DevFest
Siberia 2020

DEVFEST SIBERIA 5-6th DECEMBER

GraphQL Introspection

Also just GraphQL, why not

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A little bit about me

My name is Igor
I do this development thingy
I have twitter (@yhaskell)

A little bit of history

I love history slides in my presentations

First came HTTP*

Nice protocol for sending text through Inter-webs

You can GET and you can POST!

Later, more verbs were added

HTML is sent through; CGI for interactivity and processing

* This is a lie

A little bit of history

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SOAP*

Formerly XML-RPC

Sending messages, commands etc through network

XML: Validateable, strictly typed

Goes good with HTTP

* If this was a jump-scare, would it work?

A little bit of history

I love history slides in my presentations

REST*

Links formatted in a specific way

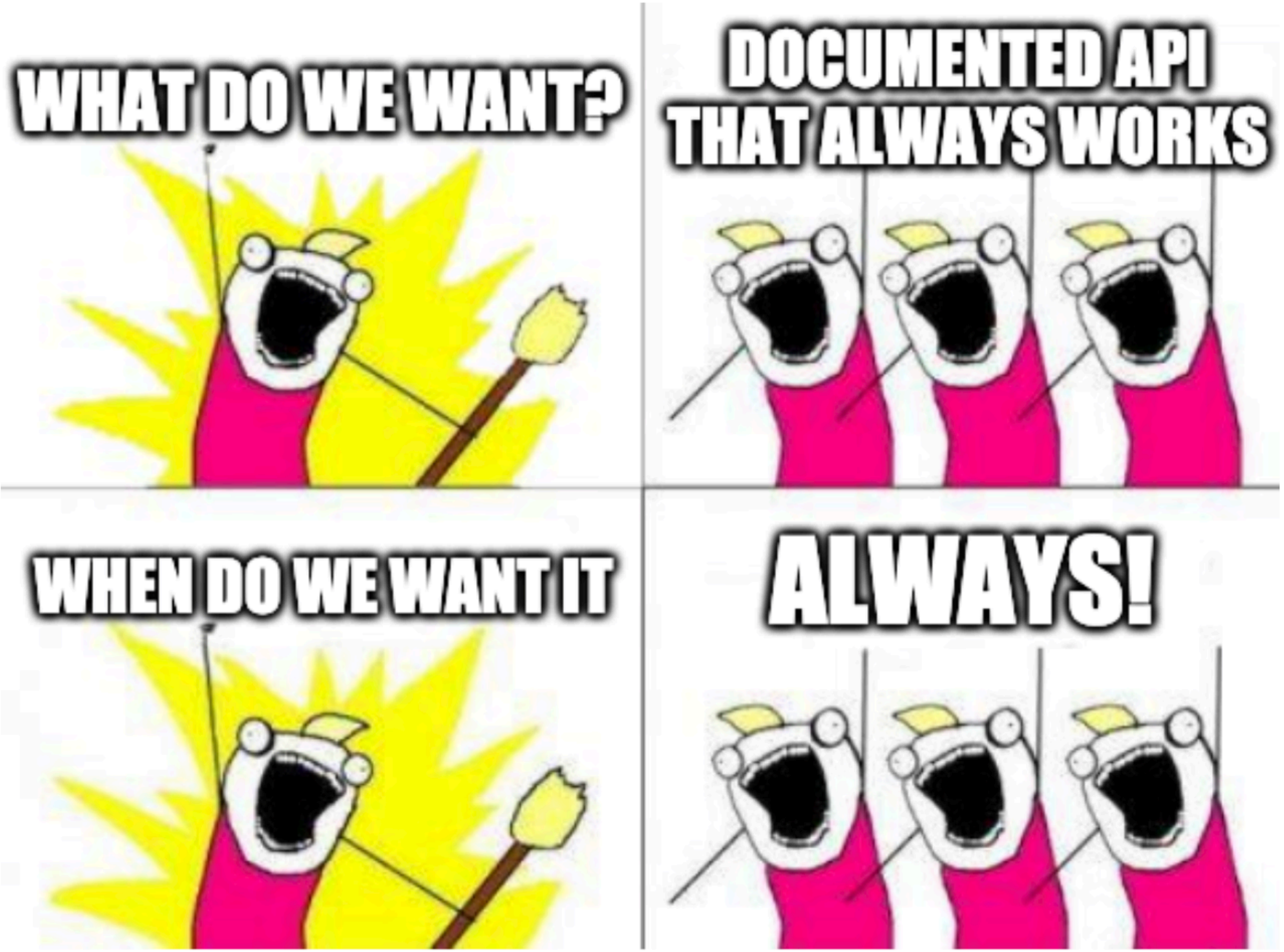
HTTP verbs determine actions

Accepts JSON, responds with JSON

* Praise our lord and saviour

REST is the way...

But there is some caveats


WHAT DO WE WANT?
DOCUMENTED API THAT ALWAYS WORKS
WHEN DO WE WANT IT
ALWAYS!

What do we miss in REST

Personal opinions presented as the only and final truth

- Automatic validation of incoming data
- Therefore, strict typing for endpoints
- A nice way to get data for multiple objects in one go
- Getting only the data we need

GraphQL

Describe your data

```
type Project {
  name: String
  tagline: String
  contributors: [User]
}
```

Ask for what you want

```
{
  project(name: "GraphQL") {
    tagline
  }
}
```

Get predictable results

```
{
  "project": {
    "tagline": "A query language for APIs"
  }
}
```

* Stolen from official website, which is, by the way, https://graphql.org/

So, What is GraphQL?

A query language for your API

Also, a runtime to fulfil the queries

Self-description built into spec

Strongly typed

Validation is in the spec too

Protocol-independent

GraphQL Query

- 3 types: query, mutation, subscription
  - queries provides idempotent data access
  - mutations, well, mutate data
  - subscriptions encapsulate data streaming

GraphQL Query

```
query {
  distilleries(country: SCOTLAND) {
    id
    name
    address { address zip city }
    phone
  }
}
```

GraphQL Query


```
{
  “data”: {
    “distilleries”: [
      {
        “id”: “s7-cXydY2js”,
        “name”: “Lagavulin”,
        “address”: {
          “street”: null,
          “city”: “Lagavulin, Isle of Islay”,
          “zip”: “PA42 7DZ”
        },
        “phone”: “+44 149 6302 749”
      },
      …
    ]
}}
```

GraphQL Mutation

```
mutation MakeOrder {
  orderItems(items: [
    { productId: “laajKUXbMOs”, count: 2 },
    { productId: “i7m-2dUWSn4”, count: 7 }
  ]) {
    id
    price
  }
}
```

GraphQL Mutation

```
{
  “orderItems”: {
    “id”: “cJ9-dc7Snekc”,
    “price”: 576.24
  }
}
```

GraphQL Schema

Multiple type kinds:

- Scalar
- Union
- Object
- Enum
- Input
- Interface
- NonNull
- List

GraphQL Scalar Type

```
scalar Date
```

(Processing code must be defined in the server code)

GraphQL Object Type

```
type User {
  id: ID!
  name: String!
}
```

GraphQL Enum Type

```
enum State {
  INITIALIZED
  PROCESSING
  ERROR
  SUCCESFUL
}
```

GraphQL Interface Type

```
interface Response {
  success: Boolean!
}
```

GraphQL Interface Type

Now we can extend the interface to some object types

```
type ErrorResponse extends Response {
  success: Boolean!
  errors: [Error!]
}

type SuccessUserCreatedResponse extends Response {
  success: Boolean!
  user: User!
}
```

GraphQL Union Type

```
type Leaf {
  data: Int!
}
type Node {
  left: Tree
  right: Tree
}
union Tree = Leaf | Node
```

GraphQL Additional Types

List: [T]

Non null: T!

GraphQL Resolvers

Resolver is a function

```
(parent, arguments, context) ⇒ value
```

It returns value for a field in a type

GraphQL Backend

Schema + Resolver Map = ❤️

* Also, something that allows clients to actually query

Let’s play with some GraphQL

GraphQL Introspection

Reflection for your API

Schema data accessible via GraphQL

Required to be available by spec

Let’s play with some more GraphQL

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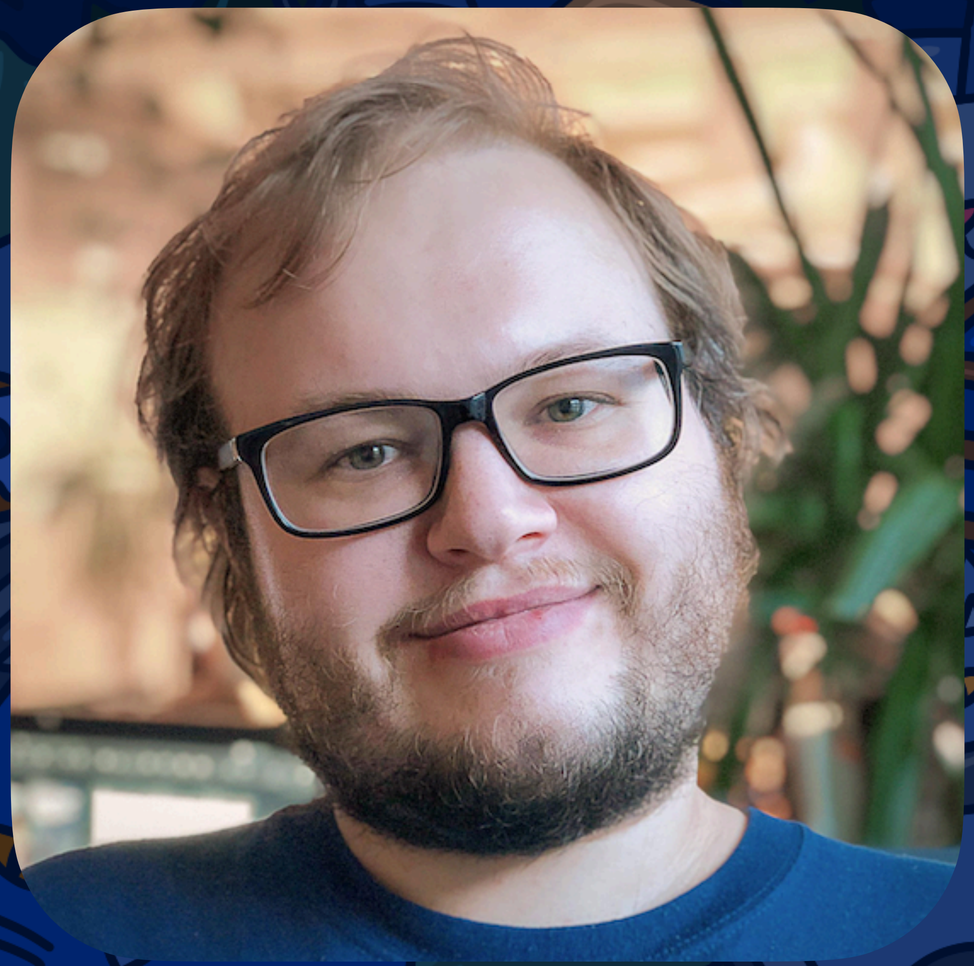

Thank you!

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https://github.com/yhaskell/gdg-siberia-2020

This presentation: https://bit.ly/2L80xkM