# Web 2.0

## Motivation and Course Overview

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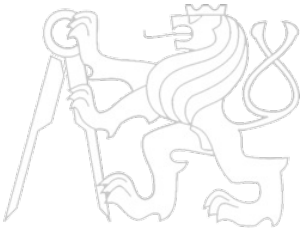

Czech Technical University in Prague
Faculty of Information Technologies • Software and Web Engineering • http://vitvar.com/courses/w20

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Humla v0.3

## Overview

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

## Web 2.0

- A new version of the Web?
- Principles
  - *Read-Write Web*
  - *Programmable Web*
  - *Realtime Web*
  - *Social Web*



## Motivation in Brief

- The Web is programmable
  - *Applications provide **data** and **functionality***
  - *Users – end-users (GUI) and programmers (API)*
  - *Any company with a Web presence has an API*
    *→ Google, Amazon, LinkedIn, Facebook, ...*
- Need for highly scalable apps
  - *Sudden increase in traffic*
  - *Slashdot effect*

## W20 and MDW Courses

- **W20 builds on MDW!**
- Application Architecture
  - *Multi-tier client-server architecture*
  - *Interface of the app, REST*
  - *Client side of the architecture, JavaScript, AJAX*
  - *Infrastructure empowered by cloud technologies*
- 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, ESB for proxy services with back-end systems, all running in a cloud environment (auto scaling, load balancers, message queues, etc.)*



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## Scope

- Cloud Architectures
  - *Details of some IaaS and PaaS services*
  - *Cloud Native, Microservice Architecture*
  - *Containers*
  - *Docker, Kubernetes*
- Advanced HTTP
  - *Same origin policy, cross-origin*
  - *OAuth, Open ID, JWT*
  - *Realtime Web protocols*
  - *HTTP Performance*
- Selected middleware technologies



## Organization of Lectures

- 13 Lectures
  - *Czech: Mon 9:15-10:45, THa:s135*
  - *English: TBA*
- Plan
  1. *17.02.2019 – Motivation and Course Overview*
  2. *24.02.2019 – Asynchronous I/O*
  3. *02.03.2019 – Introduction to Cloud Computing*
  4. *09.03.2019 – Microservices and Cloud Native Architecture*
  5. *16.03.2019 – Reserve (Cloud Computing)*
  6. *23.03.2019 – Accessing and Utilizing Services*
  7. *30.03.2019 – Security*
  8. *06.04.2019 – Protocols for the Realtime Web*
  9. *13.04.2019 – Easters*
  10. *20.04.2019 – HTTP Performance Optimization*
  11. *27.04.2019 – Blockchain*
  12. *04.04.2019 – Annotations*
  13. *11.04.2019 – Reserve*

## Organization of Practicals

- Work alone, you can collaborate
- Practicals every second week
- Number of sessions: 6-7, 5 major tasks
  1. *Introduction, JavaScript/AppScript*
  2. *TBD*
  3. *CORS/JSONP*
  4. *OAuth (JWT)*
  5. *Realtime Web*
  6. *Annotations*
- Plus a number of tasks to complete at home



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# Assessment

- Labs
  - *Presence is mandatory*
    - → *You can miss up to 1 lab without sending regrets*
  - *Total maximum points: P=40*
    - → *exercises for labs + your activity + your homeworks*
  - ***to pass**: P >= 20*
- Final exam
  - *Mandatory written test: 3 parts, ~1 hour*
    - → *each gives you a max. of 20 points, the total E = 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 + E = 100 maximum points*
    - → *The more points you have from labs, the better for the exam!*



# 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 home*
  - *http://w20.vitvar.com – both html and pdf (1 and 2 slides per page)*
- Books
  - *B. Burns: Designing Distributed Systems, O'Reily 2018*
  - *I. Grikorik: High Performance Browser Networking, O'Reily 2013*
  - *L. Richardson, M. Amundsen: RESTful Web APIs, O'Reilly Media, May 2015, ISBN 978-1-449-35806-8.*
- 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 full screen)*
  - 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*