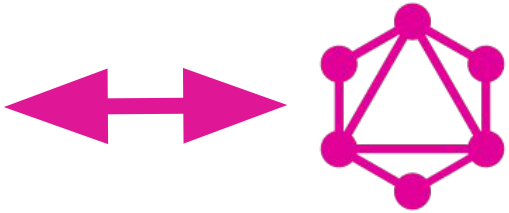
```
{
  user(name: String): User
  ...
}
```

2. Просим данные



```
{
  user(name: “Vanya Unicorn”) {
    friends {
      name
    }
    city {
      name
      population
    }
  }
}
```

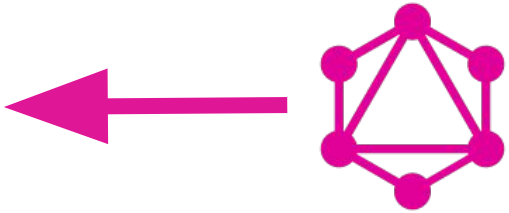
3. Получаем!



```
{
  user(name: “Vanya Unicorn”) {
    friends {
      name
    }
    city {
      name
      population
    }
  }
}
```

```
{
  “data”: {
    “user”: {
      “friends”: [
        { “name”: “Lena” },
        { “name”: “Stas” }
      ]
      “city”: {
        “name”: “Kyiv”,
        “population”: 2928087
      }
    }
  }
}
```

только нужное

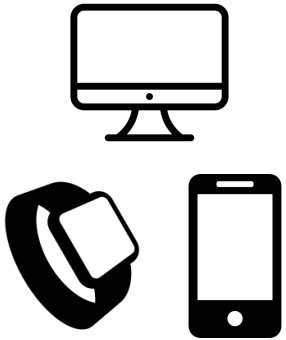


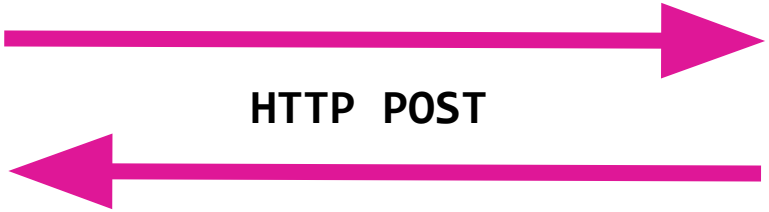
```
{
  user(name: “Vanya Unicorn”) {
    friends {
      name
    }
    city {
      name
      population
    }
  }
}
```

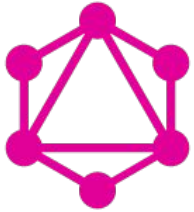
```
{
  “data”: {
    “user”: {
      “friends”: [
        { “name”: “Lena” },
        { “name”: “Stas” }
      ]
      “city”: {
        “name”: “Kyiv”,
        “population”: 2928087
      }
    }
  }
}
```

за один запрос

```
{
  user(name: "Vanya Unicorn") {
    friends {
      name
    }
    city {
      name
      population
    }
  }
}
```







```
{
  "data": {
    "user": {
      "friends": [
        { "name": "Lena" },
        { "name": "Stas" }
      ]
      "city": {
        "name": "Kyiv",
        "population": 2928087
      }
    }
  }
}
```

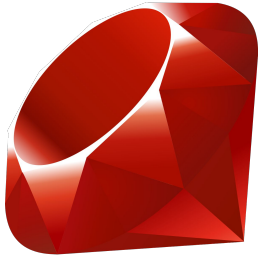
давайте “тыкать” 🦄

- WYSIWYG
- эффективная выборка
- проще разрабатывать
- полезная аналитика
- любой источник данных и транспорт

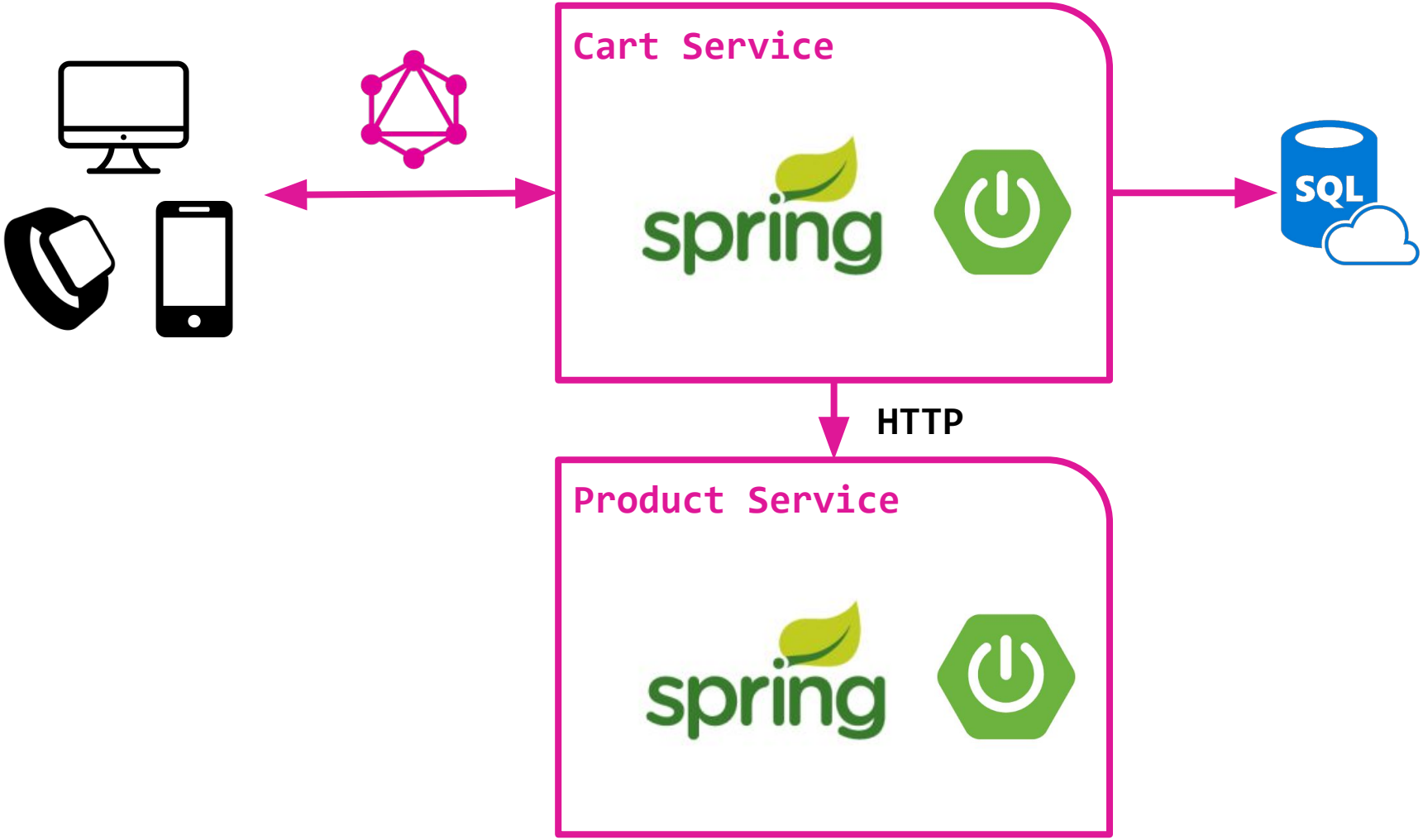
Java™

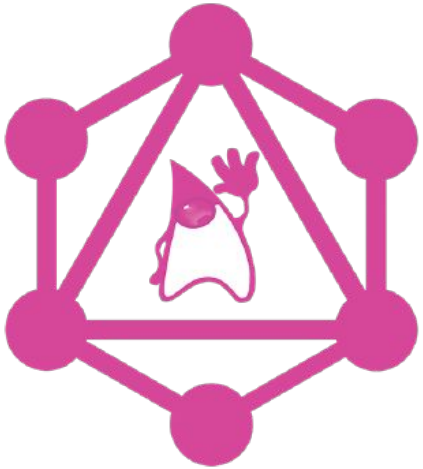
Scala

python™



node
JS®


Cart Service
spring
SQL
HTTP
Product Service
spring



graphql-java

поехали! 🦄

GraphQL SPQR

> GraphQL SPQR (GraphQL Schema Publisher & Query Resolver, pronounced like *speaker*) is a simple-to-use library for rapid development of GraphQL APIs in Java.

chat on gitter | maven central 0.9.3 | Javadoc | build passing | license Apache 2 | SemVer 2.0.0

Выполнение запроса

1)

```
{
  cart(id: 1) {
    items {
      product {
        title
        price
        images(limit: 1)
        sku
      }
      quantity
      total
    }
    subTotal
  }
}
```

2)

```
{
  cart(id: 1) {
    items {
      product {
        title
        price
        images(limit: 1)
        sku
      }
      quantity
      total
    }
    subTotal
  }
}
```

```
SELECT ... FROM Cart
     INNER JOIN Item ...
```

3)

```
{
  cart(id: 1) {
    items {
      product {
        product {
          product {
            title
            price
            images(limit: 1)
            sku
          }
        }
      }
      quantity
      total
    }
    subTotal
  }
}
```

GET /products/1
GET /products/2
GET /products/3

+

Ожидания

Реальность

```
{
  cart(id: 1) {
    items {
      product {
        title
        price
        images(limit: 1)
        sku
      }
      quantity
      total
    }
    subTotal
  }
}
```

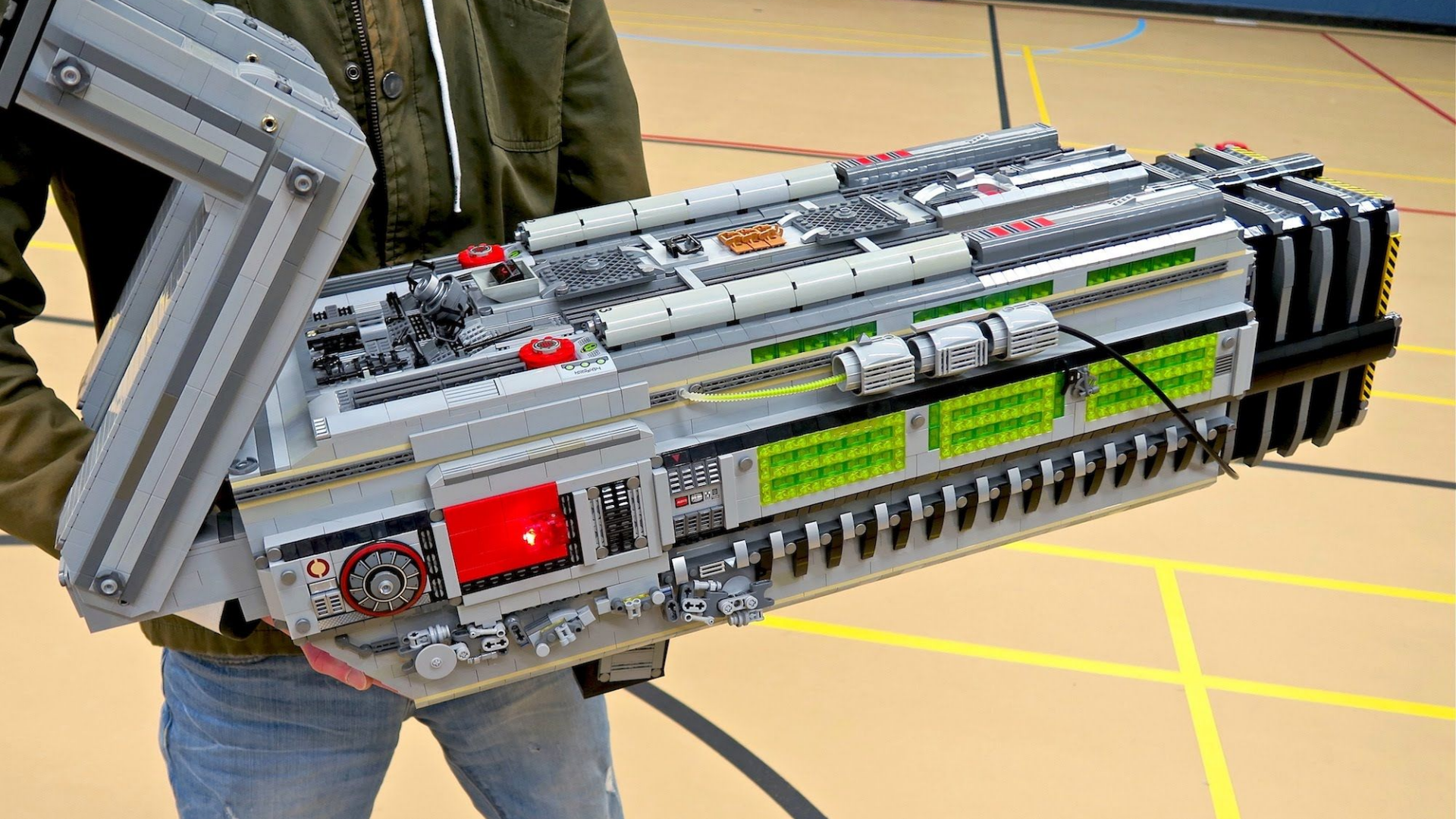
```
@Batched
GET /products?ids=1,2,3
```

+

поехали! 🦄

Безопасность

```
{
  user(name: “Vanya Unicorn”) {
    friends {
      name
      friends {
        name
        friends {
          name
          friends {
            name
            ...
          }
        }
      }
    }
  }
}
```

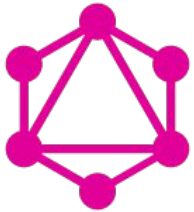


ограничиваем глубину!

ограничиваем сложность!

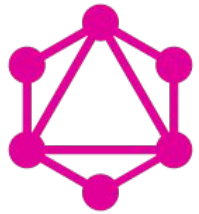
поехали! 🦄

- троттлинг / рейт лимитинг
- таймауты
- постраничный просмотр



```
schema {
  query: Query
}
```

```
schema {
  query: Query,
  mutation: Mutation
}
```



```
type Mutation {
  addProductToCart(cart: ID!,
                   product: ID!,
                   count: Int = 1): Cart
}
```

поехали! 🦄

WIX

Scala

+

Sangria

+

APOLLO

няшки рендеринга @ WiX

```
// Pre-rendered
<html>
<script data-embedded-graphql>
{
  product(productId: $productId) {
    title
    description
    price
    ...
  }
}
</script>
</html>
```

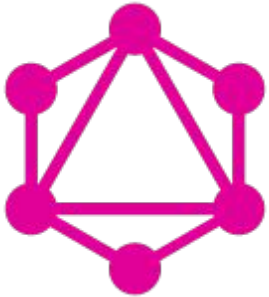
```
// Rendered
<html>
<script>
window.DATA = {
  product: {
    title: 'GraphQL Sticker',
    description: 'High quality sticker',
    price: '$2'
    ...
  }
}
</script>
</html>
```

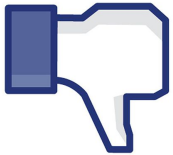
1stdibs
20 minutes
adayroi.com
ALEMBIC
ALLOCINE
AlphaSights
Amplitude
ANTS
Appier
ArangoDB
ART SY
attendify
bazinga!
Blender Bottle
Bright
Buildkite
bynder
HD CircleHD
Club Med
Colectica
compara online
Conduit
coursera
credit karma
curio
dailymotion
digitransit
Drift
DueDil
eastview christian church
easy carros
ediket
Fairfax Media
gentux
GetNinjas
Goalify
GRAPHCMS
GRAPHCOOL
HACKAGES
HSL HRT
HIJUP
HOUSING ANYWHERE
hudl
Icon Systems
idobata
IndonesiaX
inerva
intuit
leanIX
LEGENDS OF LEARNING
lelivrescolaire.fr
MAKE SCHOOL
MEDALLIA
METEOR
Mixcloud
MyHeritage
neo4j
NEWSPRING CHURCH
NINGENSOFT
Nova-Ideo
OK GROW!
OVOS
PERSADO [GO]
Product Hunt
PROJECT SEPTEMBER
PROTEL
Quri
REDBUBBLE
Reindex
Restorando
SALE STOCK
scaphold
SERVERLESS
sky
SKYARCH
あなたの創で、あなた以上に考える。
SMARKETS
startups.co
stem
swapcard
SIZIGI
taller
Teachers Pay Teachers
teselagen
THE HUNT
Trove
Unigraph:io
UST Global
vanila.
waldo
WIX
wayfair
whitescape
wirtualna polska
wishlife
WorkFlowGen
WOW air
yelp
zlyde
zzish

Хочу !!!

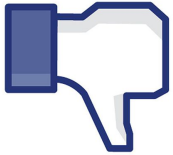
“Грусть” GraphQL

- кеширование
- безопасность
- обработка ошибок
- поддержка произвольных ресурсов

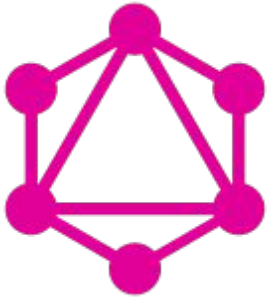


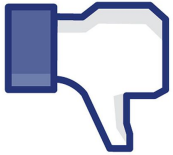


операции: идемпотентно или нет?

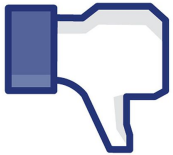


наименование операций





гипермедиа



экосистема Java

If you suck at providing REST API,
you WILL suck at providing GraphQL API.
Arnaud Lauret, API Handyman

Альтернативы

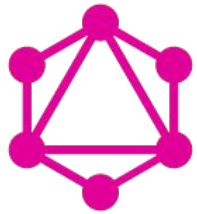
{ json:api }

linkREST

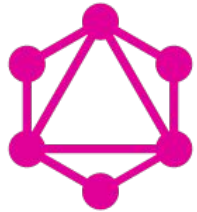
https://philsturgeon.uk/api/2017/01/24/graphql-vs-rest-overview/

https://blog.runscope.com/posts/you-might-not-need-graphql

```
schema {
  query: Query,
  mutation: Mutation,
  subscription: Subscription
}
```

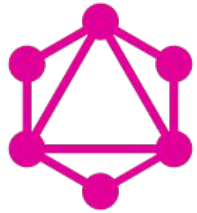


```
type Subscription {
  productAdded(cart: ID!): Cart
}
```



```
subscription {
  productAdded(cart: 123) {
    items {
      product ...
    }
    subTotal
  }
}
```

```
{
  “data”: {
    “productAdded”: {
      “items”: [
        { “product”: ... },
        { “product”: ... },
        { “product”: ... },
        { “product”: ... }
      ]
      “subTotal”: 289.33
    }
  }
}
```



```
subscription {
  productAdded(cart: 123) {
    items {
      product ...
    }
    subTotal
  }
}
```

```
{
  “data”: {
    “productAdded”: {
      “items”: [
        { “product”: ... },
        { “product”: ... },
        { “product”: ... },
        { “product”: ... }
      ]
      “subTotal”: 289.33
    }
  }
}
```

```
{
  feed {
    stories {
      author { name }
      message
      comments @defer {
        author { name }
        message
      }
    }
  }
}
```

```
{
  "feed": {
    "stories": [
      {
        "author": { "name": "Lee Byron" },
        "message": "GraphQL est grand!"
      },
      {
        "author": { "name": "Dan Schafer" },
        "message": "Anyone for lunch?"
      },
      {
        "author": { "name": "Christopher Chedeau" },
        "message": "React Native est l'avenir"
      }
    ]
  }
}
```

RANGLE.IO

REWRITING THE WEB

Search

```
{
  feed {
    stories {
      author { name }
      message
      comments @defer {
        author { name }
        message
      }
    }
  }
}
```

```
{
  "path": [ "feed", "stories", 0, "comments" ],
  "data": [
    {
      "author": { "name": "Laney Kuenzel" },
      "message": "J'aime GraphQL!"
    }
  ]
}
```

RANGLE.IO

REWRITING THE WEB

THANK YOU!

Пример, а не production ready код!

https://github.com/vtsukur/graphql-java-store

WiXEngineering

Вопросы?

flushdia

vtsukur

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