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GRAPHQL : REST IN PEACE?

Thomas SIMON

Sencha Community Days
2019
European Sencha ExtJS Conference

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NEW ZEALAND

USA

AUSTRIA

THOMAS SIMON

AGE : 33

SOFTWARE ENGINEER SINCE 2015

HOBBIES : TRAVELLING, BASKET-BALL

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MULHOUSE, FRANCE

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Java & Javascript specialist

Agile team of experts consultants

Sencha partner for France since 2013

Consulting

Development

Training

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AGENDA

- Small reminder
- GraphQL
- ExtJS & GraphQL
- Wrapping up

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FULL STACK APPLICATION

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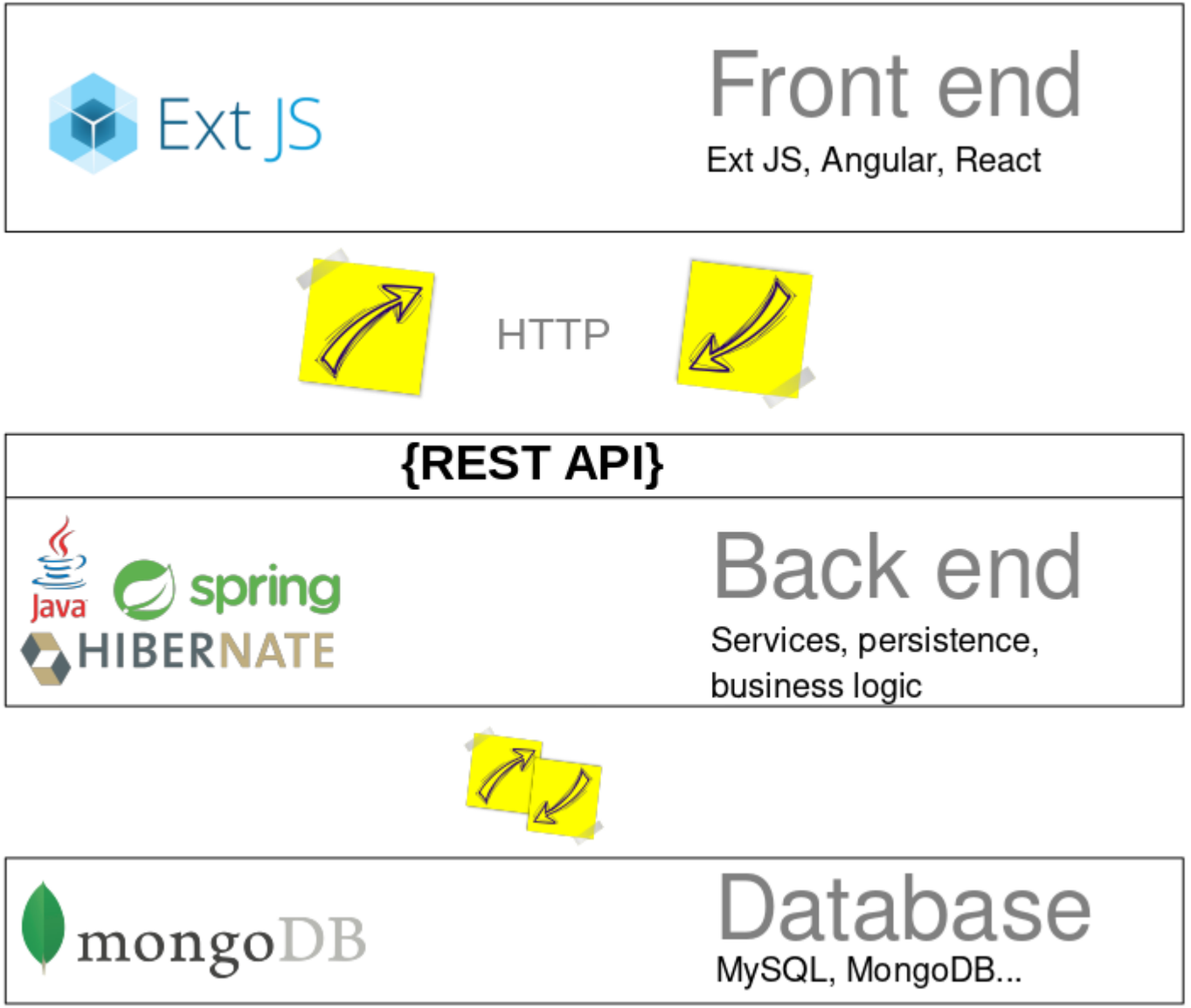

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REST

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REST

Representational State Transfer

Architecture style described in 2000

Takes advantages of any protocol

Based on 6 principles

REST PRINCIPLES

- Client - server
- Stateless
- Cacheable
- Layered system
- Uniform interface
- Code on demand (optional)

Key abstraction of information : resources

- URL to identify resources
- HTTP method to identify operation on resources
- HTTP response to view resources


1
HTTP GET
{
"user":{ … }
}
/users/87
/users/87/posts
/users/87/followers
2
HTTP GET
{
"posts" : { … }
}
/users/87
/users/87/posts
/users/87/followers
3
HTTP GET
{
"followers":{ … }
}
/users/87
/users/87/posts
/users/87/followers

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WHY CHANGE ?

Easy to use

One of the most popular API

Widely used

Proven architecture

“Oldies but goodies.”

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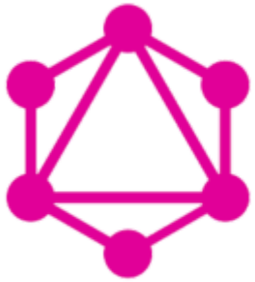
GRAPHQL



GraphQL

- Created by Facebook in 2012
- Open sourced in 2015
- Facebook‘s native app
- Reduce transmitted informations
- Focused on front-end development

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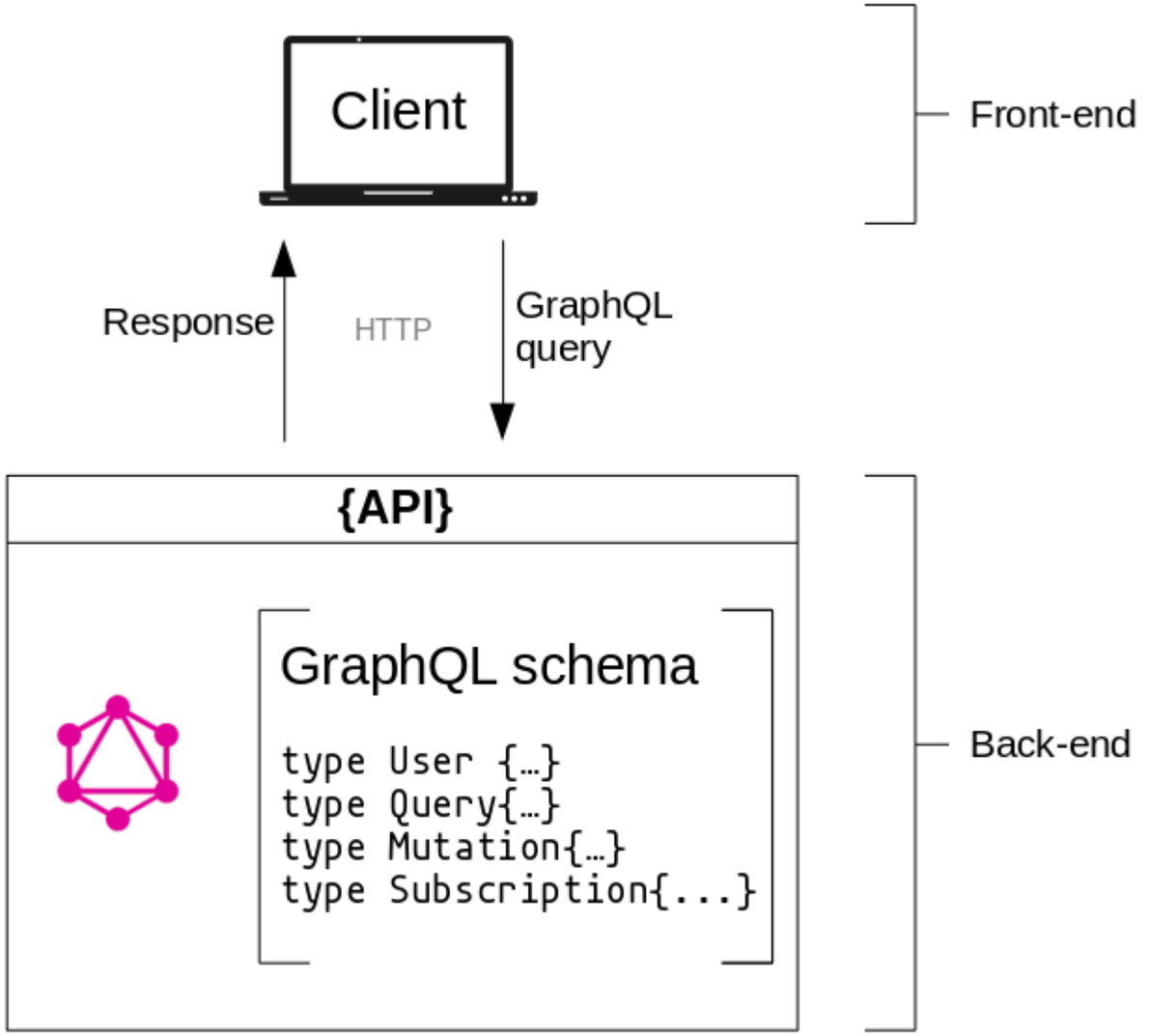
WHAT IS GRAPHQL?

- Query language
- Environment to execute queries
- Main concepts:
  - Hierarchical
  - Strongly typed
  - Defines a data shape

"Ask for what you need, get exactly that"


Client
Front-end
Response
HTTP
GraphQL
query
{API}
GraphQL schema
type User {…}
type Query{…}
type Mutation{…}
type Subscription{...}
Back-end

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GRAPHQL SCHEMA

Core of GraphQL server

Data structure

What is possible

Accessible from a single endpoint

TYPE AND FIELD

Main and most basic components

Object you can fetch

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

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3 ROOT TYPES

Operations provided by a GraphQL API

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QUERY

Fetch data from server

GraphQL schema

```
type Query {
        users: [User!]!
        user(id: ID!): User
}
```

"users" is called a resolver

Query sent by client

```
query {
  users {
        name
  }
}
```

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MUTATION

Update data

GraphQL schema

```
type Mutation {
 createUser(name: String!): User!
 updateUser(id: ID!, name: String): User!
}
```

Query sent by client

```
mutation {
  createUser(name: "Bob") {
        id
  }
}
```

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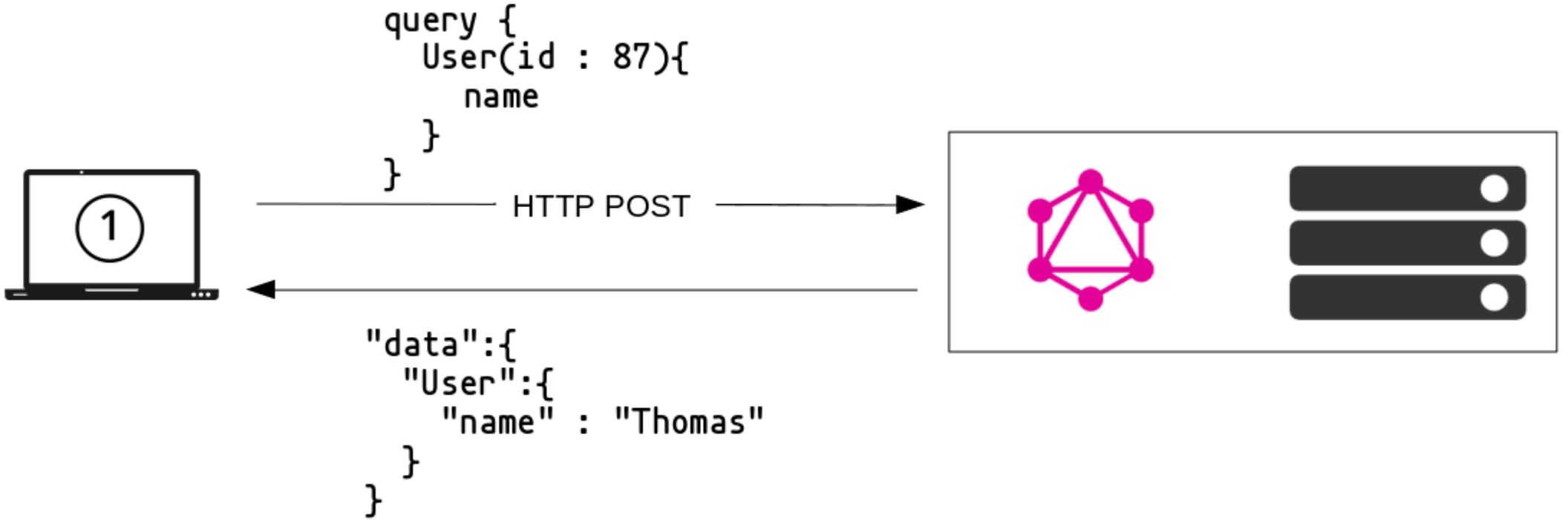
SUBSCRIPTION

A way to push data from server to the clients


query {
User(id : 87){
name
}
}
1
HTTP POST
"data":{
"User":{
"name" : "Thomas"
}
}

```
query {
  User(id : 87){
    name
    posts {...}
    followers {...}
  }
}
```


```
"data":{
  "User":{
    "name" : "Thomas",
    "posts" : [
         {"title" :"GraphQL is great"}
    ],
    "followers" : [
         {"name" :"John"}
    ]
  }
}
```

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EXT JS & GRAPHQL

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HOW TO USE GRAHQL WITH EXT JS ?

- ExtReact/ExtAngular & Apollo
- Ext JS & existing class
- Ext JS & custom class

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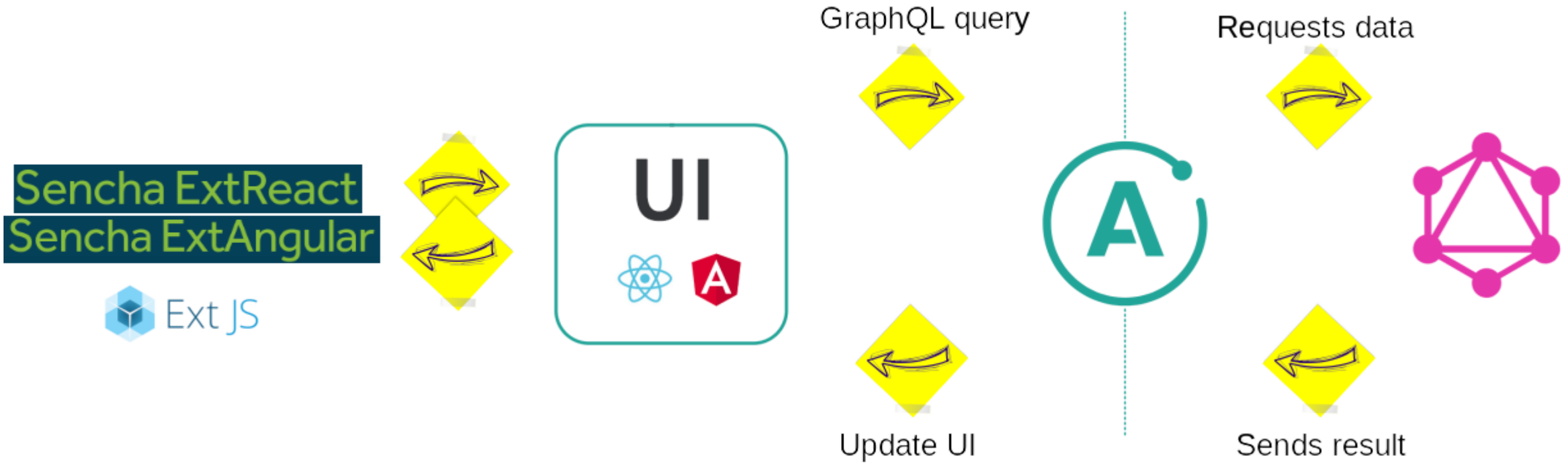
EXTREACT/EXTANGULAR



EXTREACT/EXTANGULAR

- Easier to use GraphQL with Apollo

- Complex architecture
- Only ExtJS component

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EXT JS & EXISTING CLASS

- Ext.data.proxy.Rest
- Ext.data.proxy.Ajax
- Ext.data.request.Ajax

Use query parameter and write the query

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EXAMPLE

```
Ext.Ajax.request({
        url: 'http://localhost:4000/graphql',
        jsonData:{
                query: 'query{links{url,description}}'
        },
        /* ... */
});
```

```
this.getStore('links').load({
        params:{
                query: 'query{links{id,description}}'
        }
});
```

PARAMETRIZE QUERY

```
jsonData:{
        query: 'mutation($url: String!,$desc: String!){post(url:$url,description:$desc){id}}',
        variables: {
                url: 'www.url.com',
                desc: 'Fake url'
        }
}
```

EXT JS & EXISTING CLASS

- Very easy to use

- Difficult to parametrize query
- Very tedious

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EXT JS & CUSTOM CLASS

- Extend Ext.data.proxy.Rest
- Extend Ext.data.writer.Writer
- Extend Ext.data.reader.Reader

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EXAMPLE

Clone of Hacker News

- List links
- Add links

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AUTOMATED PROCESS

```
Ext.define('HackerNews.model.Link', {
        extend: 'HackerNews.model.Base',
        /* Fields : id, url and description */
        proxy: {
                type: 'graphql',
                url: 'http://localhost:4000/graphql',
                //Reader is type 'graphql' by default
                reader: {
                        type: 'graphql',
                        rootProperty: 'data.links'
                },
                //Writer is type 'graphql' by default
                writer: {
                        type: 'graphql'
                }
```

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AUTOMATED PROCESS

New class builds queries with default configuration

```
query{links{id,url,description}}
```

```
mutation{
        createLink(url: "Test url",description: "New description"){
                id
                url
                description
        }
}
```

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USE CONFIGURATION TO BUILT QUERY

```
proxy: {
        type: 'graphql',
        url: 'http://localhost:4000/graphql',
        reader: {
                type: 'graphql',
                rootProperty: 'data.links',
                readProperties: ['id','url']
        },
        writer: {
                type: 'graphql',
                createResolverName: 'post',
                updateProperties:['url'],
                readProperties: ['id']
        }
}
```

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USE CONFIGURATION TO BUILT QUERY

```
query{links{id,url}}
```

```
mutation{
        post(url: "Test url") {
                id
        }
}
```

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AUTOMATED PROCESS

Use Ext.data.Model methods

```
let link = new HackerNews.model.Link({
        url: 'www.sencha.com',
        description: 'Nice website'
});
```

```
link.save();
```

```
link.erase();
```

EXT JS & CUSTOM CLASS

- More adaptable
- Possible to automate process
- Parametrize query
- Keep descriptive configuration

- Need time and knowledge to develop class

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WRAPPING UP

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SHALL WE GIVE UP REST ?

GraphQL is really different than REST

GraphQL is not the new REST

GraphQL is not better than REST

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THE RIGHT TOOL FOR THE RIGHT JOB

REST

- CRUD app
- Few fields & always same request type
- Easy caching (server)
- Complex data format
  (no schema constraints)

GRAPHQL

- Reduce amounts of data
- Front-end development in autonomy
- Well-defined rules
- Automatic documentation
- Rich ecosystem/community

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THANK YOU FOR YOUR ATTENTION

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QUESTION ?!

tsimon@jnesis.com

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jnesis jnesis.com/blog

@jnesis_fr

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fr.linkedin.com/company/jnesis