

3.– 6. September 2012
in Nürnberg



Herbstcampus

Wissenstransfer
par excellence

HTML5, JavaScript und der ganze REST

Multichannel-Architekturen für Enterprise-Entwickler

Norman Erck

Holisticon AG

Holisticon AG

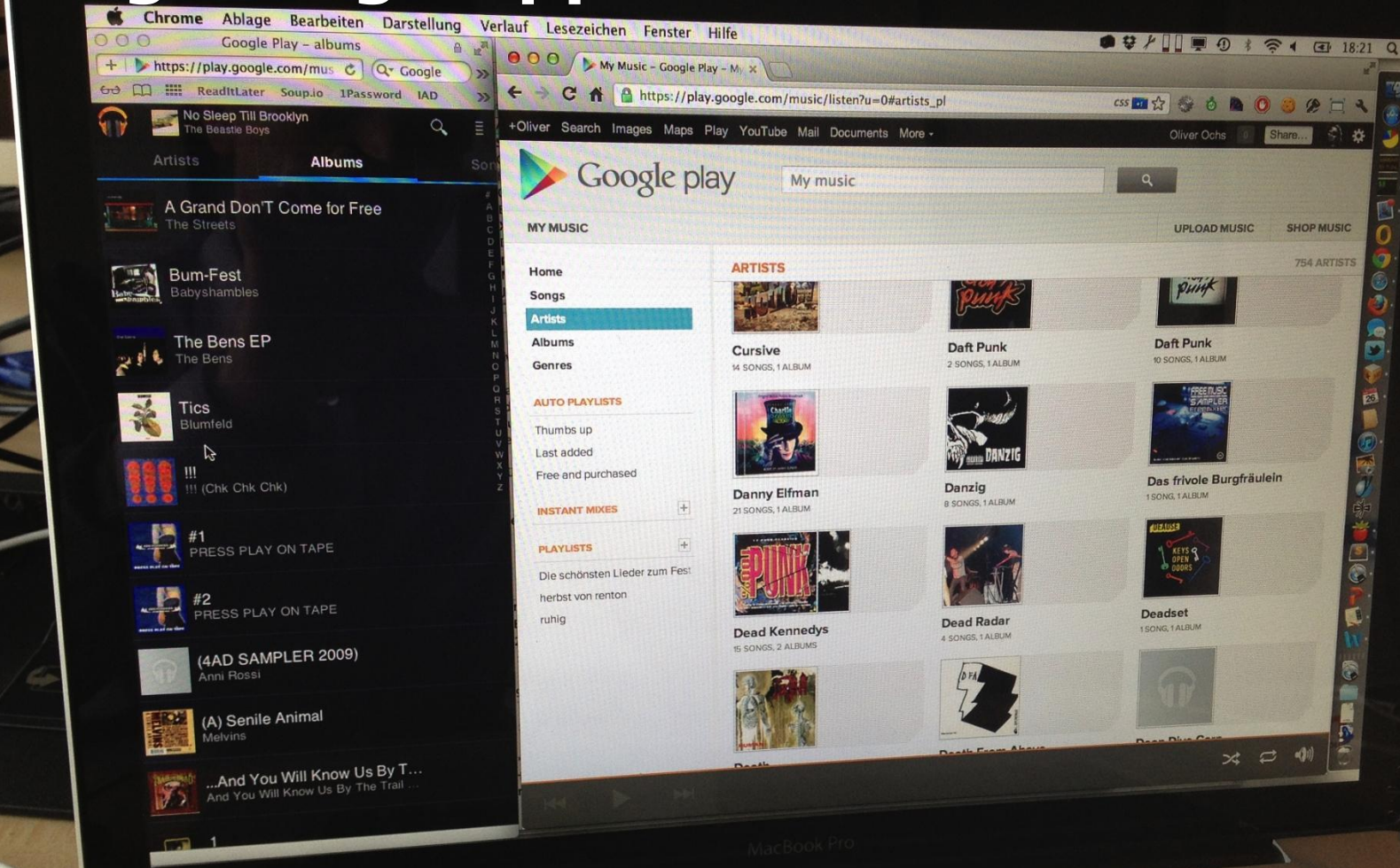
"Die Holisticon AG ist eine Management- und IT-Beratung mit Sitz in Hamburg. Mit einem ganzheitlichen Beratungsansatz unterstützen wir unsere Kunden in ihren Entwicklungsprojekten auf technischer, taktischer wie auch strategischer Ebene."



Roadmap

- Single Page Applikation
- Multichannel-Architektur
- Das REST-Pattern
- HTML5 Core
- JS Core
- JS-Code strukturieren
- Holi.fm
- Praxis MVC

Single Page Application



Evolution

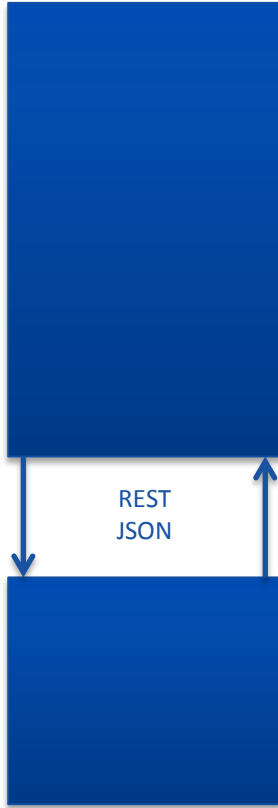
Klassisch



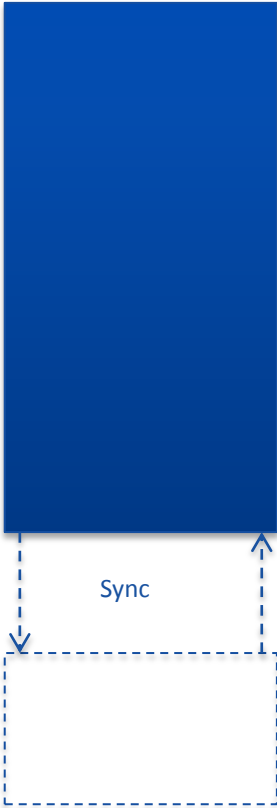
Thin Client



Thick Client



Local App

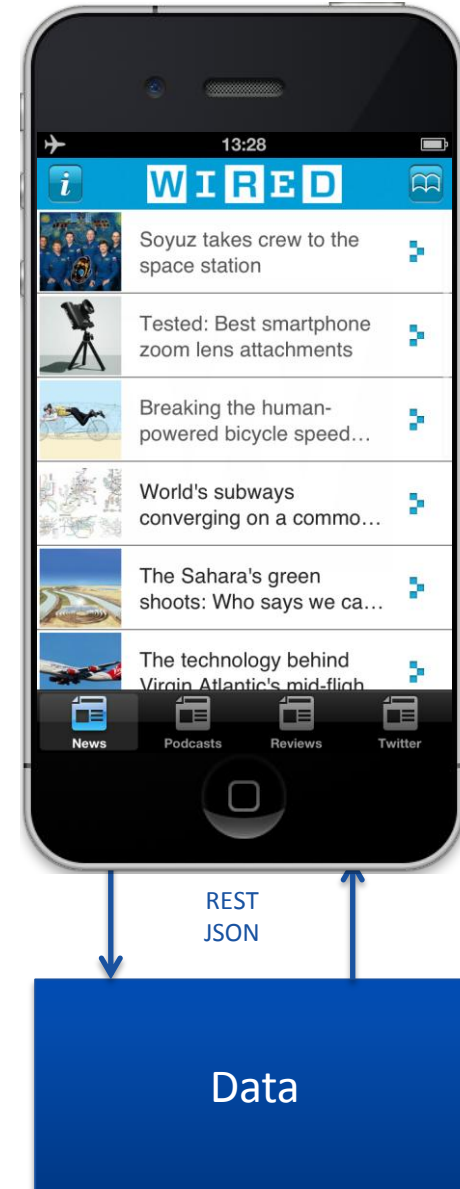


Einsatz Thick Client

Client Side Templating

Daten

JSON | XML

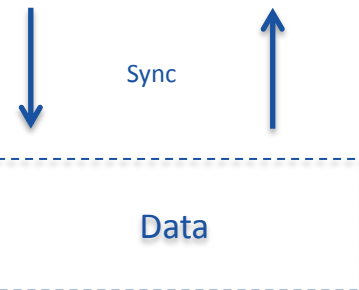
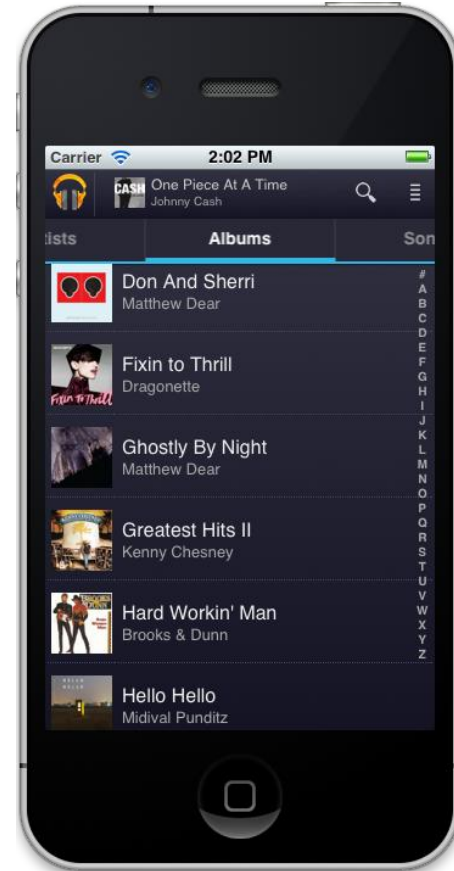


Einsatz Local App

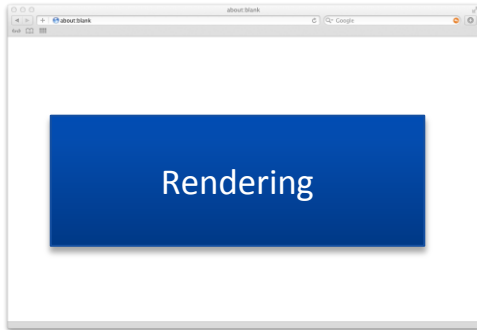
Client Side Templating

Client Side Data

Sync JSON | XML



State auf dem Server (e.g. Session)



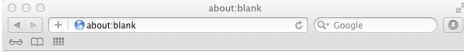
Thin Client



Thick Server



State im Client (e.g. JS Objects)



Rendering

Templating

Application Logic

Thick Client

Business Logic

Thin Server



Multichannel- Architektur



www.payback.de



www.dalim.de

Kanäle / Funktion <-> Kontext / Szenarien

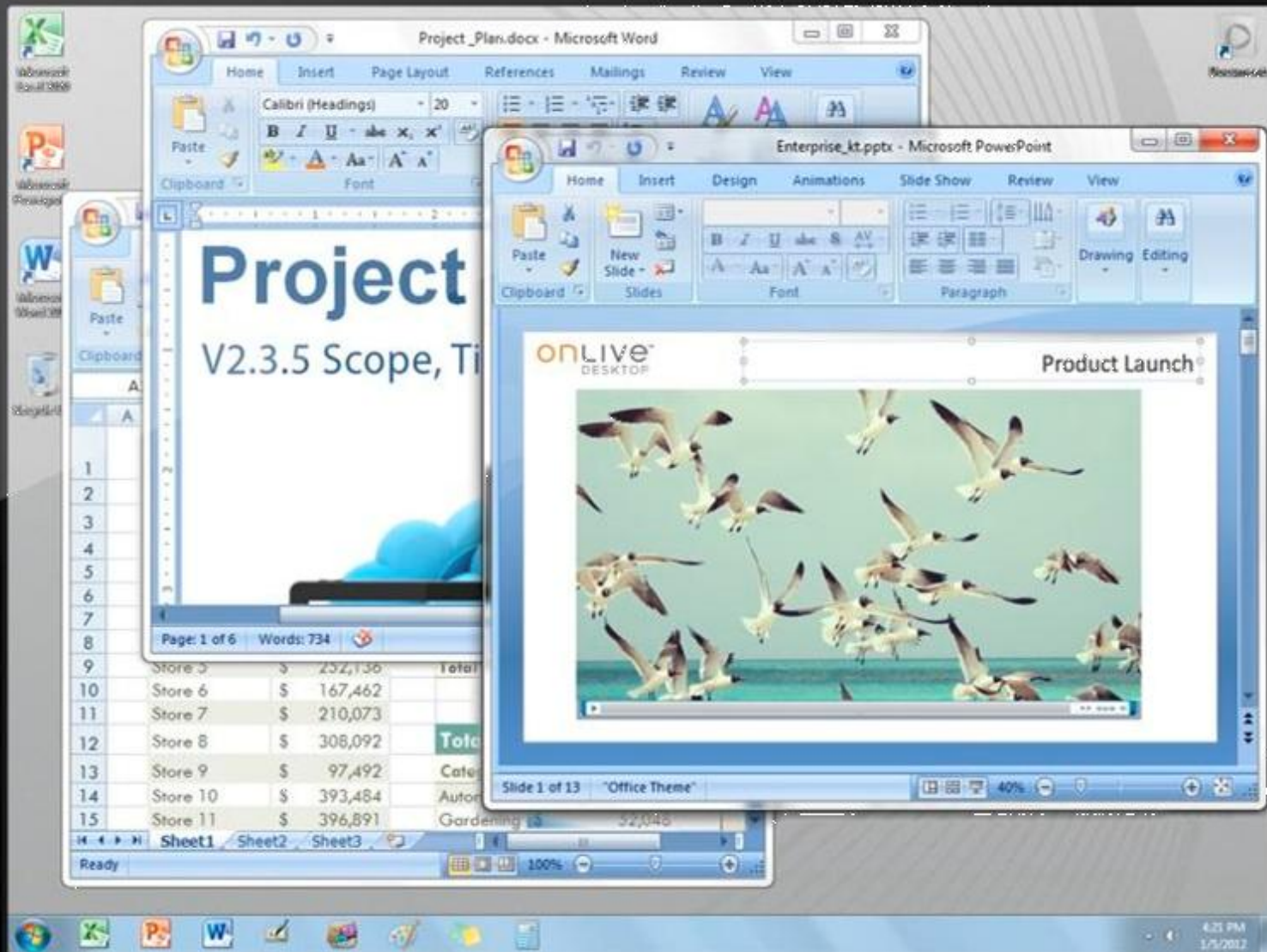
Website

Mobile

Tablet

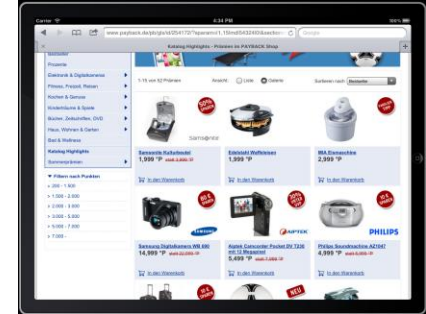
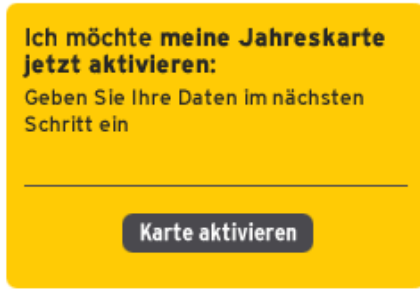


NOT Multichannel



<http://www.digitaltrends.com/mobile/video-game-streaming-service-onlive-launching-a-windows-desktop-cloud-app-for-ipad/>

Multichannel-Architektur

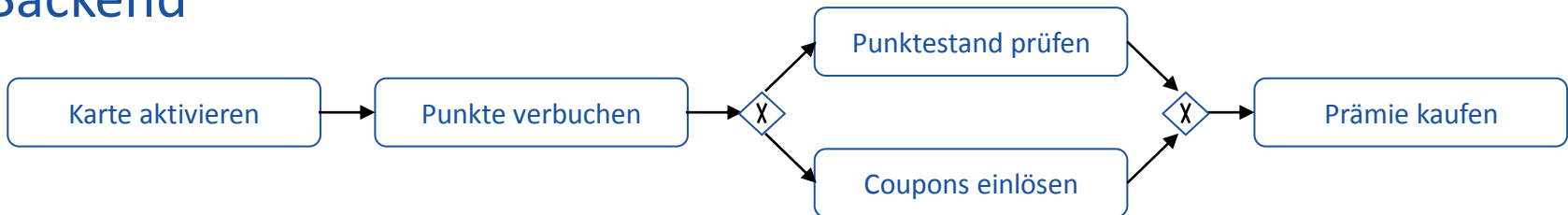


Frontend

REST



Backend



REST-Pattern



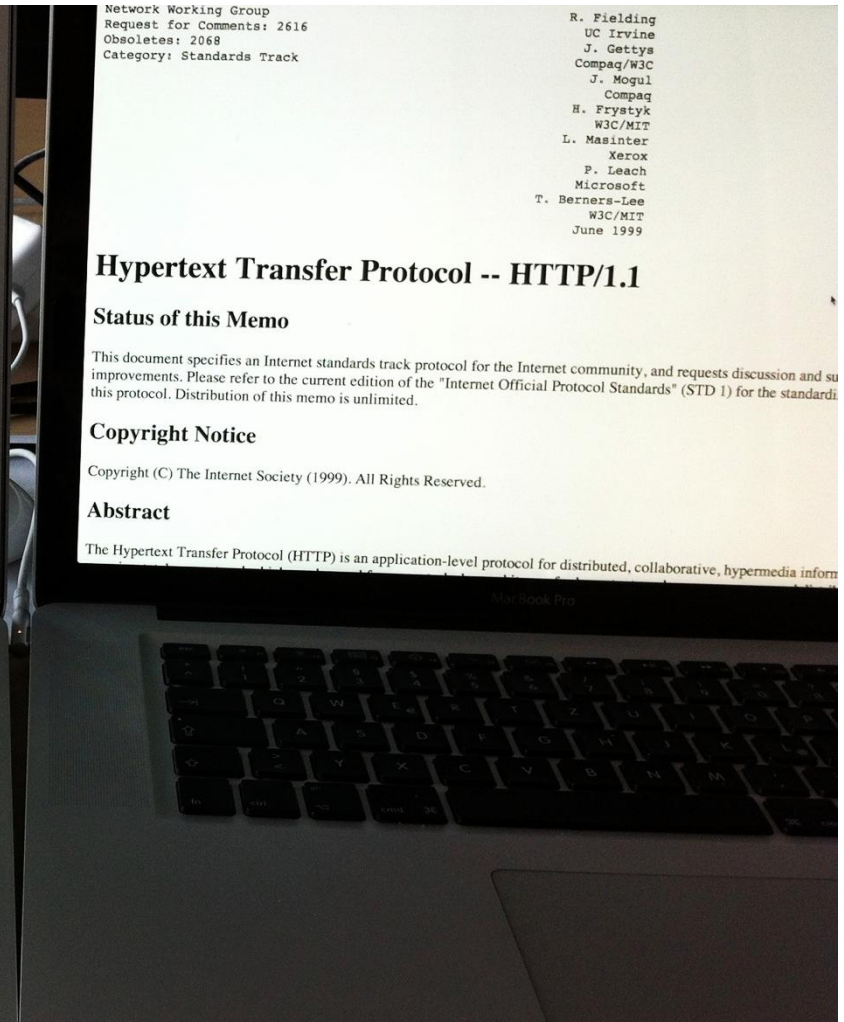
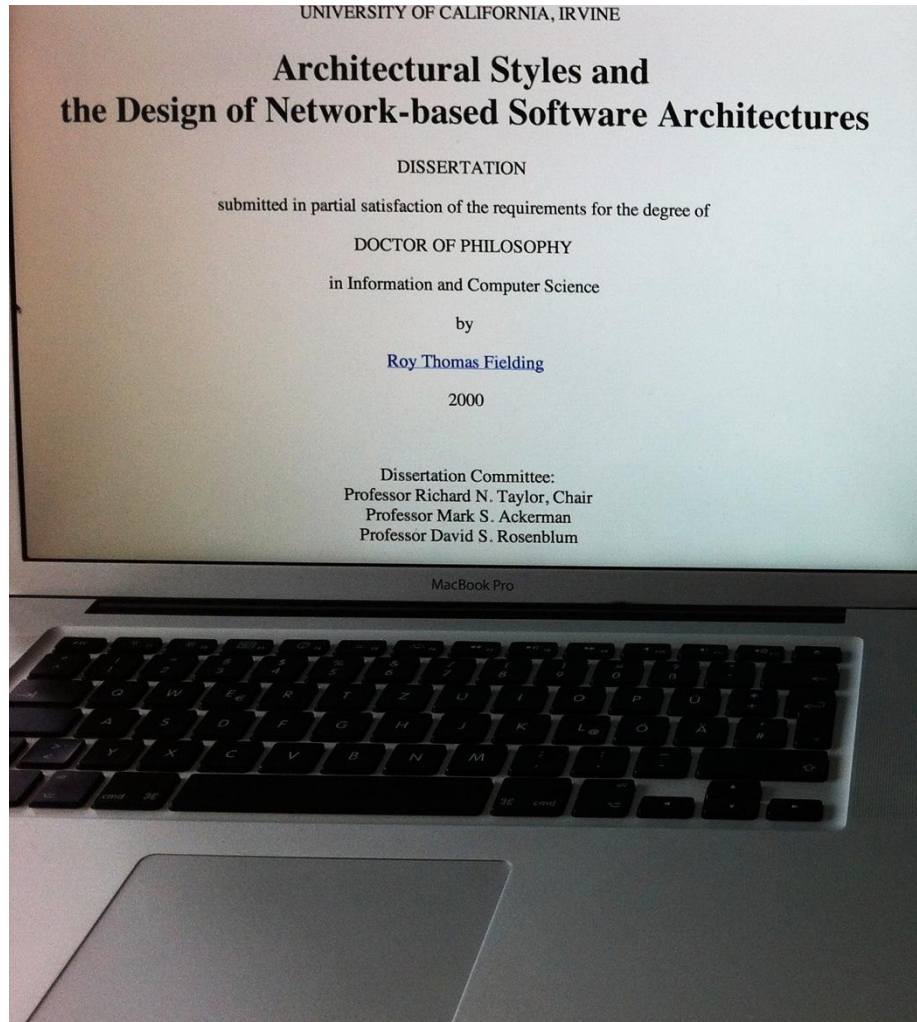
Method Signature

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
<?xml version="1.0" encoding="UTF-8" ?>
<definitions xmlns="http://schemas.xmlsoap.org/wsdl/" xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:tns="http://ec2.amazonaws.com/doc/2012-04-01/"
  xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" targetNamespace="http://ec2.amazonaws.com/doc/2012-04-01/">
  <types>
    <xs:schema xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:tns="http://ec2.amazonaws.com/doc/2012-04-01/" targetNamespace="http://ec2.amazonaws.com/doc/2012-04-01/"
      elementFormDefault="qualified">
      <xs:element name="CreateImage" type="tns:CreateImageType"/>
      <xs:complexType name="CreateImageType">
        <xs:sequence>
          <xs:element name="instanceId" type="xs:string"/>
          <xs:element name="name" type="xs:string"/>
          <xs:element name="description" type="xs:string" minOccurs="0"/>
          <xs:element name="noReboot" type="xs:boolean" minOccurs="0"/>
        </xs:sequence>
      </xs:complexType>
      <xs:element name="CreateImageResponse" type="tns:CreateImageResponseType"/>
      <xs:complexType name="CreateImageResponseType">
        <xs:sequence>
          <xs:element name="requestId" type="xs:string"/>
          <xs:element name="imageId" type="xs:string"/>
        </xs:sequence>
      </xs:complexType>
      <xs:element name="RegisterImage" type="tns:RegisterImageType"/>
      <xs:element name="RegisterImageResponse" type="tns:RegisterImageResponseType"/>
      <xs:complexType name="RegisterImageType">
        <xs:sequence>
          <xs:element name="imageLocation" type="xs:string" minOccurs="0"/>
          <xs:element name="name" type="xs:string"/>
          <xs:element name="description" type="xs:string" minOccurs="0"/>
          <xs:element name="architecture" type="xs:string" minOccurs="0"/>
          <xs:element name="kernelId" type="xs:string" minOccurs="0"/>
          <xs:element name="ramdiskId" type="xs:string" minOccurs="0"/>
          <xs:element name="rootDeviceName" type="xs:string" minOccurs="0"/>
          <xs:element name="blockDeviceMapping" type="tns:BlockDeviceMappingType" minOccurs="0"/>
        </xs:sequence>
      </xs:complexType>
      <xs:complexType name="RegisterImageResponseType">
        <xs:sequence>
          <xs:element name="requestId" type="xs:string"/>
          <xs:element name="imageId" type="xs:string"/>
        </xs:sequence>
      </xs:complexType>
      <xs:element name="DeregisterImage" type="tns:DeregisterImageType"/>
      <xs:complexType name="DeregisterImageType">
        <xs:sequence>
          <xs:element name="imageId" type="xs:string"/>
        </xs:sequence>
      </xs:complexType>
      <xs:element name="DeregisterImageResponse" type="tns:DeregisterImageResponseType"/>
      <xs:complexType name="DeregisterImageResponseType">
        <xs:sequence>
          <xs:element name="requestId" type="xs:string"/>
          <xs:element name="return" type="xs:boolean"/>
        </xs:sequence>
      </xs:complexType>
      <xs:element name="CreateKeyPair" type="tns:CreateKeyPairType"/>
      <xs:complexType name="CreateKeyPairType">
        <xs:sequence>

```

REST Architecture Pattern und HTTP



Unified API

GET

PUT

DELETE



sicher

POST

HEAD

OPTIONS

Ressourcen

Abstraktes Konzept

Dokument, Bild, Collection, Service

Kein Abbild der "Datenbank" o.ä.

Representation Metadata

```
{  
  "LastName": "Erck",  
  "GivenName": "Norman",  
  "Address": {  
    "Street": "Friedensallee 120",  
    "PLZ": "22763",  
    "City": "Hamburg"  
  }  
}
```

application/json



image/jpeg



text/html

Resources Identifiers

<http://localhost/customers/NormanErck>

<http://localhost/customers?lastName=Erck&givenName=Norman>

Request URL:

<http://localhost/customers/NormanErck>

Request Method: GET

Status Code: 200 OK

Representation von Ressourcen

```
{  
  "LastName": "Erck",  
  "GivenName": "Norman",  
  "Address": {  
    "Street": "Friedensallee 120",  
    "PLZ": "22763",  
    "City": "Hamburg"  
  }  
}
```

Manipulation durch Representation

```
{  
  "LastName": "Ochs",  
  "GivenName": "Oliver",  
  "Address": {  
    "Street": "Friedensallee 120",  
    "PLZ": "22763",  
    "City": "Hamburg"  
  }  
}
```

PUT



Customer

Nachrichten sind selbst-beschreibend

```
Accept: */*
Accept-Charset: ISO-8859-1, utf-8; q=0.7, *; q=0.3
Accept-Encoding: gzip, deflate, sdch
Accept-Language: de-DE, de; q=0.8, en-US; q=0.6, en; q=0.4
Cache-Control: max-age=0
Connection: keep-alive
Host: myshop.foo
If-Modified-Since: Tue, 13 Mar 2012 11:04:14 GMT
Referer: http://myshop.foo/eshop/baskets
User-Agent: Mozilla/5.0 [...]
```

Request URL: http://myshop.foo/img.png
Request Method: GET

```
Accept-Ranges: bytes
Age: 608563
Cache-Control: max-age=2592000
Connection: keep-alive
Content-Type: image/png
Date: Thu, 10 May 2012 06:52:36 GMT
Expires: Sat, 02 Jun 2012 05:49:53 GMT
Last-Modified: Tue, 13 Mar 2012 11:04:14 GMT
Server: Apache
Via: 1.1 varnish
X-Varnish: 2140613515 2092393484
```


Hypermedia

```
{
  "Customer": {
    "name": "NormanErck",
    "uri" : "/customer/NormanErck.json"
  },
  "Items": [
    {
      "name": "Samsung Galaxy S IV",
      "href": "/products/mobile/SamsungGalaxySIV.json",
      "count": 1
    },
    {
      "name": "Apple iPhone 5",
      "href": "/product/mobile/iPhone5_1_1.json",
      "count" : 1
    }
  ]
}
```

JAX-RS

JAVA-API for RESTful Services

Bietet Annotationen, um RESTful Services zu bauen.

HelloWorldResource.java

```
package com.sun.jersey.samples.helloworld.resources;

import javax.ws.rs.GET;
import javax.ws.rs.Produces;
import javax.ws.rs.Path;

@Path("/helloworld")
public class HelloWorldResource {
    @GET
    @Produces("text/plain")
    public String get() {
        return "Hello World";
    }
}
```

Beispiel für Parameter

```
@Path("/users/{username: [a-zA-Z][a-zA-Z_0-9]*}")
public class UserResource {

    @GET
    @Produces("text/xml")
    public String getUser(@PathParam("username") String userName)
    {
        ...
    }
}
```

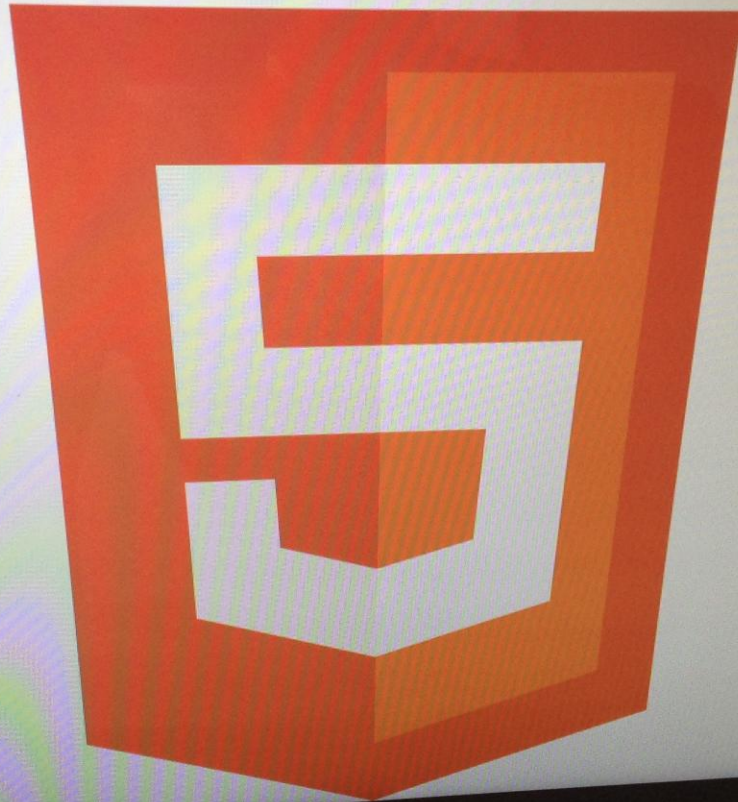
Beispiel für Message-Format

```
@Path("/myResource")
@Produces("text/plain")
public class SomeResource {
    @GET
    public String doGetAsPlainText() { ... }

    @GET
    @Produces("text/html")
    public String doGetAsHtml() { ... }
}
```

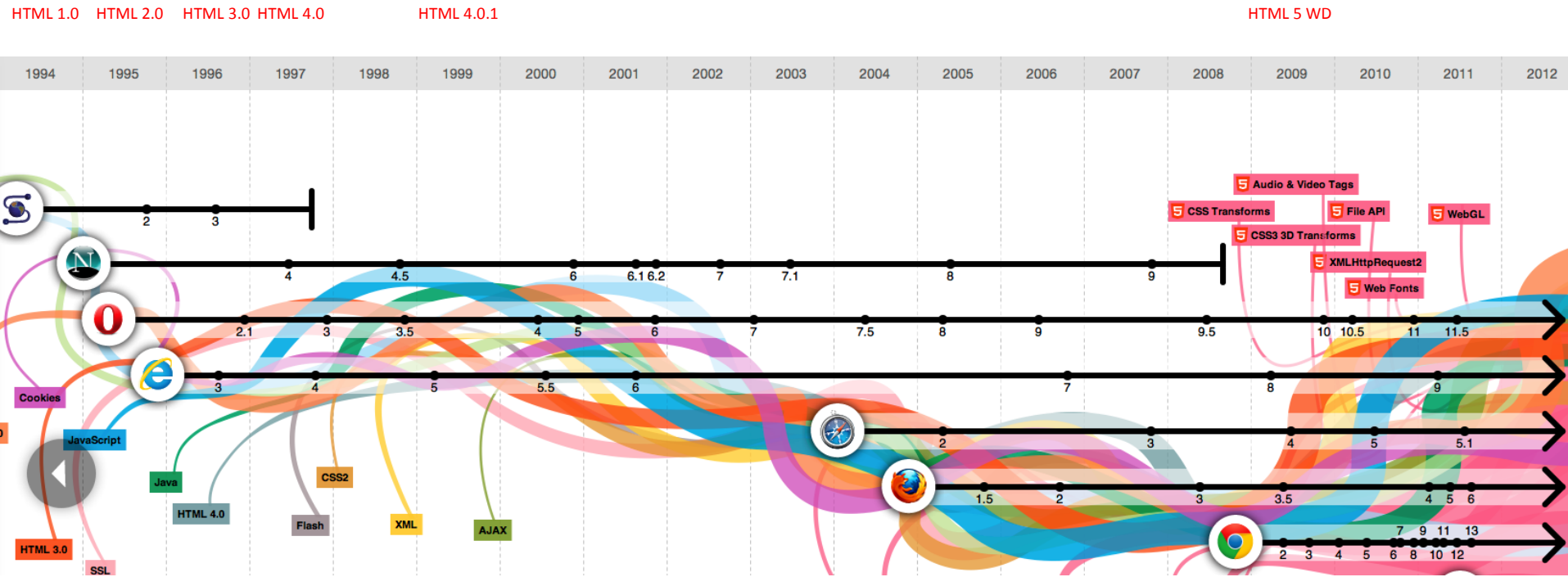
HTML5 Core

HTML



MacBook Pro

Evolution



Browser-Krieg 1.0

Browser-Krieg 2.0

<http://evolutionofweb.appspot.com/>

Doctype

```
<!DOCTYPE HTMLPUBLIC
```

```
  "-//W3C//DTD HTML 4.01//EN" "http://www.w3.org/TR/html4/strict.dtd">
```

```
<!DOCTYPE html>
```


E-Mail

```
<input type="email"  
  id="email" name="email"  
  placeholder="example@holisticon.de">
```



URL

```
<input type="url"  
  id="url" name="url"  
  placeholder="http://holisticon.de">
```



Number

```
<input type="number"  
  id="number" name="number">
```



Date

```
<input type="date"  
  id="date" name="date">
```



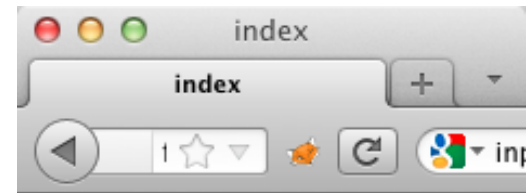
Audio

```
<audio  
  src="http://freedownloads.last.fm/Potoki.mp3"  
  controls>  
</audio>
```



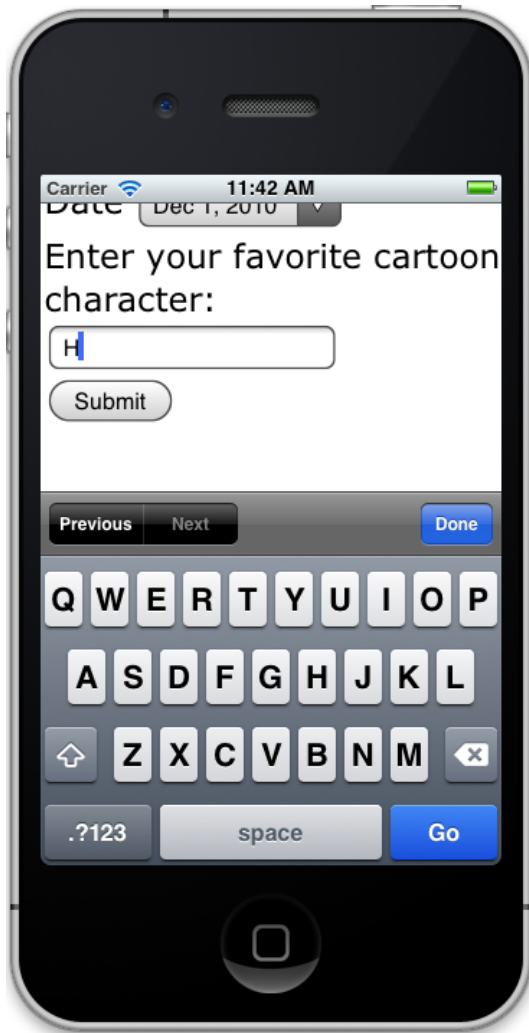
Datalist

```
<input type="text" name="character"
list="characters" />
<datalist id="characters">
  <option value="Homer Simpson">
  <option value="He-Man">
  <option value="Bart">
  <option value="Fred Flintstone">
</datalist>
```



- Email
- Url
- Number
- Date
- Enter your favorite cartoon character:

Datalist



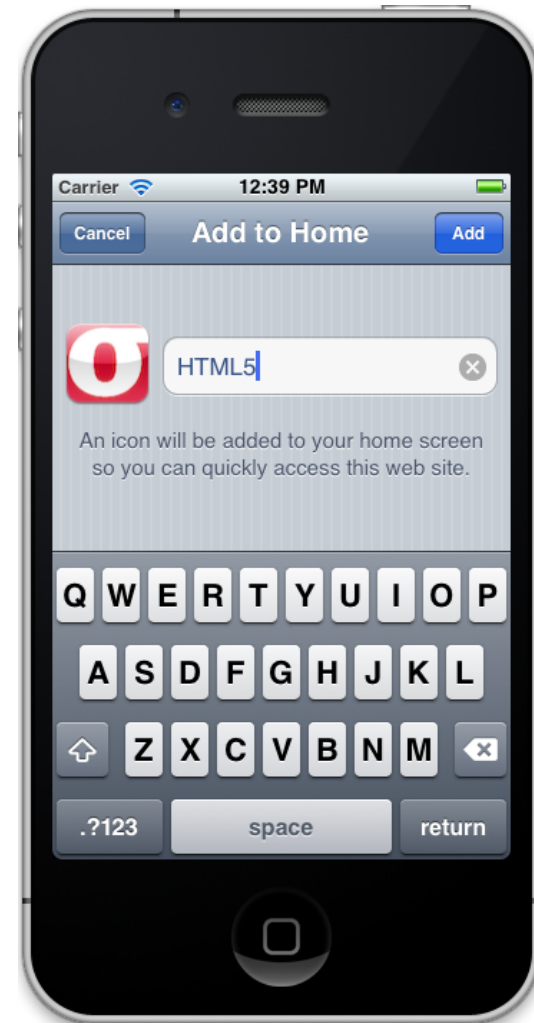
Canvas

```
<canvas id="ext-gen1162-canvas"  
  width="724" height="102" >  
</canvas>
```



Magic Tags

```
<title>HTML5</title>
<meta name="viewport"
  content="width=device-width;
  initial-scale=1.0;
  maximum-scale=1.0;
  minimum-scale=1.0;
  user-scalable=0;">
<meta name="apple-mobile-web-app-
capable" content="yes" />
<link rel="apple-touch-icon-
precomposed" href="img/icon.png"/>
<link rel="apple-touch-
icon" href="img/icon.png"/>
<link rel="apple-touch-startup-
image" href="img/splash.png" />
```



CSS3

```
-moz-box-shadow:0px 2px 2px rgba(0,0,0,0.5);
```

```
-webkit-box-shadow: 0px 2px 2px rgba(0,0,0,0.5);
```

```
box-shadow: 0px 2px 2px rgba(0,0,0,0.5);
```

@media

```
@media only screen and (max-device-width: 480px) {
```

```
  body {
```

```
    width: 460px;
```

```
  }
```

```
}
```

```
<link rel="stylesheet" type="text/css"
```

```
  href="CSS/mobile.css"
```

```
  media="only screen and (max-device-width: 480px)">
```

JS Core

JS

MacBook Pro



Dynamische Sprache

JS hat keine statischen Typen.

Typen werden zur Laufzeit dynamisch angepasst.

```
5 + "5" === "55"; // true
```

```
5 == "5"; // true
```

```
5 === "5"; // false
```

```
3..toString(); // "3"
```

Dynamische Sprache

Compiler hilft Dir nicht.

Code-Modifications können zur Laufzeit auftreten.

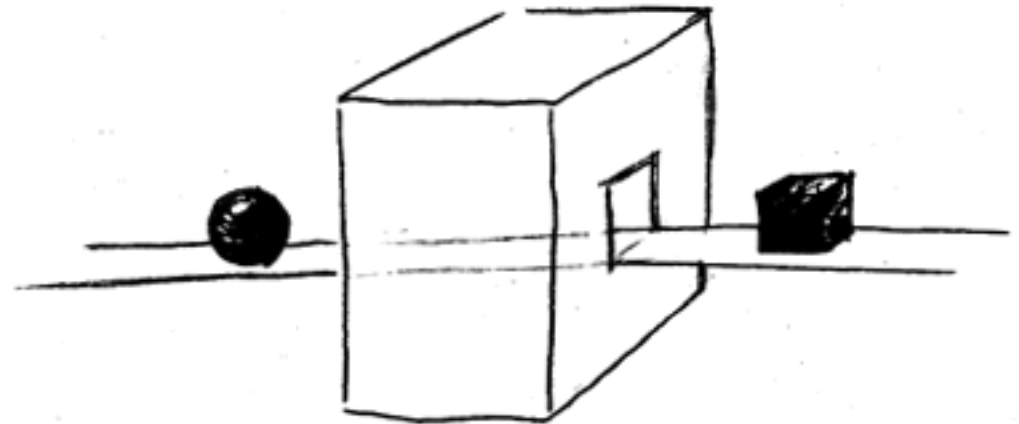


Image by Laura Dreßler

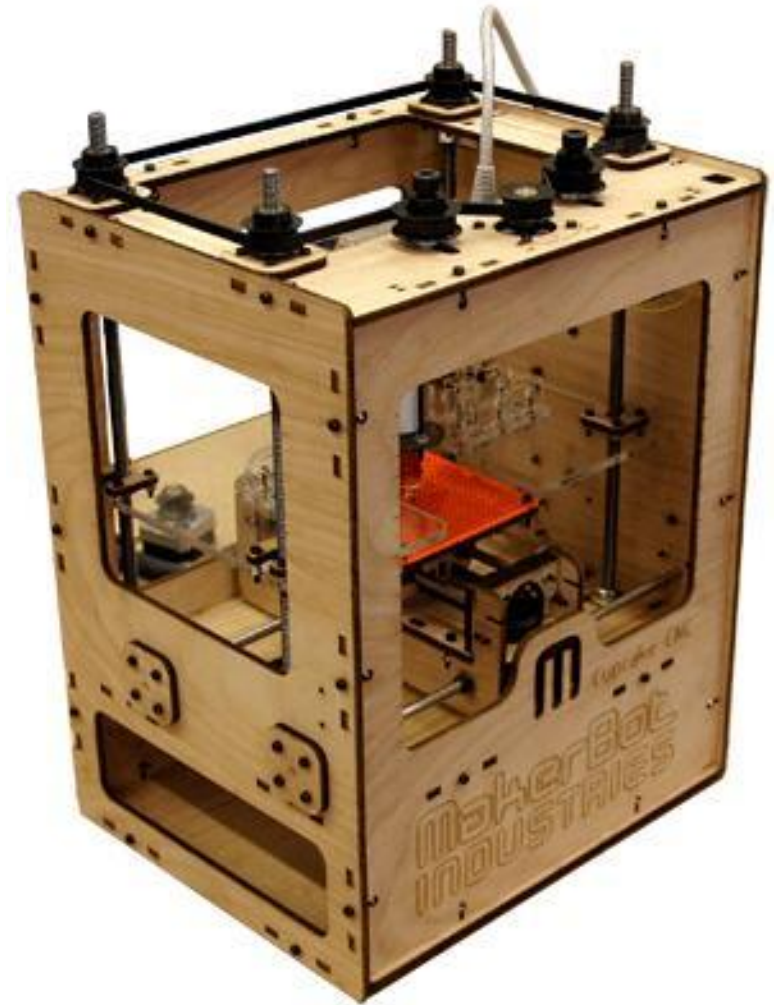
Build Process auch für JS

Documentation

Linting

Minification und Modularization (web only)

Automated Tests

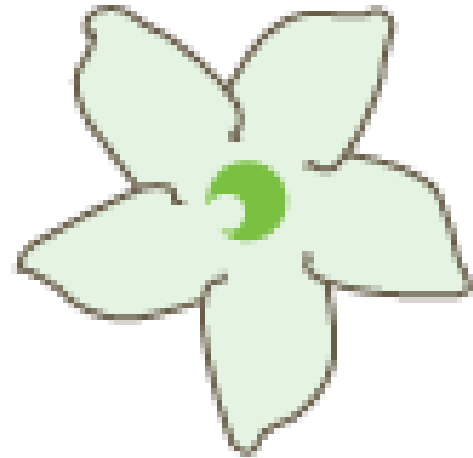


Jasmine

Basiert auf RSpec und JSpec

Keine Abhängigkeiten zu einem
Webbrowser

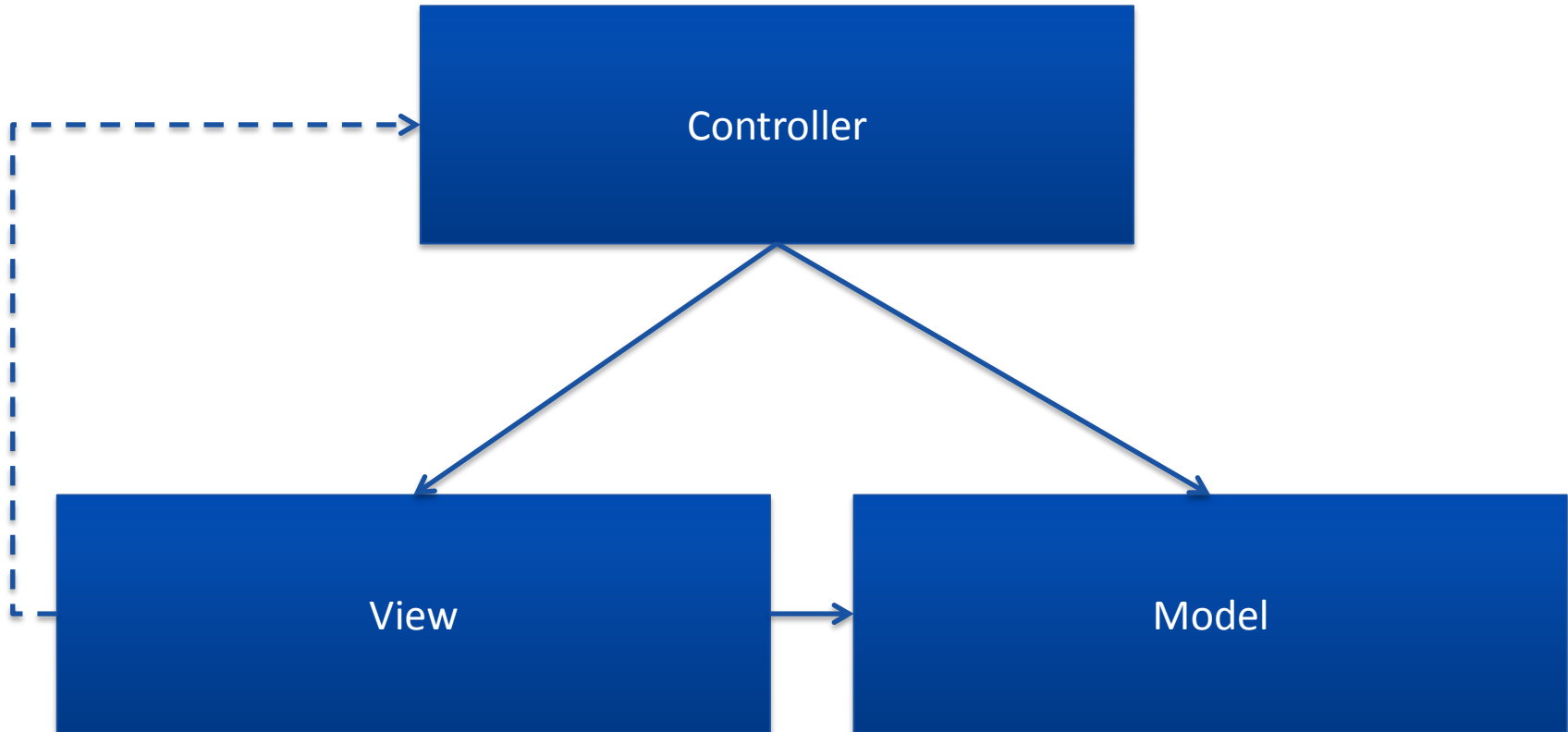
<http://pivotal.github.com/jasmine/>



JS-Code Strukturieren



MVC-Frameworks



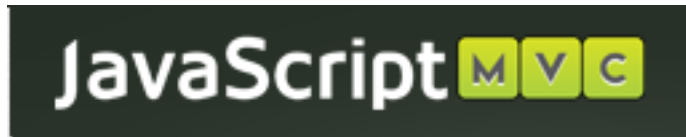
UI-Bindings



View

Model


Frameworks



TodoMVC

TodoMVC

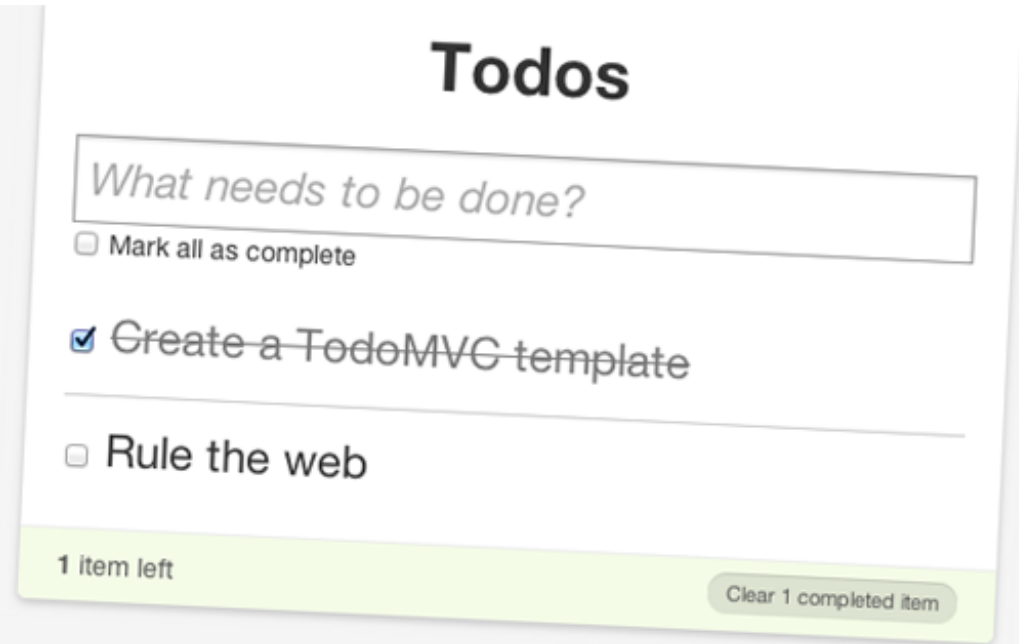
A common learning application for popular JavaScript MV* frameworks

 Tweet 748

Download

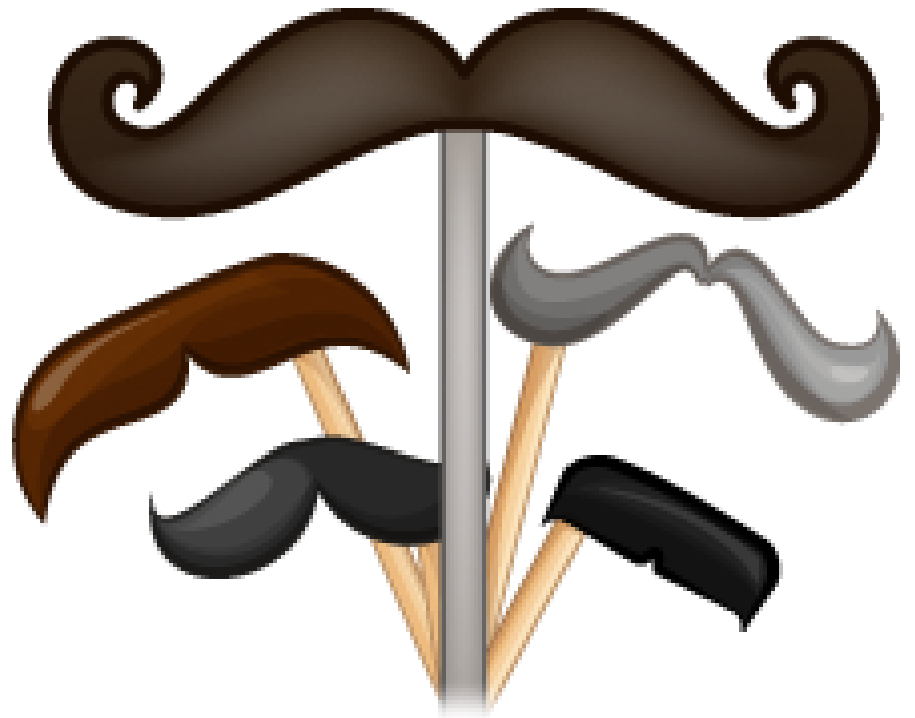
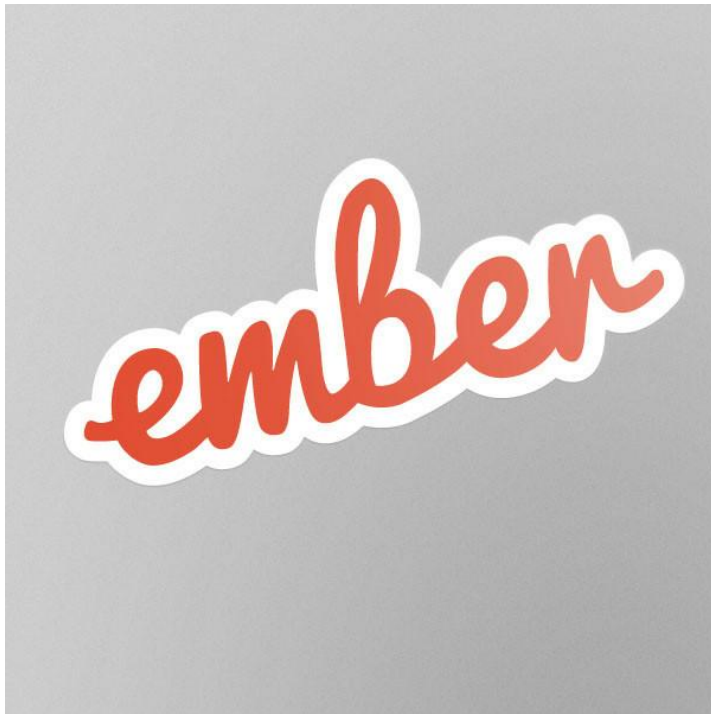
Follow on GitHub

Check out our new subproject [TodoMVC Labs](#)



<http://addyosmani.github.com/todomvc/>

ember.js

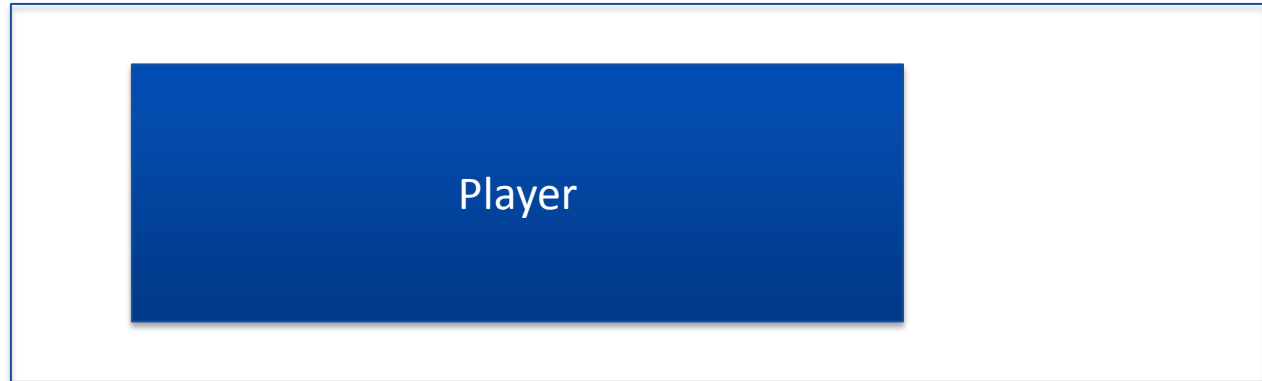


Holi.fm

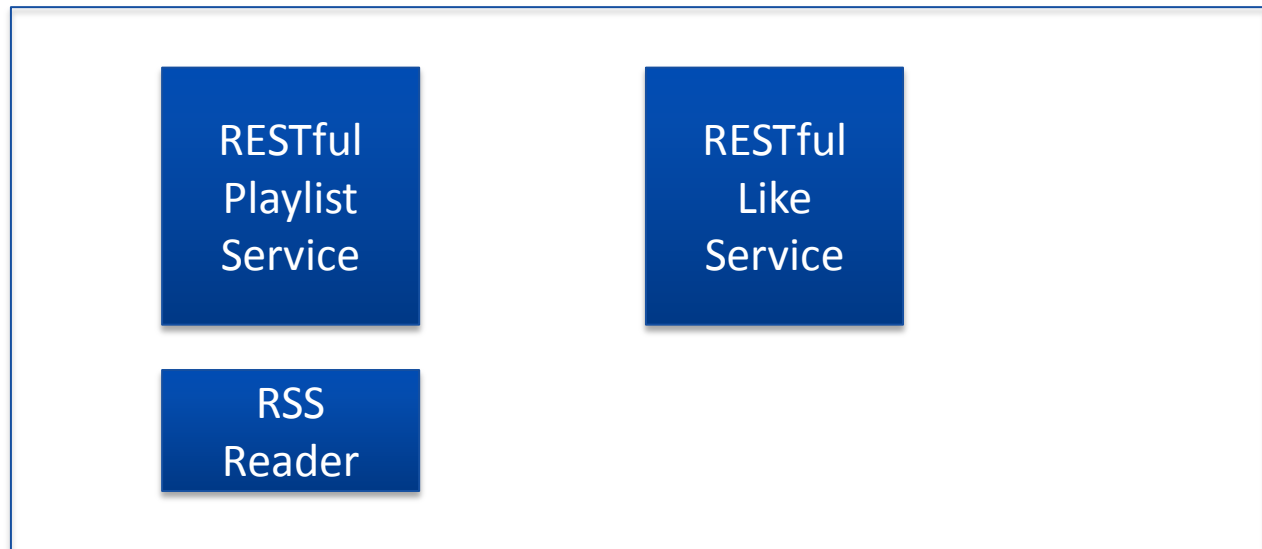


Architektur

Frontend



Backend



Last.fm

Model

```
App.holifm = Ember.Object.create({  
  tracks: [],  
  currentTrack : {  
    title: "Titel",  
    author: "Interpret",  
    src: "#"  
  }  
});
```

View

```
App.PlaylistItemView = Ember.View.extend({
  play: function(){
    App.holifm.set("currentTrack", this.content);
    Player.start(this.content);
    App.holifm.set("isPlaying", true);
  }
});
```

Controller

```
App.holifm = Ember.Object.create({
  populate: function() {
    var that = this;
    jQuery.ajax({
      url : "/holi.fm/resources/tracks/"+that.username,
      contentType : "application/json; charset=utf-8",
      success: function(data) {
        that.set('tracks', data);
      }
    });
  }
});
```

Templating

```
{{#each App.holifm.tracks}}  
  {{#view App.PlaylistItemView contentBinding="this"}}  
    <li>{{title}}</li>  
  {{/view}}  
{{/each}}
```

Mobile Development



Phone**Gap**



Dipl.-Ing. (FH)
Oliver Ochs
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