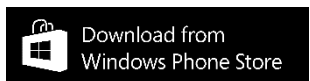# RWTHApp

From a requirements analysis to a service oriented architecture for secure mobile access to personalized data

Marius Politze, Bernd Decker

Download from Windows Phone Store

Download on the App Store

ANDROID APP ON Google play

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Overview

- **Requirements Analysis**
  - → Process
  - → (Non)Functional Requirements
- **Architecture**
  - → Existing Systems
  - → Security
- **Current State**
  - → Statistics
  - → Lessons Learned
- **Future Work**

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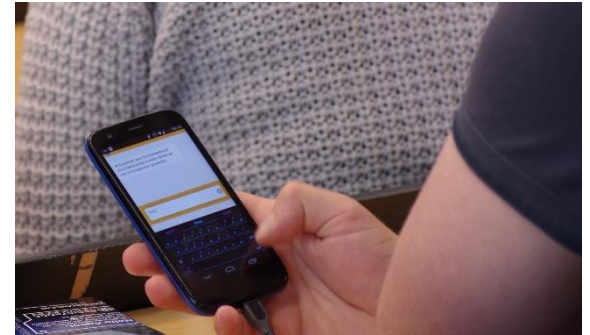
~40,000 Students

~5,000 Internationals from 117 Countries

~8,500 enrollments in winter term 2013/14

~500 Professors

~8,000 Employees

9 Faculties
115 Courses of study

RA - Timeline

September '13
- Idea Contest for students
- Start of OAuth project
- Start of RWTHApp project

November '13
- First release
- Regular meetings with students
- Establishing feedback channels

June '14
- Regular meetings with students and professors
- Subsequent releases every month
- Social media activity

RA - Process: Release Cycles
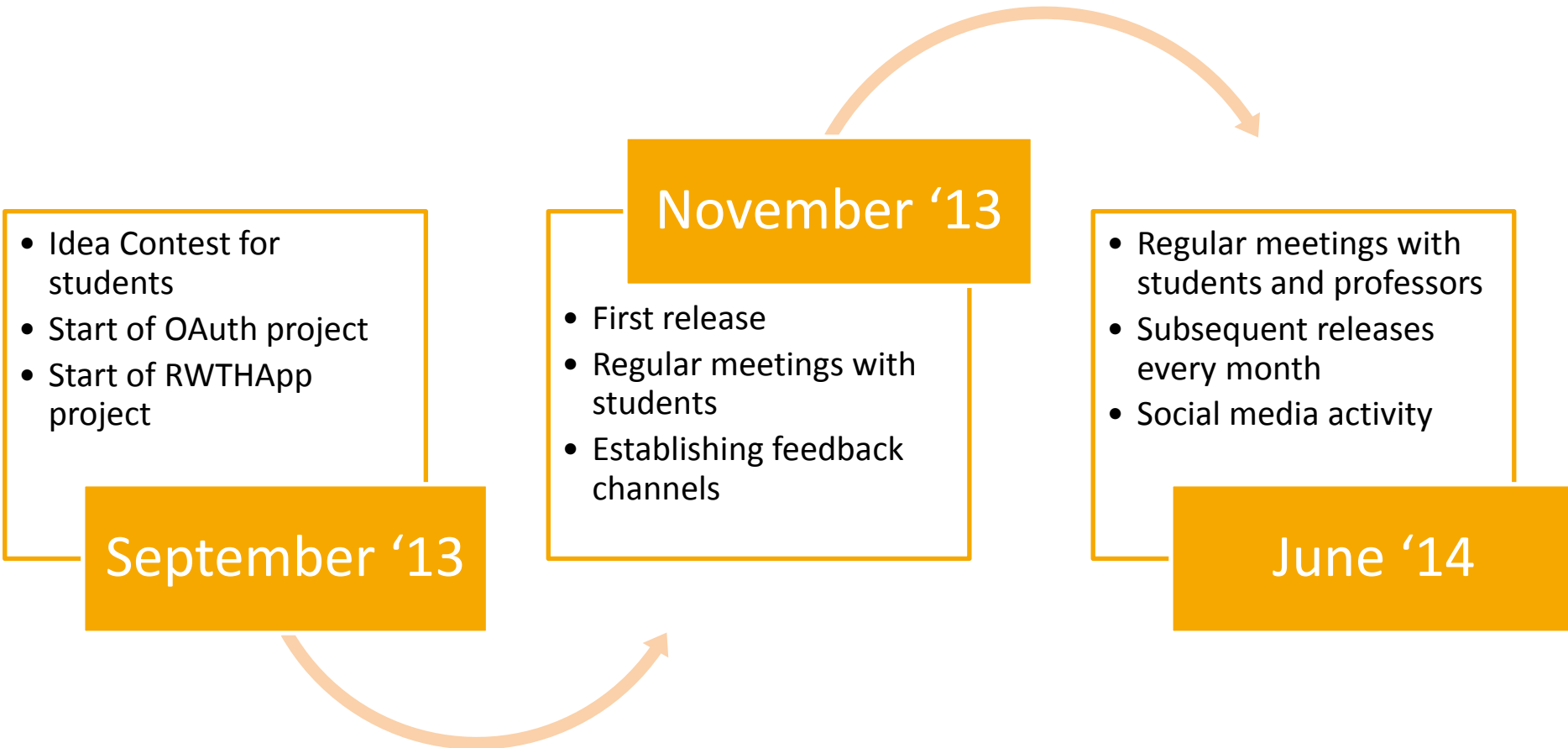
- **Meet with students and Incorporate feedback**
  - → Changes, priorities, new features
- **Design and plan features**
  - → Agile, release planning and feature specification
- **Develop, implement and test**
  - → Feature driven development
- **Release new versions**
  - → Short release cycles ~4 weeks
- **Marketing: Get in touch with students**
  - → Collect feedback and announce new versions
  - → Blogs, Facebook

Design → Develop

4 weeks

Meet with students → Release

Marketing

RA – Functional Requirements

"The Swiss army knife to support the daily tasks of the students"
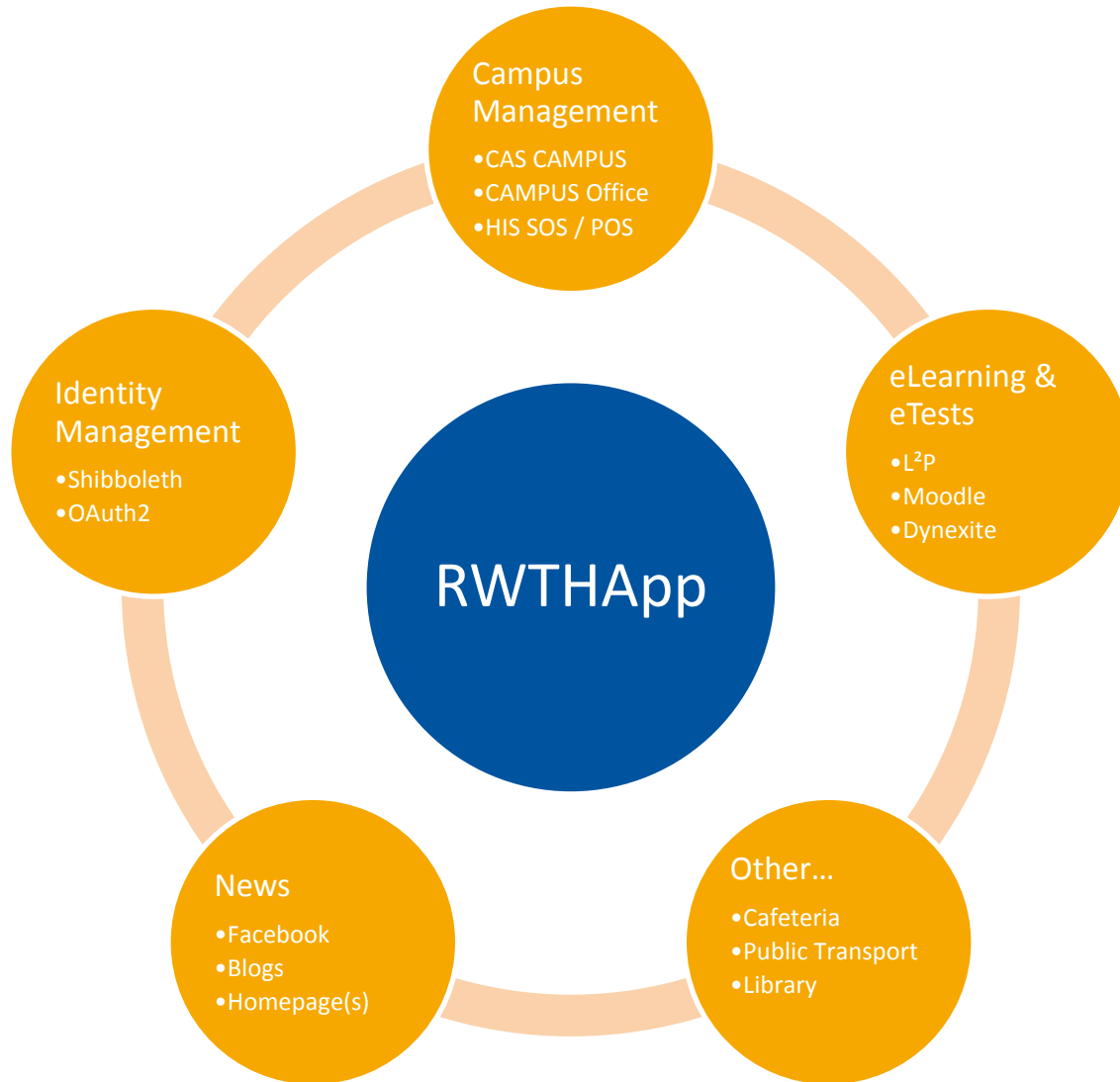
- **Contact to teachers and organizational units**
- **Live feedback during classes**
- **Lectures seminars and exams, dates, timetable, grades**
- **Room finder, campus map**
- **Campus Life: Cafeteria, public transportation, University sports**
- **Library: Literature search, Lent books and lending period**
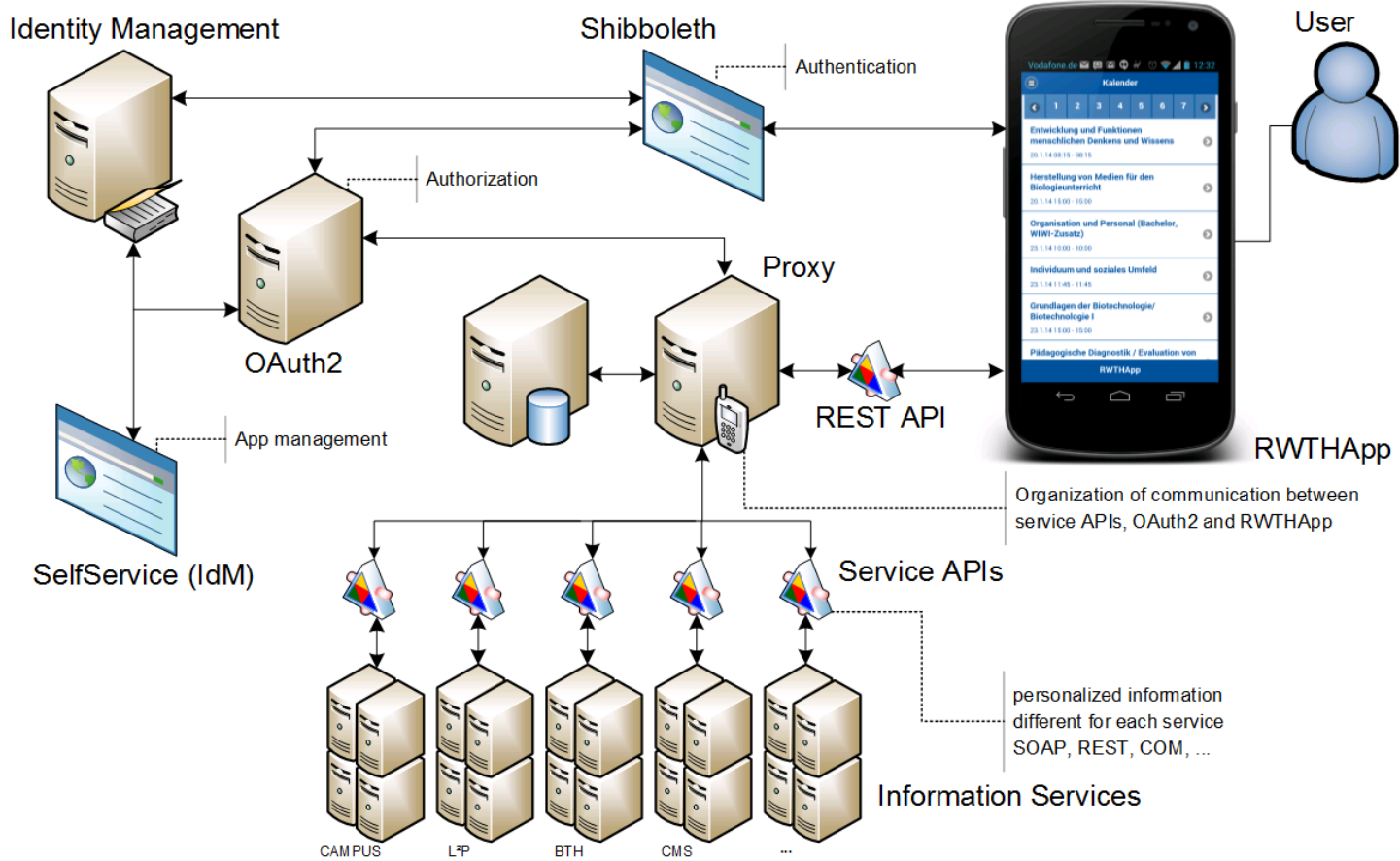- **Access to eLearning: Documents, Exercises, eTests, Discussions**
- **…**

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RA – Nonfunctional Requirements

- **Cross Platform App (PhoneGap, HTML5 and JavaScript)**
  - → Reduce platform specific coding
  - → Available for Android, iOS and Windows Phone 8, Firefox OS,…
- **Secure Authentication and Authorization**
  - → Encrypted Communication (SSL)
  - → No credentials stored in the App: OAuth2
- **Use already available information**
  - → No double data curation
- **Keep knowledge "in House"**
  - → To use already available knowledge about existing systems
  - → To react to changing requirements of the students

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Source: http://www.geekalerts.com/giant-swiss-army-knife/

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Architecture – Existing Systems

Campus Management
- CAS CAMPUS
- CAMPUS Office
- HIS SOS / POS

eLearning & eTests
- L²P
- Moodle
- Dynexite

Other…
- Cafeteria
- Public Transport
- Library

News
- Facebook
- Blogs
- Homepage(s)

Identity Management
- Shibboleth
- OAuth2

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Architecture – App Proxy

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Architecture - Security

- **Secure device based authorization using OAuth2**
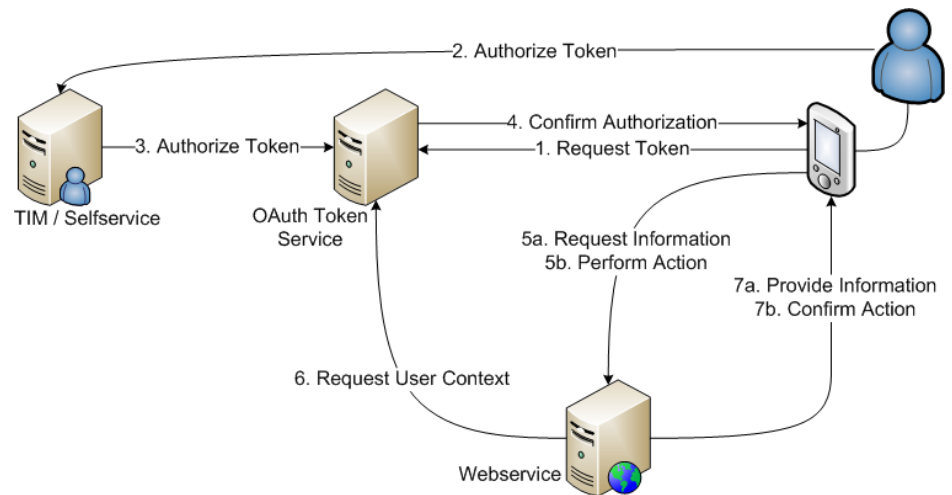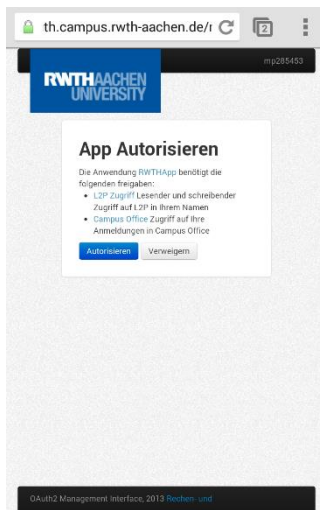 - → (De)Authorization through web interface
  - → No passwords / credentials passed trough the app

- **OAuth2 was established as a University Service**
  - → Integrated with Shibboleth to authenticate users
  - → Possibility to extend as a federation service

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Current State

v0.2 Release

- Adress book search
- Room finder

v0.4 Release

- Timetable
- News

v0.6 Release

- Directfeedback

v0.3 Release

- E-learning content

v0.5 Release

- Lecture Search
- E-Learning recent activities

Source: http://www.victorinox.com/

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Current State - Statistics

- **Approx. 15,000 installations**
  - → ~10000 Android
  - → ~5000 iOS
  - → ~300 Windows Phone 8

- **Avg. 40,000 requests per day**

- **~ 16,000 lines of code**

- **< 10 support requests / week**

Installations

Current State - Lessons Learned
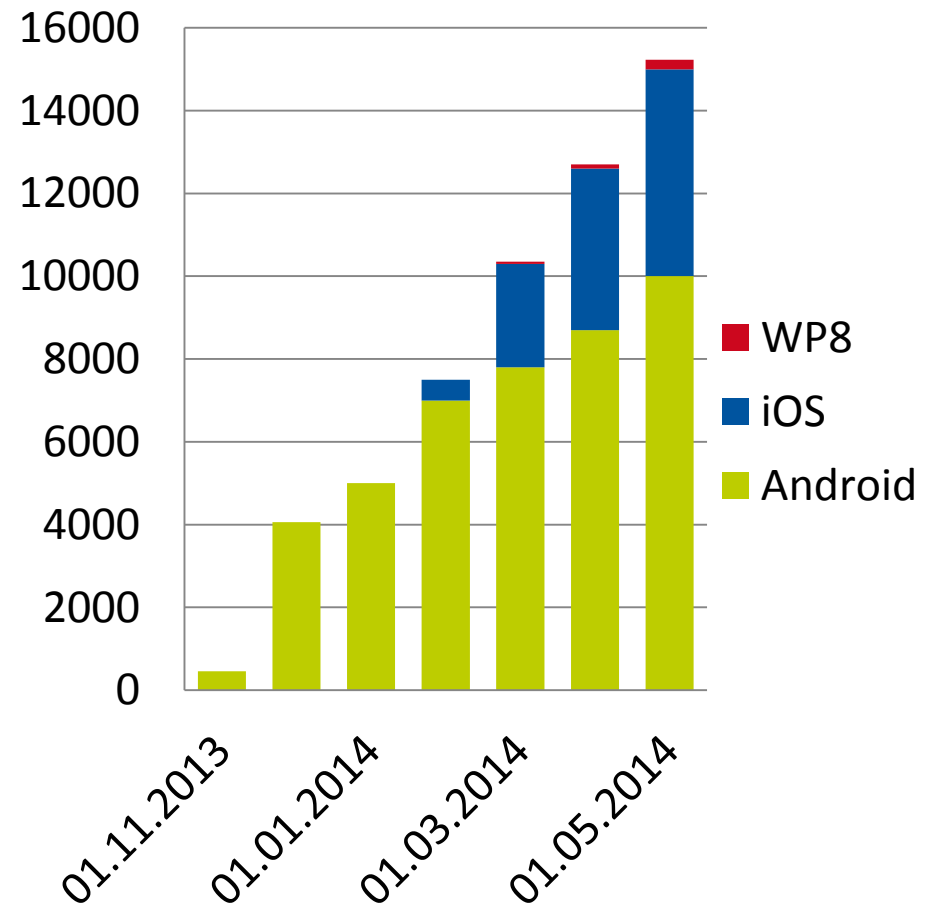
- **Students provided valuable input**

  → Feedback and meetings with students

  → Business value based on the students needs

- **Platform Independent App**

  → Has some quirks

  → Still some platform specific code and
    adaptations needed

  → Can adopt fast to additional platforms
    (FireFoxOS is coming!)

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Future Work
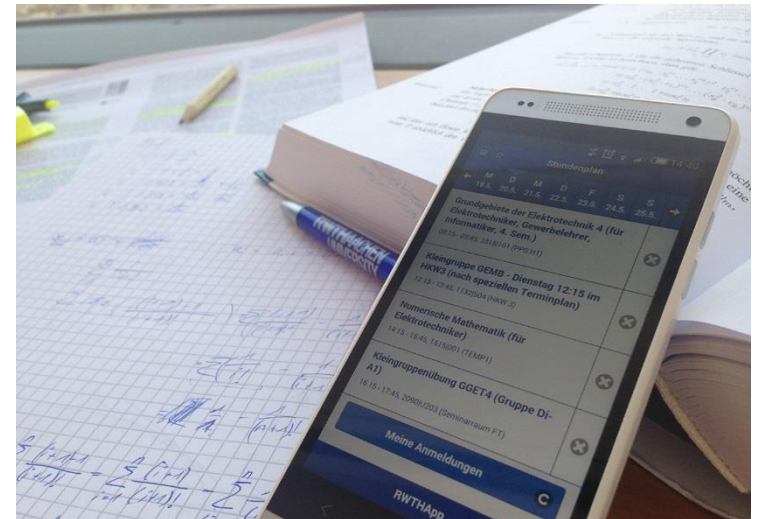
- **Upcoming features**

  → Library, Cafeteria, Public transport, …

  → Student guide (guidelines, information, mentoring, counsellors, …)

- **Enhancements**

  → Extend direct feedback

  → Bettercaching mechanisms and performance
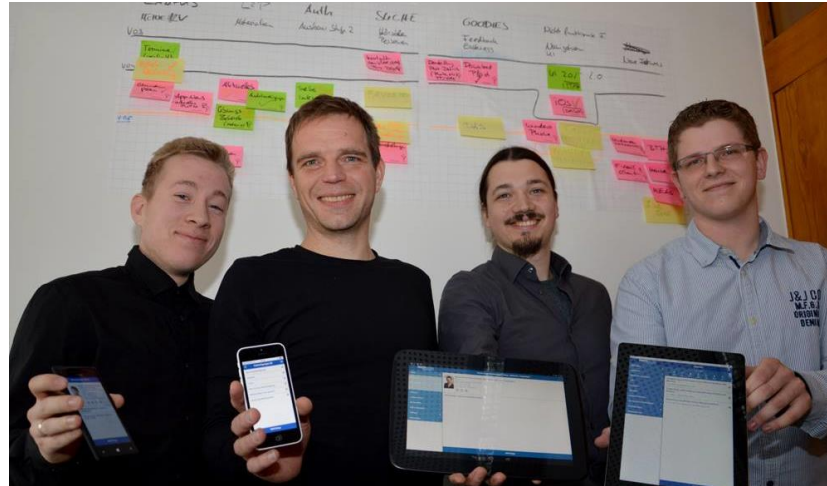
- **Software Engineering**

  → Refine software engineering process

  → More detailed reporting and statistics

- **Release APIs for students, institutes, 3rd parties …**

  → RWTH Aachen app directory

  → RWTH Aachen app guidelines

Source: http://www.victorinox.com/

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Thank you for your attention!

Further information:

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