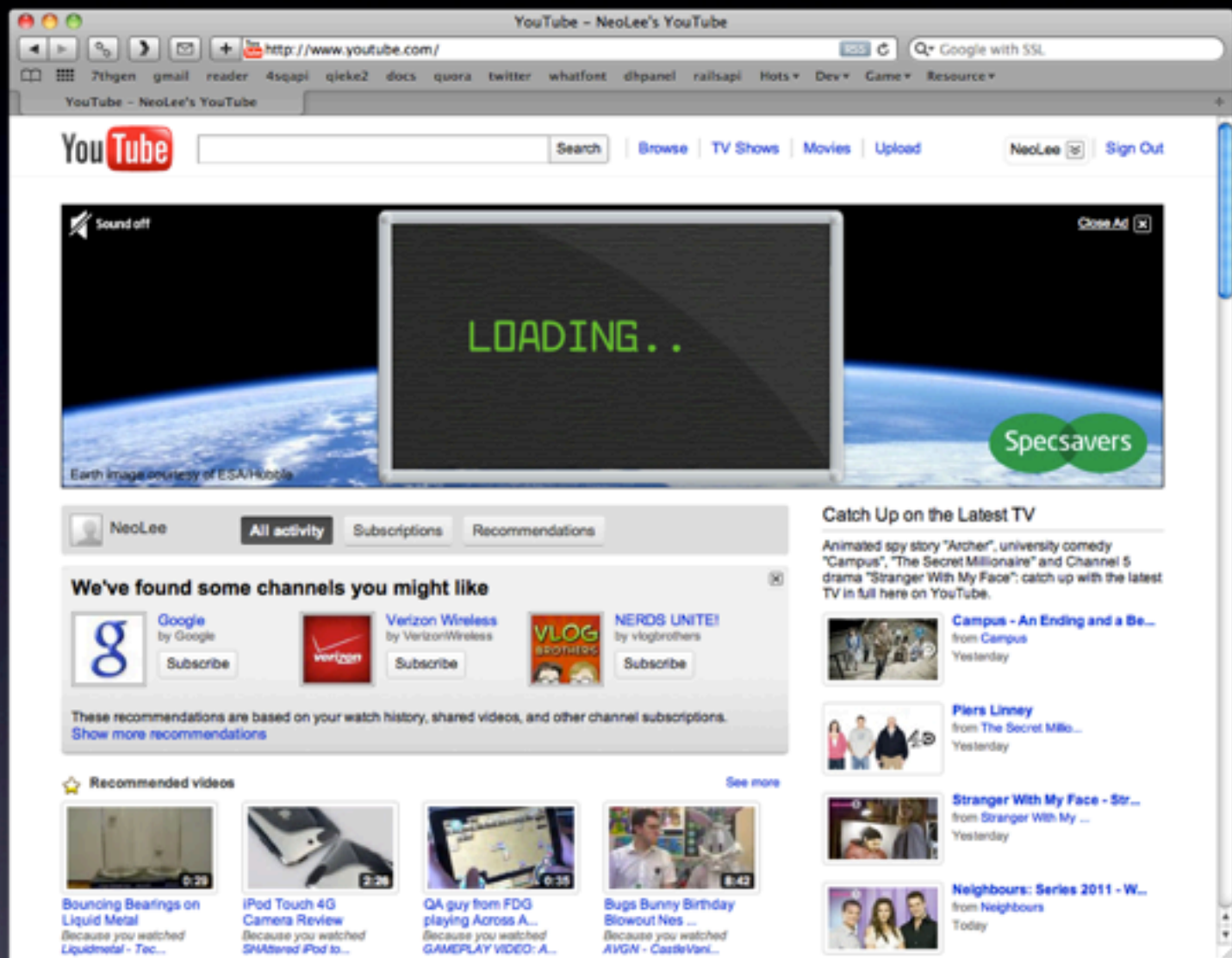
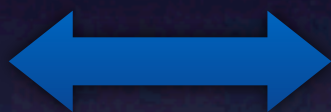


API Design Practices

Felix Lee
2012/06/09

Agenda

- API Oriental Design
- API Services Architecture
- API Testing Strategy



Website

Model

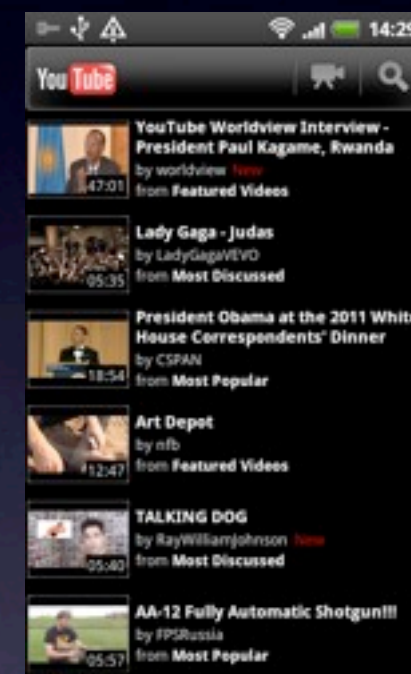
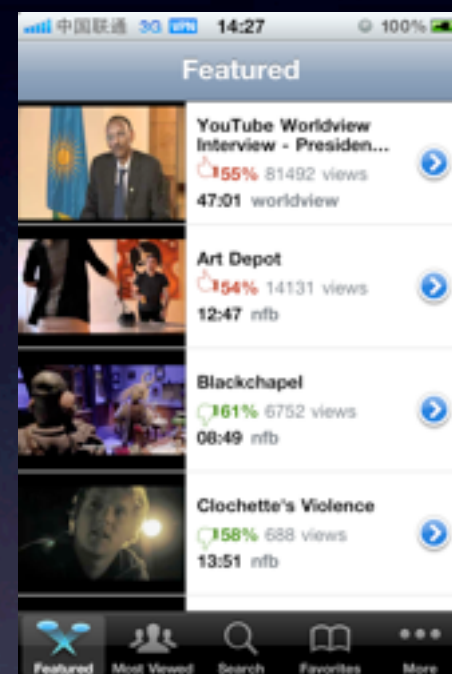
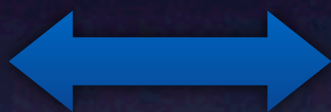
Control

View

Browser









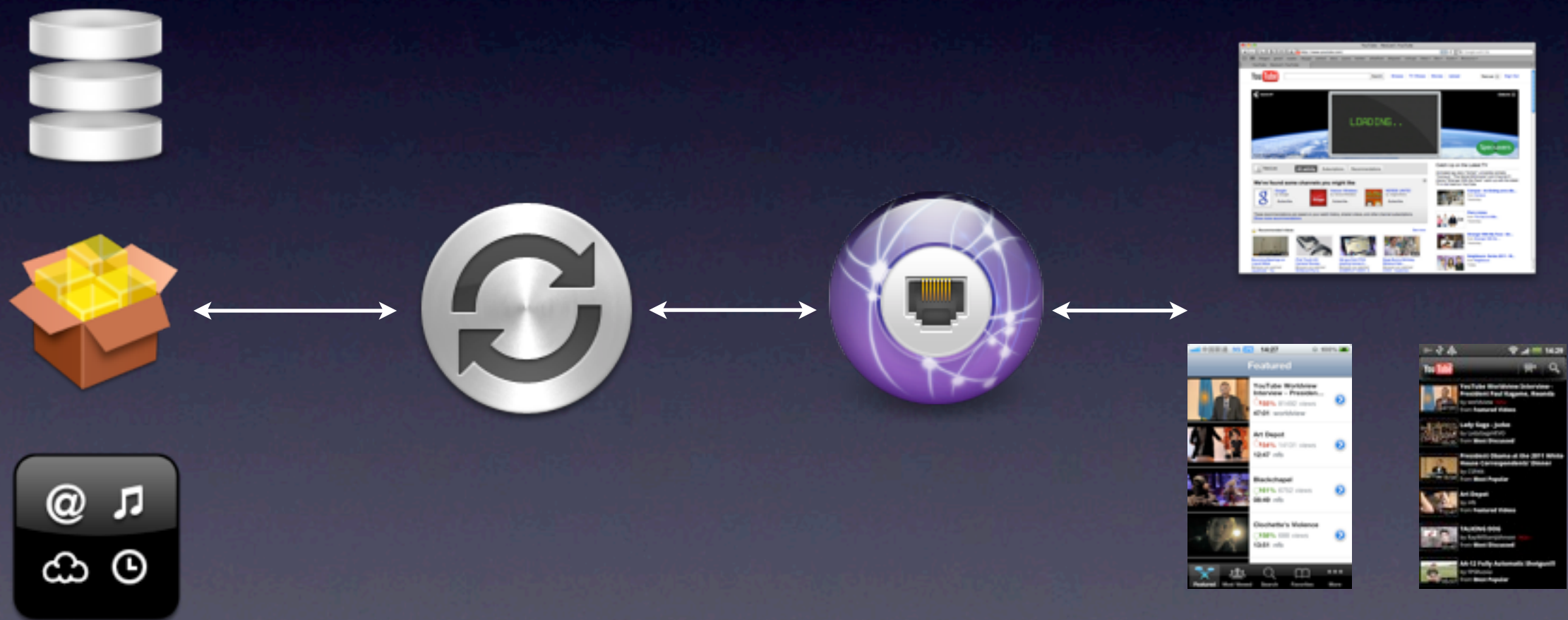
Service

Resource

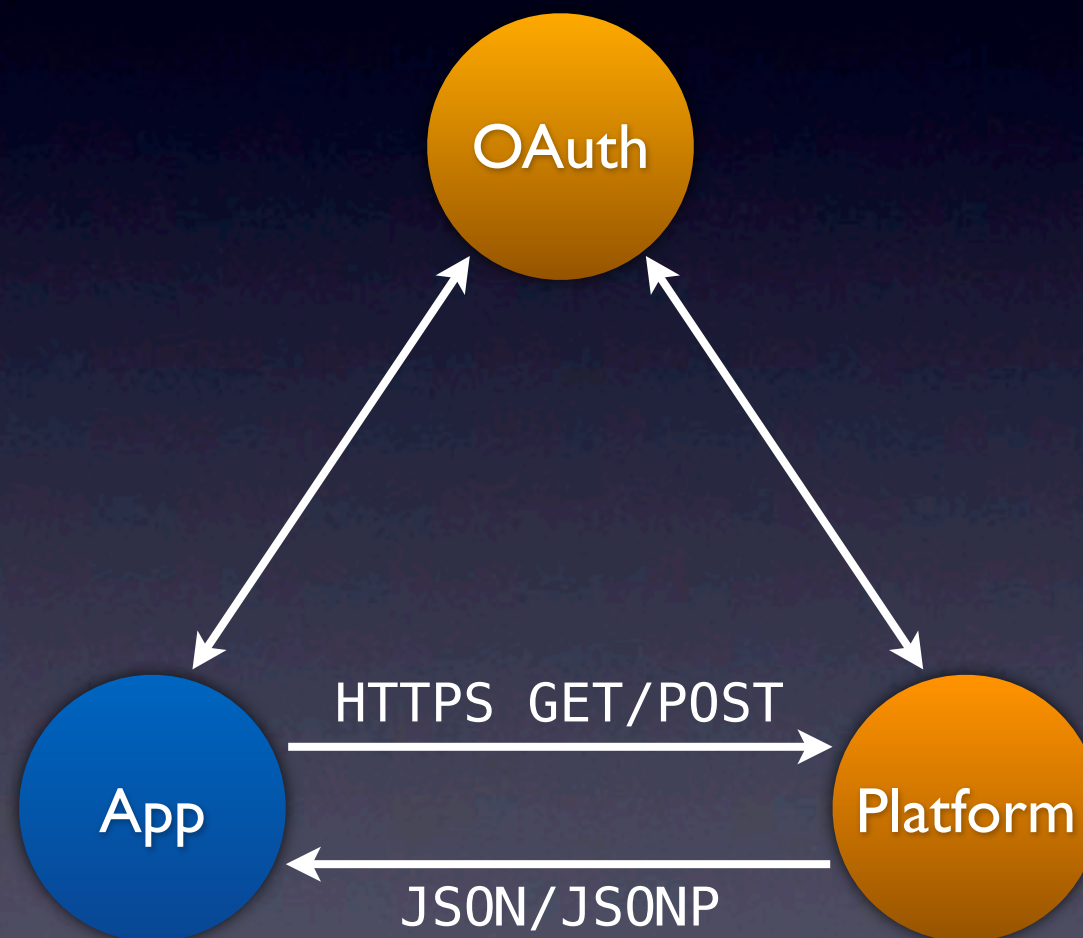
Service

API

Clients



RESTful APIs



API Request

Request

VERSION ID



https://api.qiyu.im/v2/checkins/nearby?ll=106.615,29.551&oauth_token=xxx

API ROOT

ENDPOINT

PARAMETERS

Response

```
{
  meta: {
    code: 200
  },
  response: {
    checkins: [
      {
        uuid: "4031",
        type: "shout",
        time_zone: "CST",
        message: "jj<0>",
        created_at: "1280714010",
        photo_uuid: "0",
        loc_lat: "31.19441",
        loc_lng: "121.58286",
        loc_name: "",
        comment_count: "0",
        user: {
          uuid: "21383",
          first name: ""
        }
      }
    ]
  }
}
```


RESTful and HTTP Verbs

GET: `https://api.qiyu.im/v2/users/self/mod?nickName=felix`

Level 0

GET

POST

PUT

DELETE

PATCH

RESTful and HTTP Verbs

POST: `https://api.qiyu.im/v2/users/self/mod { nickName:felix }`

Level 0

GET

POST

PUT

DELETE

PATCH

Level 1

GET

POST

PUT

DELETE

PATCH

RESTful and HTTP Verbs

PUT: `https://api.qiyu.im/v2/users/self { nickName:felix, avatar:... }`

Level 0

GET

POST

PUT

DELETE

PATCH

Level 1

GET

POST

PUT

DELETE

PATCH

Level 2

GET

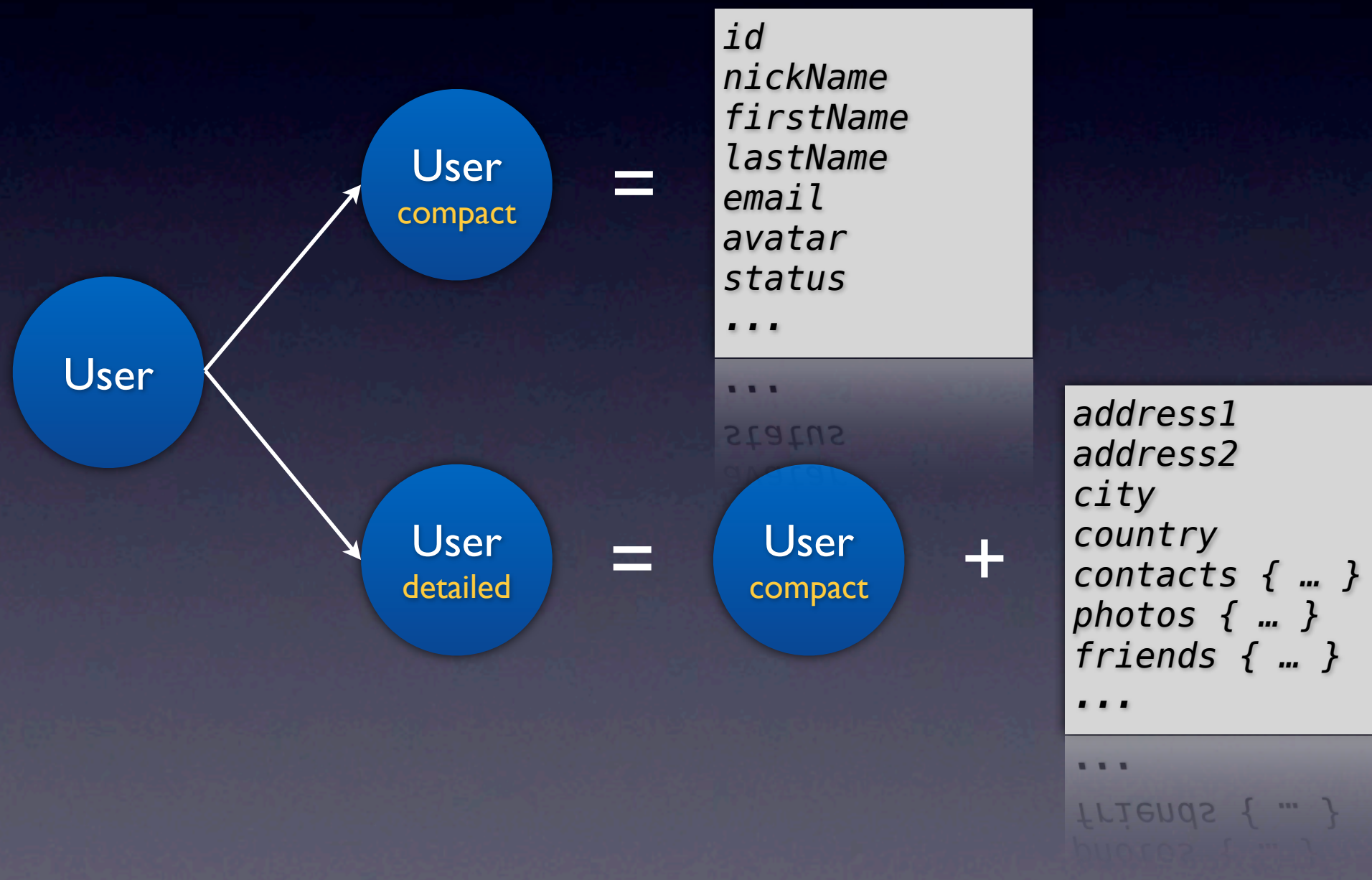
POST

PUT

DELETE

PATCH

Response: JSON / JSONP




```

{
  - meta: {
    code: 200
  },
  - response: {
    - user: {
      photo: http://l.sdo.com/photo/avatar/user\_1011320739334110000.jpg?v=2012052093,
      homeCity: "",
      type: "user",
      id: 1011320739334110000,
      leaveTime: 0,
      + followers: { ... },
      online: "false",
      nickName: "灰太龙",
      email: "feilong.me@gmail.com",
      relationship: "self",
      signature: "奇遇大叔，只此一家别无分号，其它的大叔经鉴定均是冒牌货←_←",
      + visitors: { ... },
      birthday: "1911-12-7",
      + checkins: { ... },
      userName: "feilong",
      firstName: "",
      + photos: { ... },
      gender: "male",
      + followings: { ... },
      popularity: 2753,
      + contact: { ... },
      lastName: "",
      + attributes: { ... },
      age: 100
    }
  }
}

```

```
venues: {},
checkins: {
  count: 150,
  items: [
    {
      id: 1011330747748110000,
      private: "0",
      type: "shout",
      timeZone: "CST",
      message: "起床还是不起，这可就是问题… [敬礼]",
      createdAt: 1330747748,
      photoid: 0,
      photos: {},
      comments: {},
      actions: {},
      location: {},
      source: {},
      states: {},
      venue: {},
      reposted: "false",
      reposts: {},
      user: {}
    },
    {
      id: 1011330080005110000,
      private: "0",
      type: "shout",
      timeZone: "CST",
```


API Category

Objects

`users/self`

`venues/10020`

General

`users/search`

`venues/nearby`

`checkins/nearby`

Aspects

`users/1/badges`

`users/self/checkins`

`venues/2/visitors`

Actions

`users/1/senddm`

`checkins/23/upvote`

`specials/1/markdone`

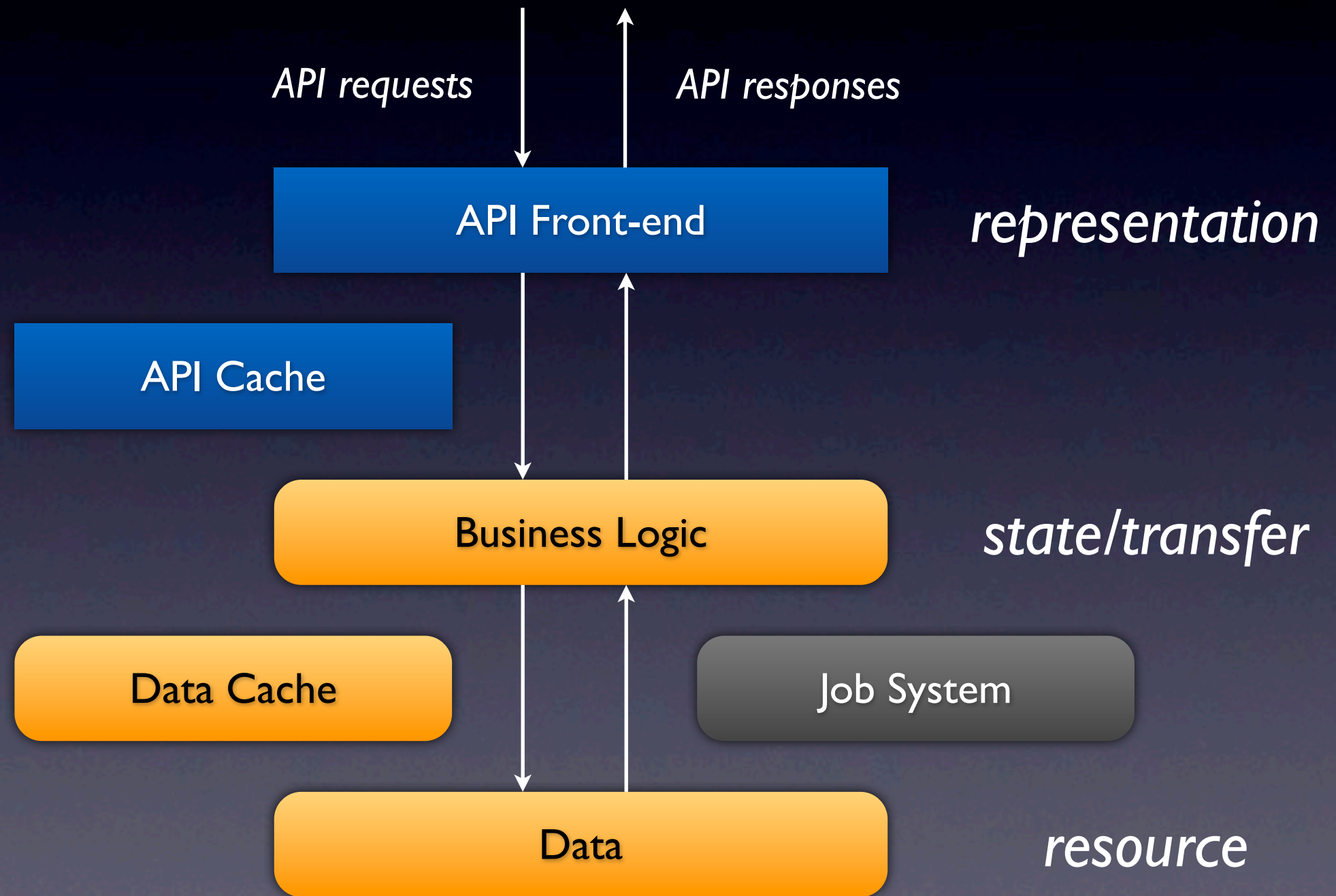
Misc

`multi`

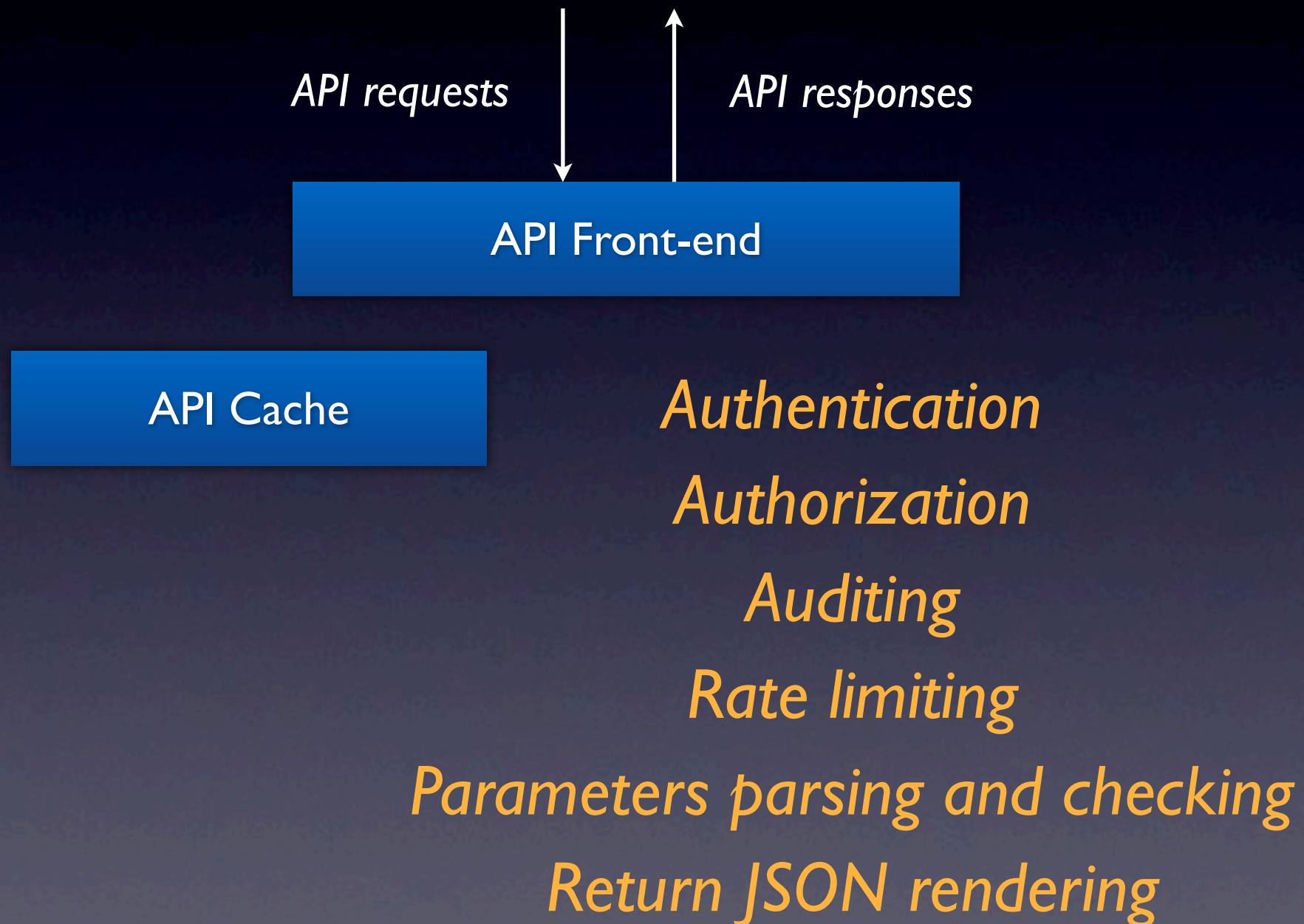
API Matrix

Objects	General	Aspects	Actions
users	register search	badges checkins ...	follow senddm ...
venues	search categories	checkins visitors ...	marktodo flag ...
checkins	recent nearby		addcomment upvote ...
photos			
tips	search		marktodo markdone unmark
specials	search		markdone unmark

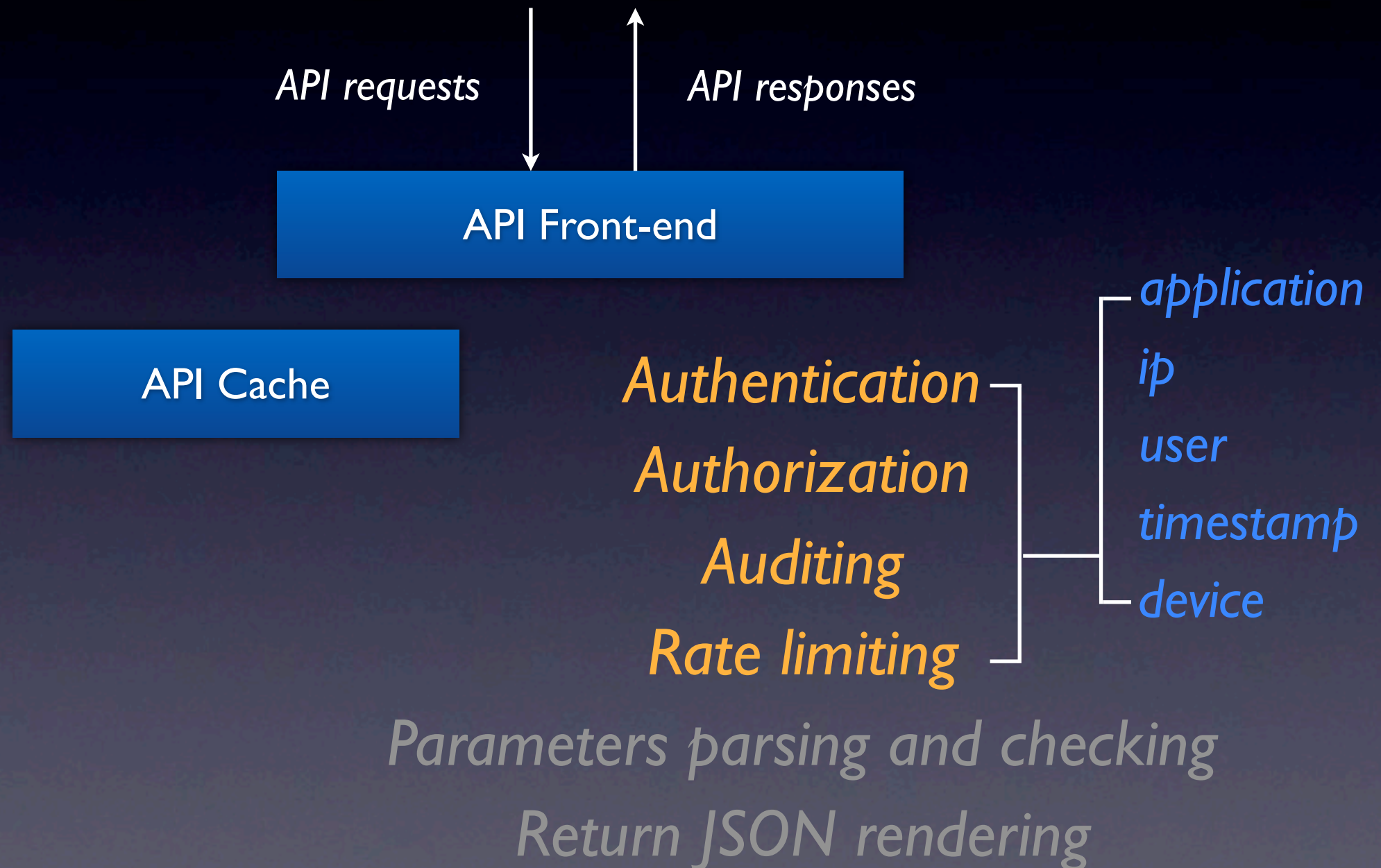
API Service Architecture



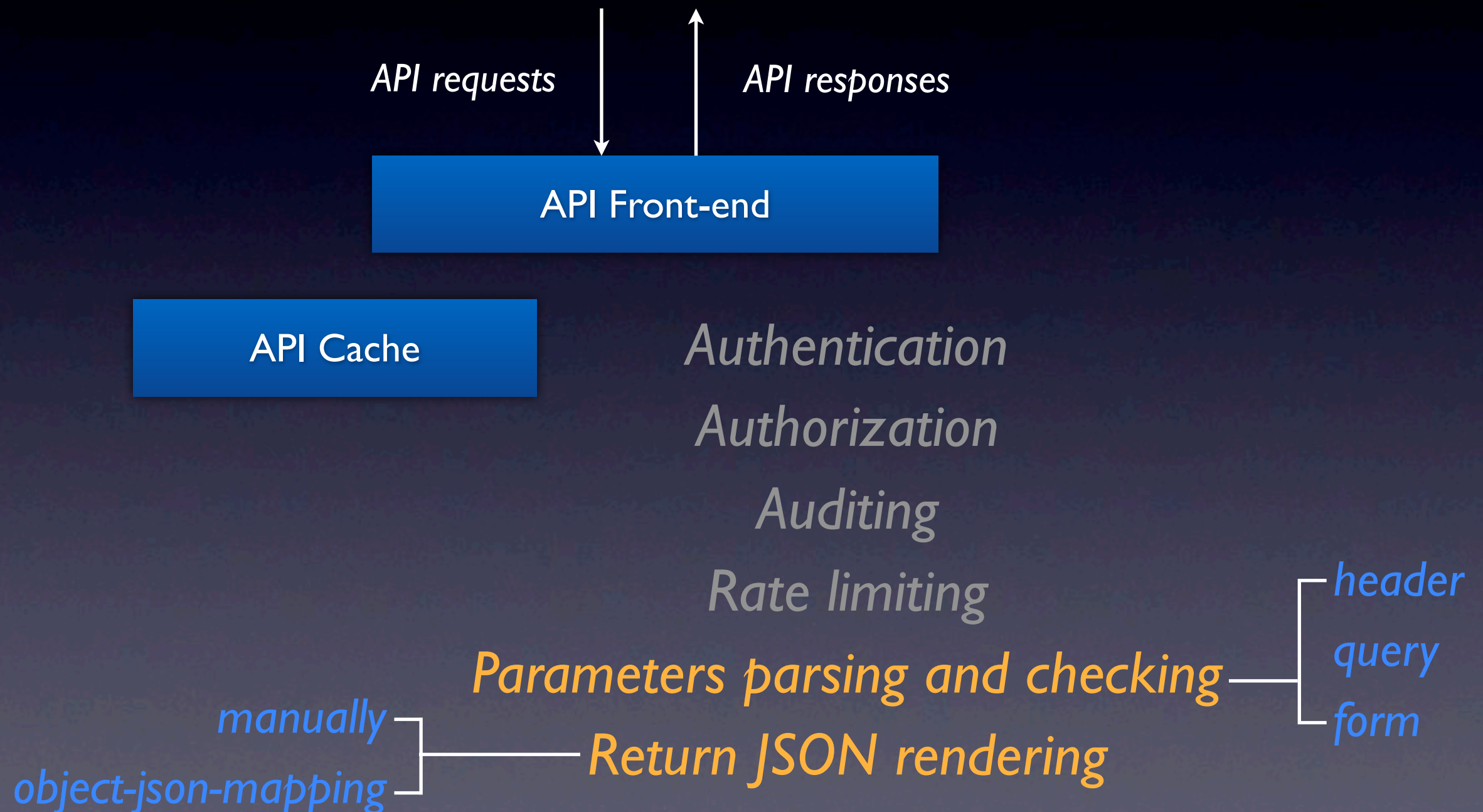
Front Control



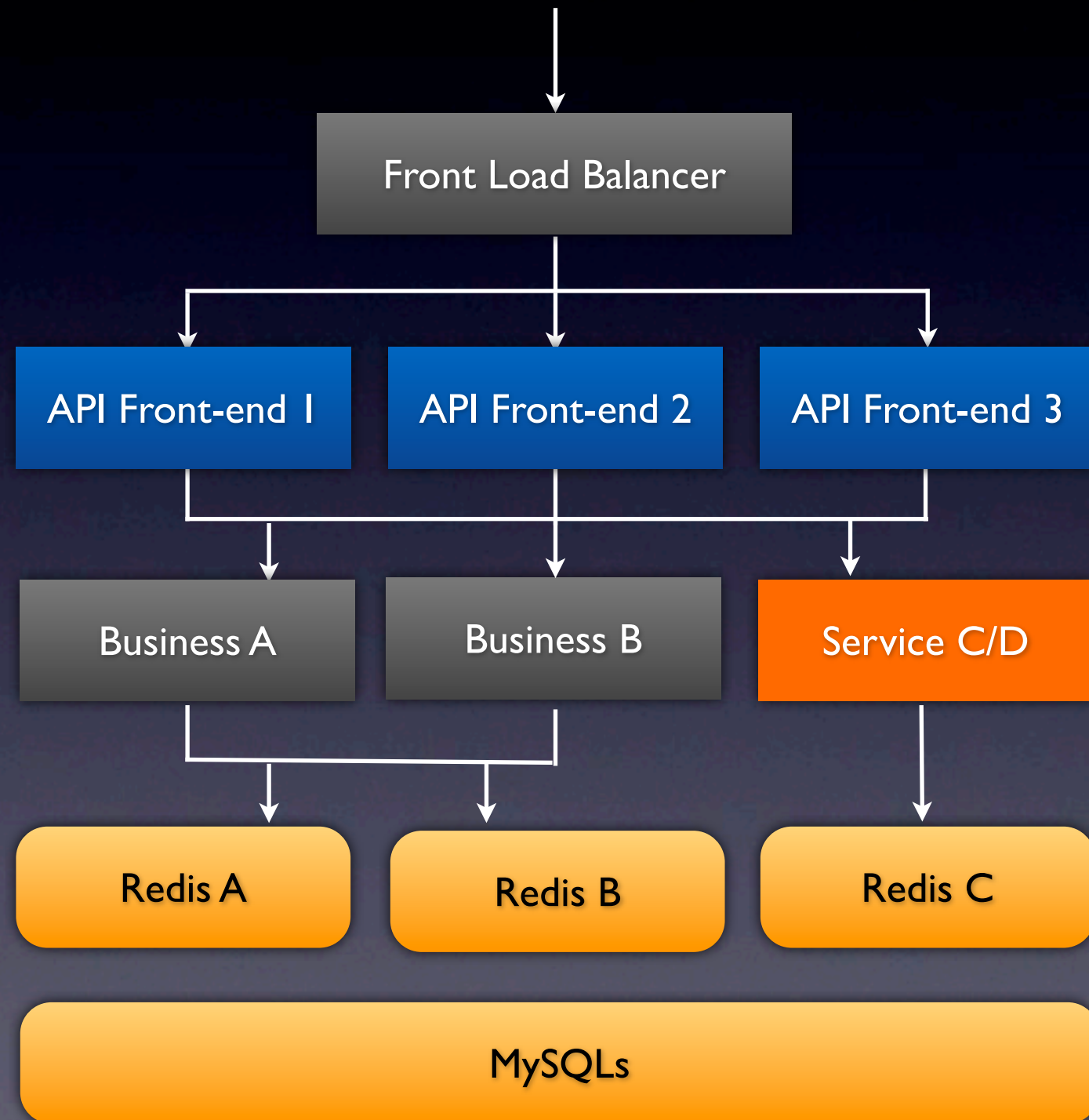
Front Control



Front Control



Scaling



API Testing Envs

- `http://API_ROOT/v1/`
- `http://API_ROOT/v1d/`
- `http://API_ROOT/v1x/`
- `http://API_ROOT/v1y/`
- `http://API_ROOT/v1z/`
- ...

API View & Testing Tools

- JSON View - <http://jsonview.com/>
- Firebug - <http://getfirebug.com/>
- Tamper Data - <https://addons.mozilla.org/en-US/firefox/addon/tamper-data/>

API Explorer

The screenshot shows a web browser window with the address bar displaying `api.qieke.local/explorer/restfulbed.html#req=checkins/1`. The browser's bookmark bar includes links for 'Most Visited', 'Getting Started', 'Gmail', 'Analytics', '推荐到芝麻', 'Python小组', '芝麻问答', 'Google+', and '新浪微博'. The page title is 'RESTful API Explorer'. Below the title, there is a text input field containing the URL `http://api.qieke.local/v2d/checkins/1` and a green 'View' button. A message below the input field states: 'OAuth token automatically added: `http://api.qieke.local/v2d/checkins/1?oauth_token=082b8b397d71c05672b4a30c57042b65`'. The main content area displays a JSON response from the API:

```
{
  meta: {
    code: 200
  },
  response: {
    checkin: {
      id: 1,
      private: "0",
      type: "checkin",
      timeZone: "CST",
      message: "偏僻的湘菜馆。 . . ",
      createdAt: 1301279040,
      photos: {
        count: 0,
        items: []
      },
      comments: {
        count: 0,
        items: []
      },
      location: {
        lat: 23.02601,
        lng: 113.84849,
        name: ""
      },
      venue: {
        name: "湘川菜馆(三秦塑胶制品厂东南)",
        description: "美食|其他",
        verified: 0,

```


API Testing

```
def test_users_nearby_and_update_location(self):
    body = {"ll": "24.45451,118.07537"}
    self.call_api("/users/self/update_location?magic_token=%s" %
                  options.second_user["magic_token"], dict(body))

    body = {"ll": "24.45,118.07", "limit": 44, "offset": 0}
    self.call_api("/users/self/nearby", body)

    self.assertTrue(self.response.get("nearbys", {}))
    self.assertGreaterEqual(self.response["nearbys"]["count"], 1)

    items = self.response["nearbys"]["items"]

    distances = {}
    for item in items:
        distances[str(item["user"]["id"])] = item["distance"]

    self.assertIn(options.second_user["uuid"], distances)
    self.assertEqual(distances[options.second_user["uuid"]], 704) # distance
```

Reference

- http://en.wikipedia.org/wiki/Representational_state_transfer
- <http://www.ics.uci.edu/~fielding/pubs/dissertation/top.htm>
- <http://www.ruanyifeng.com/blog/2011/09/restful.html>
- <http://paradigmx.net/blog/2012/04/27/a-brief-guide-of-restful-soa-part-i/>

Acknowledgement

- @soulhacker (<http://paradigmx.net/>)
- <http://qiyu.im/>

Q & A

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