HTTP API & Py

Milan Čermák
Pyvo Brno,
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Why API?

APIs lead to success

What makes a good API?

Consistency

Consistency

Predictability

Consistency

Predictability

Adherence to standards

Consistency

Predictability

Adherence to standards

Great documentation

Why HTTP?

"While HTTP isn't always the best answer, it's a damn fine first guess."

Coda Hale

Benefits of HTTP

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The most widespread application protocol

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Statelessness

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Statelessness

Optional caching

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Statelessness

Optional caching

Promotes layered infrastructure

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etc.

Limitations of HTTP

Limitations of HTTP

Authorization

Limitations of HTTP

Authorization

Statelessness

Limitations of HTTP

Authorization

Statelessness

Verbosity

Limitations of HTTP

Authorization

Statelessness

Verbosity

Crippled parallelism

```
"REST" if protocol.startswith("http") else "you're doing it wrong"
```

Set of architectural constraints

Set of architectural constraints

Client-server

Set of architectural constraints

Client-server

Stateless

Set of architectural constraints

Client-server

Stateless

Cacheable

Set of architectural constraints

Client-server

Stateless

Cacheable

Layered

Set of architectural constraints

Client-server

Stateless

Cacheable

Layered

Uniform interface *

How can Python help?

OOP

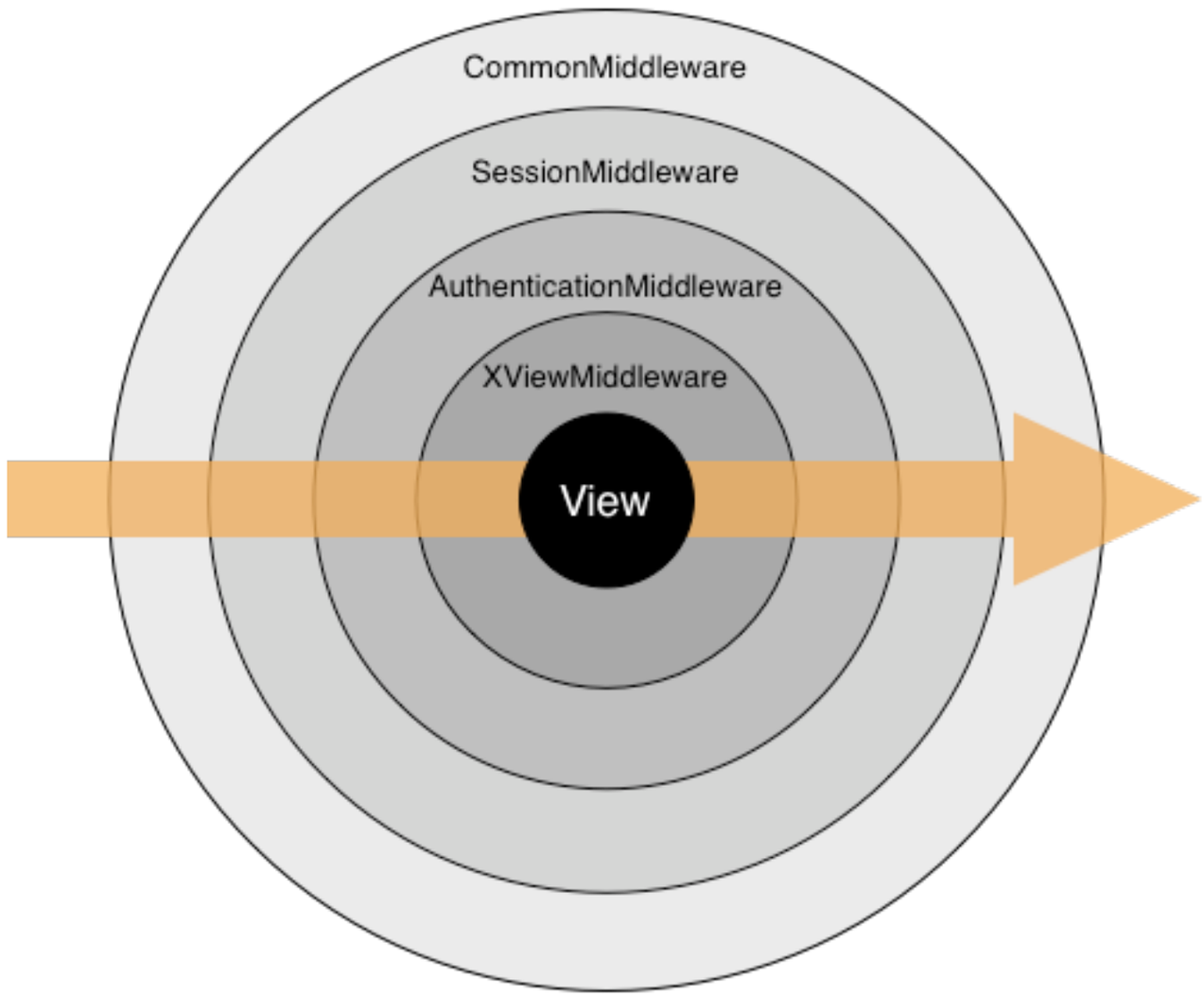
OOP

URI ~ Class handler mapping

```
import handlers

urls = [(r"/user", handlers.users.NewUser),
        (r"/user/(\d+)", handlers.users.User)]

class User(handler.base.BaseHandler):
    def delete(self, user_id):
        pass
    def get(self, user_id):
        pass
    def post(self, user_id):
        pass
```

```
class UserValidatorMixin(object):
    def check_user_data(self, user_dict):
        pass

class User(handler.base.BaseHandler,
           UserValidatorMixin):

def post(self, user_id):
    new_user = self.get_argument(“user”)
    if not self.check_user_data(new_user):
        return self.http_error(400, “Invalid data”)
```

Middleware


CommonMiddleware
SessionMiddleware
AuthenticationMiddleware
XViewMiddleware
View

Extending JSONEncoder

```
import json

class AppJSONEncoder(json.JSONEncoder):

    def default(self, obj):
        if isinstance(obj, User):
            return {"name": obj.name,
                    "height": obj.height,
                    "cash": obj.get_bank_account_balance()}
        return json.JSONEncoder.default(self, obj)

user = User("1337")
json.dumps(user, cls=AppJSONEncoder)
```

What about mobile?

Compression of HTTP bodies

```
GET /user/1337 HTTP/1.1

Host: api.napyvo.io

Accept-Encoding: gzip, identity
```

Compression of HTTP bodies

```
HTTP/1.1 200 OK

Content-Encoding: gzip

Content-Type: application/json; charset=utf-8
```

Compression of HTTP bodies

```
POST /user HTTP/1.1

Host: api.napyvo.io

Content-Encoding: gzip

Content-Type: application/json


[gzipped representation of a user]
```

Caching

```
Cache-Control: max-age=3600

Expires: Thu, 31 Jan 2013 22:00:00 GMT
```

```
<- Last-Modified: Thu, 31 Jan 2013 18:30:00 GMT

-> If-Modified-Since: Wed, 30 Jan 2013 13:37:00 GMT
```

```
ETag: foo

If-None-Match: foo
```

Partial resources

```
GET /car/9


{"car": {
    "color": "red",
    "passengers": [
        {"href": "/user/1337",
         "rel": "self"}]
    }
}
```

```
GET /car/9?zoom=passengers

{"car": {

    "color": "red",

    "passengers": [

        {"href": "/user/1337",

         "rel": "self",

         "name": "Milan",

         "drink": "beer",

         "skills": ["python", "http"],

         }]

    }

}
```

The promise of Hypermedia

Hypermedia as the engine of application state

Q & A