Web 2.0
Lecture 1: Motivation and Course Overview

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Hellos

- Tomáš Vitvar
  - *Technical Architect at Oracle*
    - → *SOA and Oracle Integration Architectures*
  - *Researcher, developer, software architect*
    - → *Have worked in Austria, Ireland, Germany, Czech rep.*
    - → *Universities and companies, ProgrammableWeb*
    - → *member of W3C Advisory Committee*
    - → *EU research and development projects, evaluator*

- Jaroslav Kuchař
  - *CTU FIT research assistant, Ph.D. at CTU FIT*
  - *Web services, data mining, analytics, Web technologies*

- Milan Dojchinovski
  - *Ph.D. at CTU FIT, web services*

Overview

- Motivation
- Scope, Requirements, Learnings
- Assessment, Resources, Communication

Bird's View

- Web 2.0 engineering is...
  - *far beyond PHP and HTML!*
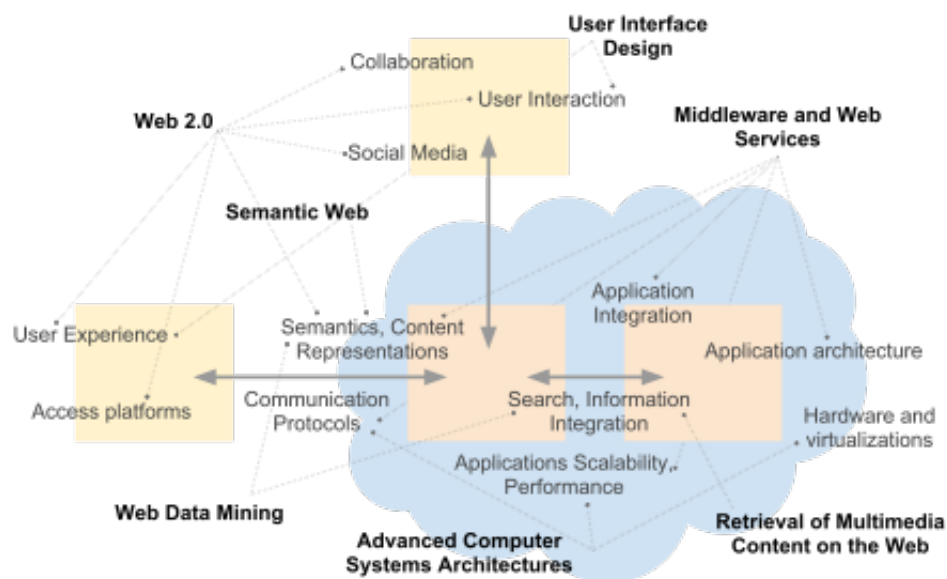
Motivation in Brief

- The Web is for users
  - *users not only consume but also produce (prosumers)*
  - *improved user experience*
- The Web is a huge database
  - *users generate content (explicit and implicit knowledge)*
  - *large portion of this database is social data*
- The Web is programmable
  - *Applications provide GUI, end-users (non-technical)*
  - *Applications provide API, users are programmers*
  - *Any company with the Web presence has an API*
    - → *Google, Amazon, LinkedIn, Facebook, ...*
    - → *Wikipedia - Linked Data*

W20 and MDW Courses

- **W20 builds on MDW!**
- Application Architecture
  - *Multi-tier client-server architecture*
  - *More focus on the client side of the architecture, JavaScript, AJAX*
    - → *Assume a robust infrastructure is in place, will not talk about it*
    - → *Usually empowered by public cloud environments (Google AppEngine, Amazon EC2, etc.)*
- Technology, Platform
  - *JEE was a platform in enterprise environments*
  - *JavaScript*
    - → *client-side + related technologies*
    - → *server-side – asynchronous I/O, node.js*
  - *It does not mean you cannot combine technologies*
    - → *Node.js as a Web server, Oracle Service Bus for middleware to build interfaces with back-end systems, all running in a cloud environment (auto scaling, load balancers, message queues, etc.)*

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Scope

- Web 2.0 principles
  - *Read/Write Web, Programmable Web, Social Web, ...*
- REST Architecture
  - *Principles, Architecture*
  - *HTTP protocol in very detail*
- Data on the Web
  - *metadata, microformats, microdata*
- AJAX applications
  - *JavaScript*
  - *accessing the data, protocols*

What You Will Learn in Lectures

- Concepts and theory ~ 10%
  - *principles that drive Web 2.0 technological development*

- Technology ~ 70%
  - *state of the art Web 2.0 technology*
  - *data, protocols, frameworks*

- Examples ~ 20%
  - *toy examples to demonstrate concepts, theory and technologies*

Organization of Lectures

- 13 Lectures
  - *Czech: Mo 7:15-8:45, T9:155*
  - *English: TBA*

- Plan
  1. *11.02.2012 – Motivation and Course Overview (html)*
  2. *11.02.2012 – Introduction to JavaScript (html)*
  3. *18.02.2012 – Concepts, Statistics and Technologies (html)*
  4. *25.02.2012 – Representational State Transfer (html)*
  5. *04.03.2012 – Uniform Interface (html)*
  6. *11.03.2012 – HATEOAS, Scalability, Description (html)*
  7. *18.03.2012 – Atom and AtomPub (html)*
  8. *25.03.2012 – Microformats, Microdata, Web Forms (html)*
  9. *08.04.2012 – Resource Description Framework (html)*
  10. *15.03.2012 – Accessing and Utilizing Services (html)*
  11. *22.04.2012 – OAuth and OpenID (html)*
  12. *29.04.2012 – Protocols for the Realtime Web (html)*
  13. *06.05.2012 – Reserve*

Organization of Practicals

- Work alone, you can collaborate
- Practicals every second week
- Number of sessions: 6-7, 5 major tasks
  1. *Introduction, Apps Script (JavaScript)*
  2. *Pipes, Mashup*
  3. *A RESTful service - development, consumption*
  4. *Atom, HATEOAS, Scalability*
  5. *Microformats, Microdata, RDFa*
  6. *OAuth, Realtime Web*
- Plus a number of tasks to complete off-line (at home)
- All textual/design diagrams results in the wiki
  → https://edux.fit.cvut.cz/courses/MI-W20/
- All (nicely commented!) code results in the svn
  → http://project.fit.cvut.cz

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Assessment

- Labs
  - *Presence is mandatory*
    - → *You can miss up to 1 lab without sending regrets*
  - *Every task gives you a max. of 6 points*
  - $6 \cdot 5 = 30$ *points*
  - *Activity in labs gives you a max. of 10 points*
  - *Total maximal points: $p_p = 40$, **to pass**: $p_p \geq 20$*
- Final exam
  - *Mandatory written test: 3 parts, ~1 hour*
    - → *each gives you a max. of 20 points, the total $p_t = 60$ points*
    - → *you must have at least 50% of points from each theme covered by a test part and 50% of points in total*
  - *Final score:*
    - → $p_p + p_t = 100$ *maximum points*
    - → *discussion may adjust your points freely*

Assessment – Final Marks

Mark	Points	In words
A	100–90	výborně
B	89–80	velmi dobře
C	79–70	dobře
D	69–60	uspokojivě
E	59–50	dostatečně
F	49–0	nedostatečně

Source: http://www.cvut.cz/pracoviste/pravni-odbor/dokumenty/studijni-predpisy/studijnirad.pdf

- Everything good and bad will count
  - *practicals, coding, (pro-)activity, passiveness, hacking, lectures, exam, cheating, ...*

Resources

- Online sources
  - *https://edux.fit.cvut.cz/courses/MI-W20/ – EDUX*
  - *https://project.fit.cvut.cz/ – Your project (svn)*
  - *slides*
    `http://vitvar.com/courses/slides/w20/lecture{X}.(html|pdf)`, *where `X` is the lecture number*
- Books
  - *G. Vossen, S. Hagermann: Unleashing Web 2.0: from concepts to creativity, Elsevier/Morgan Kaufmann, 2007, ISBN 9780123740342. (→ Web 2.0 Concepts)*
  - *L. Richardson, S. Ruby: RESTful Web Services: Web services for the real world, O'Reilly Media, May 2007, ISBN 9780596529260.*
- Other
  - *Many sources on the Web, to be listed throughout the course*
  - *A lot of W3C sources, Web architecture, HTTP*

About Slides

- Humla – Open Source HTML5 Presentation Environment
  - *every slide has a unique URL*
  - *all figures linked with Google drawings*
  - *possible to format and print in PDF*
  - *running local, with back-end NodeJS support, and offline*
  - *Fork it at Humla github repo*
- Keys

1	*default browsing mode*
2	*slideshow mode (automatically scales to fullscreen)*
3	*grid (overview) mode*
4	*print mode, 2 slides per page*
←	*slide left*
→	*slide right*
d	*debug mode*
e	*toggle last error messages on/off*

Code Examples

- Example code in various languages
  - *Java, JavaScript (server-side), xml, command line (bash) and plain text (e.g., BNF-like syntax, regular expressions, etc.)*
- Code colors
  - *different colors of the listings' gutters based on the language*

```
1 | public String test() {
2 |     // this is a Java code
3 | }
```

```
1 | function test() {
2 |     // this is a JavaScript code
3 | }
```

```
1 | <test><!-- this is a XML code --></test>
```

```
1 | echo "this is a bash test"
```

Communication

- Language
  - *Text: English (slides, tweets, posts, instructions, etc.)*
  - *Voice: Czech*
- Channels
  - *limit emails in general*
  - *Twitter: @Web2e*
    - → *technology news related to web engineering courses*
    - → *it's a reading for you, make sure you follow this*
  - *Hashtags: #w2e_w20ann*
    - → *(W20-)related organizational announcements*
- Direct
  - *ask me anything directly, if not of interest to public*
  - *email me at tomas@vitvar.com, follow me on Twitter @TomasVitvar*