

# DESIGNING MOBILE API

WOJTEK ERBETOWSKI

MobileWarsaw #21, 19.01.2015

t: @erbetowski

ABOUT ME?

YOU ALL KNOW ME ALREADY, RIGHT?

WHY NOT SIMPLY 'DESIGN AN API'?

GOOD MOBILE API

≠

GOOD API



**LIMITATIONS, SIR**

REST & HATEOAS

# GET /users/123

```
{  
  "name": "John Doe",  
  "age": 25,  
  "links": [  
    {  
      "rel": "self",  
      "href": "/users/123"  
    },  
    {  
      "rel": "account",  
      "href": "/accounts/987"  
    },  
    {  
      "rel": "address",  
      "href": "/addresses/555"  
    }  
  ]  
}
```

GET /addresses/555

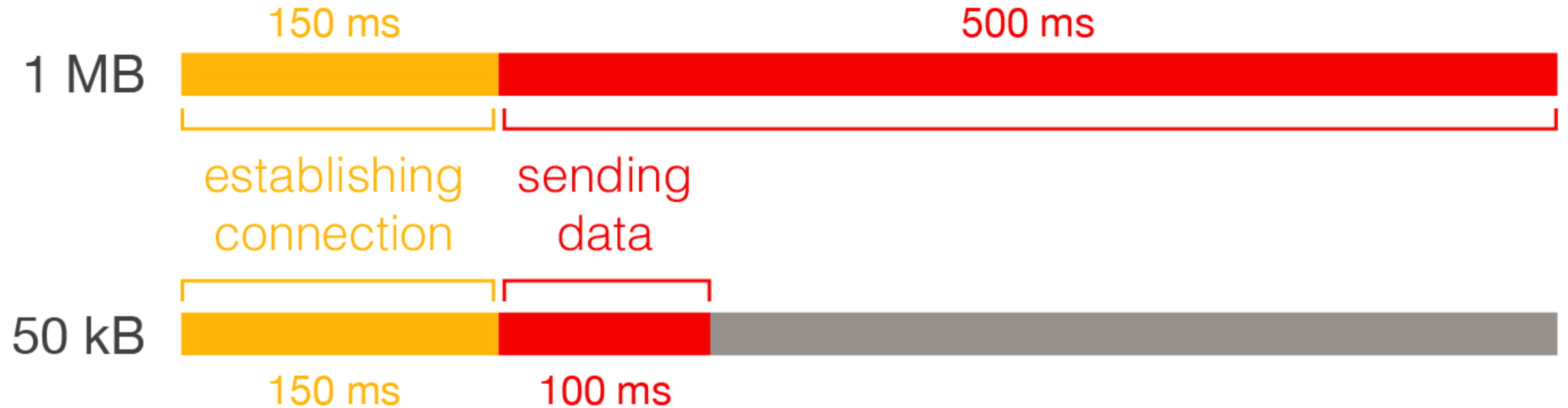
```
{  
  "street": "Sesame",  
  "no": 25,  
  "zipCode": "12-321",  
  "state": "NY",  
  "country": "US"  
}
```



HATEOAS IS GREAT!

THERE'S A THING CALLED LATENCY

# Latency



# Latency

	PC + WiFi	Mobile + WiFi	Mobile + LTE	Mobile + HSDPA+	Mobile + 2G
min	0.993	2	15	42	203
avg	3.435	19	90	60	227
max	30.678	460	811	956	2000
stddev	2.22	17	x	55	84
down	139.90	18.57	14.47	5.73	0.08
up	86.19	18.23	5.73	3.68	0.1

IT CAN GET CRAZY

MERGING RESPONSES

GET /user/123

```
{  
  "name": "John Doe",  
  "age": 25,  
  "country": "US"  
}
```

AND IF IT AIN'T YOURS?



EXPANSION FTW!

GET /users/123?  
fields=[name,age,address[country]]

```
{  
  "name": "John Doe",  
  "age": 25,  
  "country": "US"  
}
```

BUT MOST OF ALL

**CONNECTION: KEEP-ALIVE**

DOCS

## Swagger Sample App

This is a sample server Petstore server. You can find out more about Swagger at <http://swagger.wordnik.com> or on irc.freenode.net, #swagger. For this sample, you can use the api key "special-key" to test the authorization filters

[Terms of service](#)

[Contact the developer](#)

[Apache 2.0](#)

### pet : Operations about pets

Show/Hide | List Operations | Expand Operations | Raw

GET

/pet/{petId}

Find pet by ID

DELETE

/pet/{petId}

Deletes a pet

Parameters

OFF

!

Parameter	Value	Description	Parameter Type	Data Type
petId	<input type="text" value="(required)"/>	Pet id to delete	path	string

Response Messages

HTTP Status Code	Reason	Response Model
400	Invalid pet value	

Try it out!

PATCH

/pet/{petId}

partial updates to a pet

POST

/pet/{petId}

Updates a pet in the store with form data

POST

/pet/uploadImage

uploads an image

POST

/pet

Add a new pet to the store

PUT

/pet

Update an existing pet

GET

/pet/findByStatus

Finds Pets by status

GET

/pet/findByTags

Finds Pets by tags

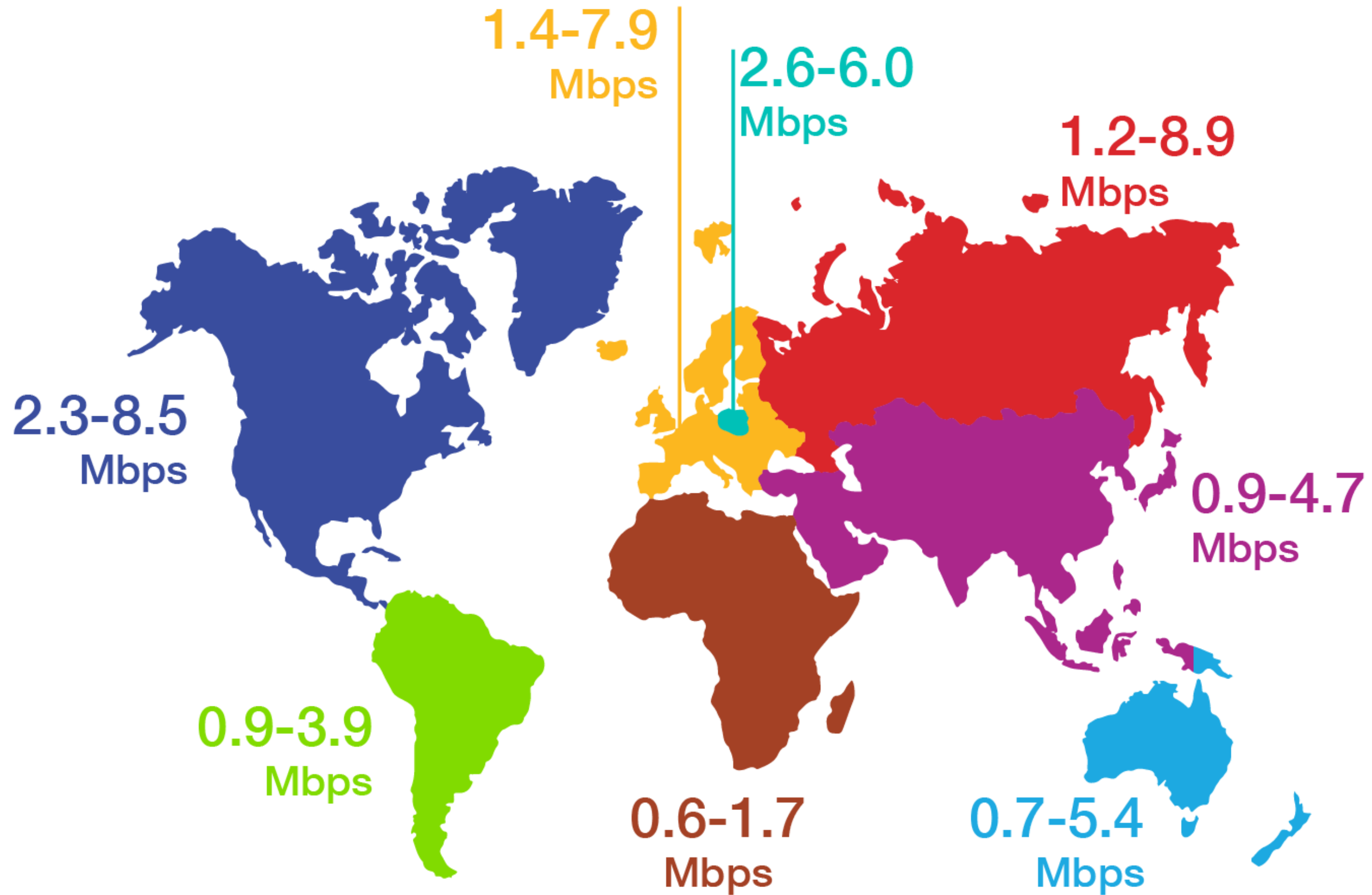
### user : Operations about user

Show/Hide | List Operations | Expand Operations | Raw

### store : Operations about store

Show/Hide | List Operations | Expand Operations | Raw

THROUGHPUT





DO YOU GET ONLY WHAT YOU NEED?

```
{
  "person": {
    "id": 12345,
    "firstName": "John",
    "lastName": "Doe",
    "age": 25,
    "phones": {
      "home": "800-123-4567",
      "work": "888-555-0000",
      "cell": "877-123-1234"
    },
    "email": [
      "jd@example.com",
      "jd@example.org"
    ],
    "dateOfBirth": "1980-01-02T00:00:00.000Z",
    "registered": true,
    "emergencyContacts": [
      {
        "name": "",
        "phone": "",
        "email": "",
        "relationship": "spouse|parent|child|other"
      }
    ],
    "address": {
      "street": "Sesame",
      "no": 25,
      "zipCode": "12-321",
      "state": "NY",
      "country": "US"
    }
  }
}
```

```
{  
  "firstName": "John",  
  "lastName": "Doe",  
  "age": 25,  
  "country": "US"  
}
```

AND IF IT AIN'T YOURS?

EXPANSION FTW!

GET /users/123?  
fields=[name,age,address[country]]

```
{  
  "name": "John Doe",  
  "age": 25,  
  "country": "US"  
}
```

# DATA COMPRESSION

```
{  
  "people": [  
    {  
      "firstName": "Jason",  
      "lastName": "Page",  
      "username": "jasonp",  
      "isMale": true,  
      "phone": "142-808-3743",  
      "nid": "12252671714"  
    },  
    ...  
  ]  
}
```



FULL

222910 bytes

GZIPPED

32128 bytes (14%)

DOMAIN COMPLEXITY

USUALLY AUTOMATED TESTING SUCKS  
(ON MOBILE)

SO IF UI DIFFERS FROM  
DATA MODEL

... LET THE BACKEND GUYS WORRY

# POST /relation

```
{  
  "type": "follower",  
  "from": 123,  
  "to": 456  
}
```

POST */follow/456*

HTTP CACHE



Expires: Sat, 21 Feb 2015 05:00 GMT

IOS (AFNETWORKING + NSURLCACHE)

ANDROID (RETROFIT + OKHTTP + HTTPRESPONSECACHE)

GET /users?page=1

```
[  
  "Arthur",  
  "Bob",  
  "Celine",  
  "Daniel",  
  "Eve",  
  "Fred",  
  "George"  
]
```

GET /users?since=185328145127



CASE STUDY

ENDPOINTS OVERALL  
FROM 36 TO 20

ENDPOINTS USAGE  
(FULL APPLICATION FLOW)  
FROM 86 TO 20

96% DATA SIZE REDUCTION  
(84% WITHOUT GZIP)



IN THE END

IT'S ALL ABOUT USABILITY

STARRING

# AKAMAI

## STATE OF THE INTERNET

[http://www.akamai.com/  
stateoftheinternet/](http://www.akamai.com/stateoftheinternet/)

# SWAGGER

<http://swagger.io/>

# APPLAUSE (FORMER UTEST)

<https://itunes.apple.com/us/app/utest/id411486493>

ANY THOUGHTS?