Facilitating Teacher-Student Communication and Interaction in Large-Scale Lectures with Smartphones and RWTHApp

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- Approximately 42,000 Students
- Approximately 5,000 Internationals from 117 Countries
- Approximately 9,000 enrollments in winter term 2014/15
- Approximately 500 Professors
- Approximately 8,000 Employees
- 9 Faculties
- 115 Courses of study

UNIVERSITY ~42,000 Students

~5,000 Internationals from 117 Countries

~9,000 enrollments in winter term 2014/15

~500 Professors

~8,000 Employees

9 Faculties

115 Courses of study
Requirements

• Platform Independent
  • Cordova (HTML5, JavaScript, CSS)
  • Native functionalities using Plug-ins

• Personalization
  • Anonymous or authenticated mode

• Security
  • No user credentials given to the app (OAuth2)
  • Fully encrypted communication (SSL)

• Data sources
  • Use existing data sources. No double data couration!

• Development
  • RWTH „In-House“
  • Flexible an independent, feature driven

Design → Develop
Meet with students → 4 weeks → Release
Marketing
Systemlandscape in June 2015

RWTHApp

- CAMPUS / CAMPUSOffice
- Campus Management
- SOS, POS
- EvaSys
- L3P
- Moodle
- Dynexite
- Self Assessment
- Click it Now
- Studentenleben
- University Library
- Public Transport
- Canteens
- University Sports
- News
- Homepage(s)
- Blogs
- Identity Management
- OAuth2
- Shibboleth
- SelfService
- Facebook

Connected
Planned
Possible
Timeline

- **v0.2 Release**
  - Person-Search
  - Lecture Hall-Finder
  - Feedback
  - My Lectures
  - OAuth2

- **v0.3 Release**
  - L²P: Materials
  - Lecture appointments

- **v0.4 Release**
  - My Timetable
  - RWTH-News

- **v0.5 Release**
  - Lecture search
  - L²P: Recent activities

- **v0.6 Release**
  - Directfeedback: Text

- **v0.7 Release**
  - Directfeedback: Images & Polls
  - Lecture Hall Images

- **v0.8 Release**
  - Quiz2Go: Moodle Self Assessment

- **v0.9 Release**
  - University Library

- **v1.0 Release (Planned)**
  - Canteens
  - UI Redesign
RWTHApp Architecture

Identity Management

Shibboleth

Proxy

REST API

User

Mobile device

SelfService (IdM)

Service APIs

Information Services

Identity Management

Authorization

OAuth2

App management

Authentication

Organization of communication between service APIs, OAuth2 and RWTHApp

personalized information different for each service

SOAP, REST, COM, ...

CAMPUS
CAMPUS Office

SOS/POS

L²P

UB

Moodle

...
Requirements from Students and Teachers

Direct feedback: An audience response system using Smartphones

- Get Feedback from students in large-scale lectures (1000+ students)
- Acoustics in big lecture halls is usually too bad to understand questions
- Students do not dare to ask
- Lecture is streamed to multiple room so students have no physical contact with the teacher
- Low threshold: easy to use for students and teachers
Directfeedback General Idea
Directfeedback Core Features

**Interactive Polls**
Classic „Audience Response System“ to evaluate and discuss multiple choice questions during the lecture.

**Filter and categorize**
For better evaluation and handling so the focus can stay on the topic of the lecture.

**Exchange Textmessages between teachers and students**
Send messages from smartphone to the teachers notebook and respond to students questions.

**Handwritten Formulas and Drawings**
A picture is worth a thousand words: Exchange images with the teacher.
RWTHApp Overall Statistics

Downloads

Monthly growth

- Android
- iOS
- WindowsPhone8
Direktfeedback Statistics

- Already used by 42 lectures and other events
- 25 lectures during the current term
- 100 – 1000 students
- single lecture hall or using live broadcast to a second room
- During large events: max. 1 question / second, avg. ~3 questions / minute
Future Work

• Check contexts with remote peers where no physical contact is possible

• Usage outside of learning context e.g. for IT and Library support

• Independant web application for students for ad-hoc usage

• Integration with Quiz2Go (prepared Moodle quizzes)
Thank you for your attention!