Das Schweizer Taschenmesser für Python-Webentwickler

Armin Ronacher — http://lucumr.pocoo.org/

Über Mich

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- Name: Armin Ronacher
- Werkzeug, Jinja, Pygments, ubuntuusers.de
- Python seit 2005
- WSGI Krieger der Ersten Stunde (naja fast)

Warum Python?

Warum Python?

- agil
- aktive Community
- unzählige Module
- herausragende Introspection Funktionalität
- **WSGI**

WSGI

WSGI

- **W**eb **S**erver **G**ateway **I**nterface
- Low-Level Interface zwischen Anwendung und Server
- erlaubt es Komponenten Framework–übergreifend zu verwenden
- CGI / FastCGI / SCGI / AJP / mod_python / mod_wsgi / twisted / standalone
- einfach und schnell

Hello World

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```
def application(environ, start_response):
    start_response('200 OK', [('Content-Type', 'text/html')])
    return [
        '<!DOCTYPE HTML>\n<title>Hello World</title>\n'
        '<h1>Hello World!</h1>'
    ]
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Response #2

Deployment

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lighttpd

Apache

Deployment

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Apache

mod_fastcgi / mod_scgi

mod_wsgi

Deployment

lighttpd

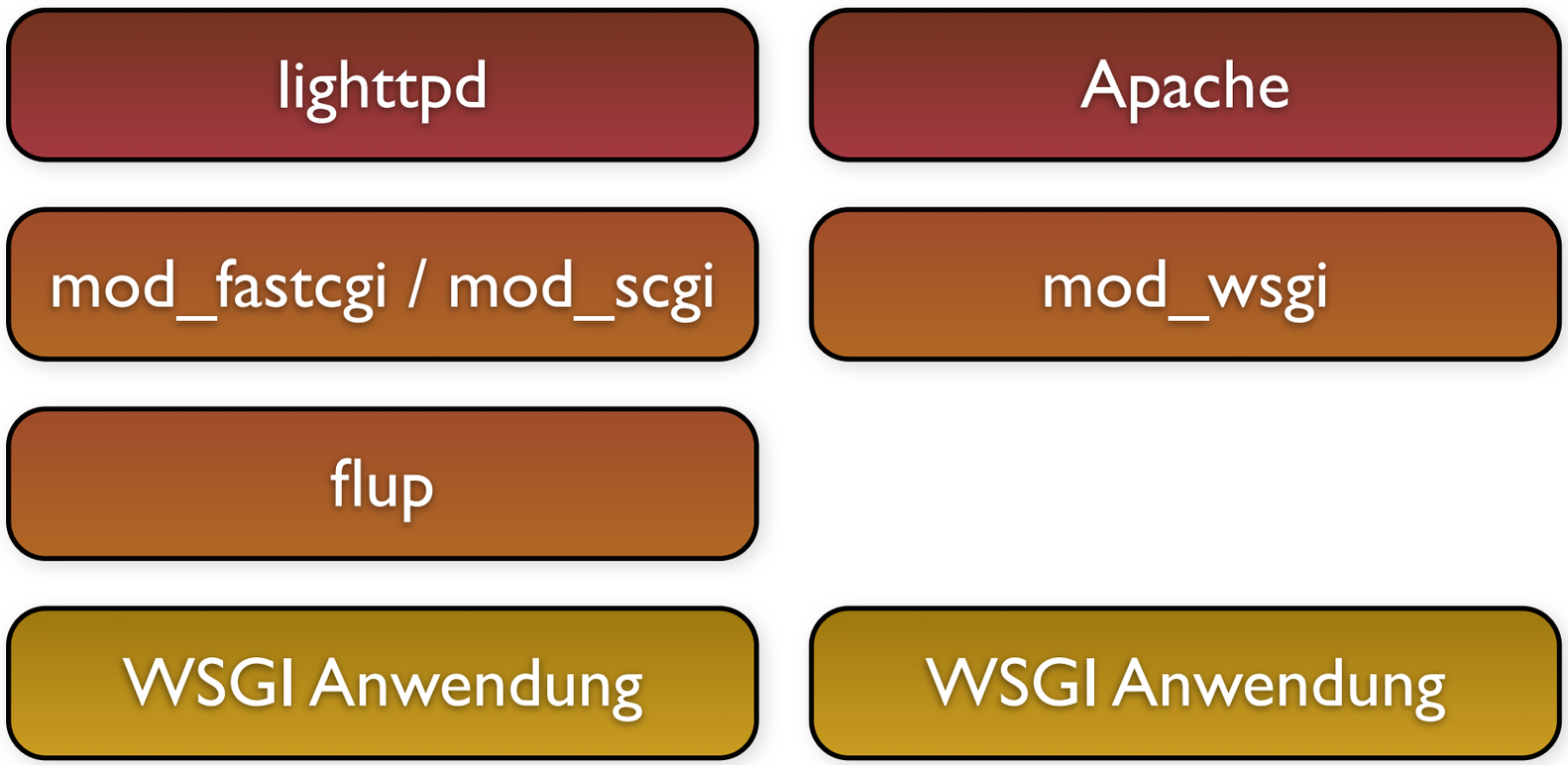
Apache

mod_fastcgi / mod_scgi

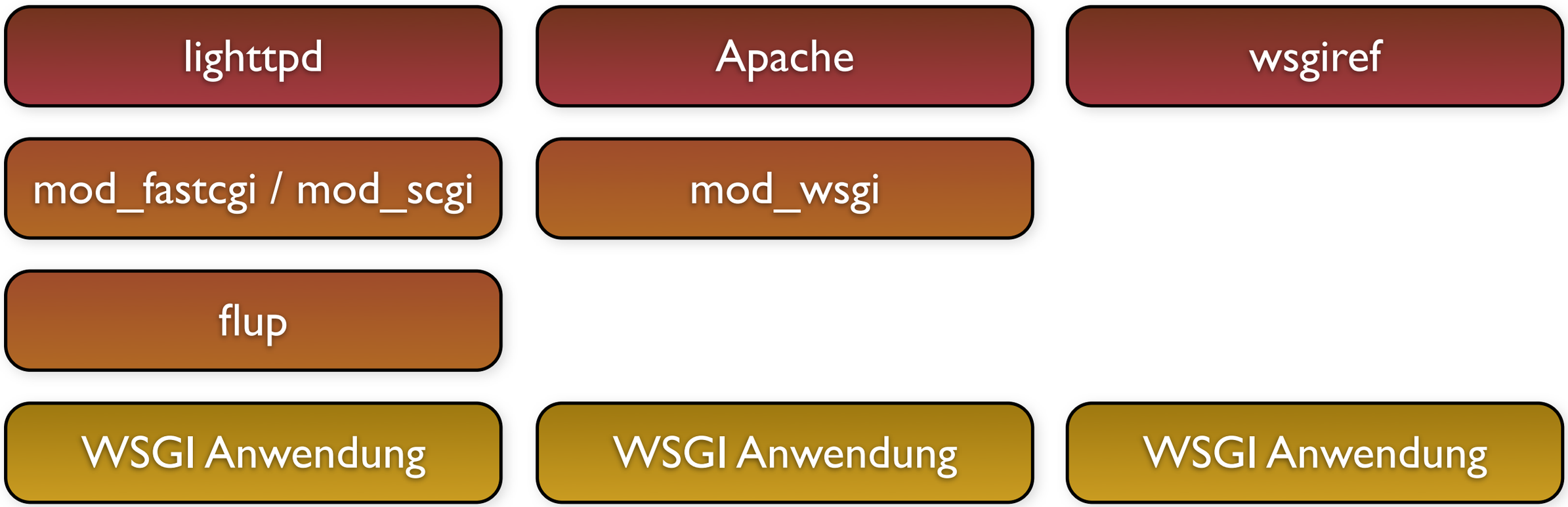
mod_wsgi

flup

Deployment


lighttpd
Apache
mod_fastcgi / mod_scgi
mod_wsgi
flup
WSGI Anwendung
WSGI Anwendung

Deployment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Middlewares

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- nützlich um …
  - … Fehler zu protokolieren
  - … kaputte Serverdaten zu reparieren
  - … mehrere Anwendungen zu kombinieren

Aber....

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http://dirtsimple.org/2007/02/wsgi-middleware-considered-harmful.html

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- verbindet sie und stellt ein `application` Objekt bereit oder ruft das Gateway auf.

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```
from yourapplication import Application
from yourmiddleware import YourMiddleware
from vendormiddleware import VendorMiddleware

application = Application(configuration=here)
application = YourMiddleware(application, configuration=here)
application = VendorMiddleware(application)
```

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- Middleware: zwischen Anwendung und Gateway
- Gateway: übersetzt WSGI nach CGI usw.

Werkzeug

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- unzählige kleine Helferlein

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- ORM

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- ein Framework

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- kann man wunderbar kombinieren
- jeder will was anderes
- Cherry Picking!

Wie schaut es aus?

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```
>>> from werkzeug import Request, create_environ
>>> environ = create_environ('/index.html?foo=bar&foo=baz&blah=42')
>>> request = Request(environ)
>>> request.args['foo']
u'bar'
>>> request.args.getlist('foo')
[u'bar', u'baz']
>>> request.args.get('blah', type=int)
42
>>> request.path
u'/index.html'
>>> request.method
'GET'
```

DumpIt!

Ein Pastebin in 15 Minuten

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- Werkzeug — WSGI
- Jinja — Templates
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```
easy_install Werkzeug
easy_install Jinja
easy_install Pygments
```

#0: Datenbank

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schema.sql

```
CREATE TABLE pastes (
    id INTEGER NOT NULL,
    code TEXT,
    lang VARCHAR(40),
    PRIMARY KEY (id)
);
```

#1: Imports

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```
import sqlite3
from os import path
from werkzeug import Request, Response, redirect
from werkzeug.exceptions import HTTPException, NotFound
from werkzeug.routing import Map, Rule
from jinja import Environment, FileSystemLoader
from pygments import highlight
from pygments.lexers import get_lexer_by_name, TextLexer
from pygments.formatters import HtmlFormatter
```

#2: Konfiguration

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```
DATABASE = '/path/to/dumpit.db'
PYGMENTS_STYLE = 'pastie'
LANGUAGES = [
    ('text',            'No Highlighting'),
    ('python',          'Python'),
    ('c',               'C')
]
TEMPLATES = path.join(path.dirname(__file__), 'templates')

jinja_env = Environment(loader=FileSystemLoader(TEMPLATES))
pygments_formatter = HtmlFormatter(style=PYGMENTS_STYLE)

def render_template(template_name, **context):
    template = jinja_env.get_template(template_name)
    return template.render(context)
```

#3: Dispatching

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def application(environ, start_response):
    request = Request(environ)
    request.db = sqlite3.connect(DATABASE)
    url_adapter = url_map.bind_to_environ(environ)
    try:
        endpoint, values = url_adapter.match()
        response = globals()[endpoint](request, **values)
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http://localhost:5000/
http://localhost:5000/42
http://localhost:5000/42/raw
http://localhost:5000/pygments.css

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    return response(environ, start_response)
```

#4: „Views“

#4: „Views“

```
def new_paste(request):
    if request.method == 'POST':
        code = request.form.get('code')
        lang = request.form.get('lang')
        if code and lang:
            paste = Paste(lang, code)
            paste.save(request.db)
            return redirect(str(paste.id))
    return render_template('new_paste.html', languages=LANGUAGES)
```

#4: „Views“

```
def new_paste(request):
    if request.method == 'POST':
        code = request.form.get('code')
        lang = request.form.get('lang')
        if code and lang:
            paste =
            paste.s
            return
    return render_t
```

```
def show_paste(request, id):
    paste = Paste.get(request.db, id)
    if paste is None:
        raise NotFound()
    return render_template('show_paste.html', paste=paste)
```

#4: „Views“

```python
def new_paste(request):
    if request.method == 'POST':
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def show_paste(request, id):
    paste = Paste.get(request.db, id)
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    return render_template('show_paste.html', paste=paste)
```

```python
def download_paste(request, id):
    paste = Paste.get(request.db, id)
    if paste is None:
        raise NotFound()
    return Response(paste.code)
```

#4: „Views“

```
def new_paste(request):
    if request.method == 'POST':
        code = request.form.get('code')
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```
def show_paste(request, id):
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        raise NotFound()
    return render_template('show_paste.html', paste=paste)
```

```
def download_paste(request, id):
    paste = Paste.get(request.db, id)
    if paste is None:
        raise NotFound()
    return Response(paste.code)
```

```
def pygments_style(request):
    return Response(pygments_formatter.get_style_defs(),
                    mimetype='text/css')
```

#5: Model

#5: Model

```
class Paste(object):

    def __init__(self, lang, code, id=None):
        self.lang = lang
        self.code = code
        self.id = id

    @property
    def highlighted_code(self):
        try:
            lexer = get_lexer_by_name(self.lang)
        except ValueError:
            lexer = TextLexer
        return highlight(self.code, lexer, pygments_formatter)

    @classmethod
    def get(cls, con, id):
        cur = con.cursor()
        cur.execute('select lang, code, id from pastes where id = ?', [id])
        row = cur.fetchone()
```

#5: Model

```
    @classmethod
    def get(cls, con, id):
        cur = con.cursor()
        cur.execute('select lang, code, id from pastes where id = ?', [id])
        row = cur.fetchone()
        if row:
            return cls(*row)

    def save(self, con):
        cur = con.cursor()
        if self.id is None:
            cur.execute('insert into pastes (lang, code) values (?, ?)',
                        [self.lang, self.code])
            self.id = cur.lastrowid
        else:
            cur.execute('update pastes set lang = ?, code = ? where '
                        'id = ?', [self.lang, self.code, self.id])
        con.commit()
```

#6: Templates

#6: Templates

layout.html

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
  "http://www.w3.org/TR/html4/strict.dtd">
<html>
  <head>
    <title>Dump It!</title>
    <link rel="stylesheet" href="/static/style.css" type="text/css">
    <link rel="stylesheet" href="/pygments.css" type="text/css">
  </head>
  <body>
    <div id="header">
      <h1>Dump It!</h1>
    </div>
    <div id="page">
      {% block body %}{% endblock %}
    </div>
  </body>
</html>
```

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    <link
    <link
  </head>
  <body>
    <div
      <h1
    </div
    <div
      {%
    </div
  </body>
</html>
```

new_paste.html

```
{% extends "layout.html" %}
{% block body %}
  <h2>New Paste</h2>
  <form action="" method="post">
    <p><textarea name="code" rows="8" cols="50"></textarea></p>
    <p><select name="lang">
    {% for code, name in languages %}
      <option value="{{ code }}">{{ name }}</option>
    {% endfor %}
    </select><input type="submit" value="Paste"></p>
  </form>
{% endblock %}
```

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    {% for code, name in languages %}
      <option value="{{ code }}">{{ name }}</op
    {% endfor %}
    </select><input
  </form>
{% endblock %}
```

show_paste.html

```
{% extends "layout.html" %}
{% block body %}
  <h2>Paste #{{ paste.id }}</h2>
  <div class="paste">
    {{ paste.highlighted_code }}
  </div>
{% endblock %}
```

Entwicklungsserver

Entwicklungsserver

```
if __name__ == '__main__':
    from werkzeug import run_simple, SharedDataMiddleware
    application = SharedDataMiddleware(application, {
        '/static': path.join(path.dirname(__file__), 'static')
    })
    run_simple('localhost', 4000, application)
```

Entwicklungsserver

```
if __name__ == '__main__':
    from werkzeug import run_simple, SharedDataMiddleware
    application = SharedDataMiddleware(application, {
        '/static': path.join(path.dirname(__file__), 'static')
    })
    run_simple('localhost', 4000, application)
```

```
mitsuhiko@nausicaa:~/DumpIt$ sqlite3 /path/to/dumpit.db < schema.sql
mitsuhiko@nausicaa:~/DumpIt$ python dumpit.py runserver
 * Running on http://localhost:4000/
```

„Dump It!“ In Aktion

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Mehr als ein Weg

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- Auth: Apache / LDAP / OpenID

http://werkzeug.pocoo.org/

http://lucumr.pocoo.org/talks/ltgraz08/