TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

Application Development for Mobile and Ubiquitous Computing

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Second Presentation - Adaptation Concepts, 13.12.2019

Agenda

- General Idea - Recap
- Application Scenario - Recap
- Adaptation & Context Awareness
- Technologies
- Work plan

General Idea - Recap

- **Students usually have a lack of information regarding who their course mates are.**
  - **Communication and interaction between them is beneficial and desired by all parties.**

- **Approach:**
  - **Develop an app to give such a service that easily provides information sharing between students of the same course.**

Application Scenario - Recap

1. Register with TU mail address
2. Login with TU mail address
3. Create Profile / Decide on information you want to publish
    a. Optional:
        i. exclude certain courses (or people) from seeing certain parts of your information
4. Enter course groups
    a. Enroll for course in jExam
    b. Receive Token
    c. Search for Course in Search Bar in App / Find it in Overview Section
    d. Enter Token to enroll for course group in App
5. Course group Overview
    a. Students enrolled in this course have access to their course mates profile

Adaption & Context Awareness

Adaption of Application Data

Connectivity Challenge

Monitor **network connection bandwidth** using Androids **ConnectivityManager** and **NetworkInfo**

Situation: User has bad network connection and tries to view another user profile

Solution: The quality of user profile pictures will be adapted to the network connection strength. Weaker connection → Lower resolution image.

Method: *Reduction: Lossy Conversion*

On image upload: multiple levels of picture quality will be saved to the DB and fetched according to the current context.

Adaption & Context Awareness

Technical Context

Offline Challenge

Monitor **network connection state** using Androids **ConnectivityManager** and **NetworkInfo**

Situation: Network connection is lost while using the application.

Solution: Save general course information locally, so it can be accessed in offline mode. Inform user about lost connection.

Method: *Prefetching*

Save general course data to device when user enrolls for course (except: student list). Fetch locally when connection is lost. Queue other requests (like accessing user profiles, loading course list ...) and update when network is available.

Adaption & Context Awareness
Usability Adaptation

Usability Challenge

Monitor **user satisfaction and interaction efficiency** using **user studies**

Situation: General interaction with the application.

Solution: Implement a minimalist easy to use UI based on: Learnability, Efficiency, Memorability, Errors, Satisfaction.
Verify the achievement of these goals through first hand feedback.

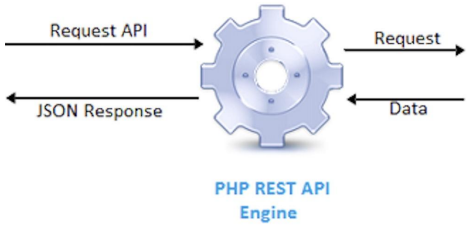
Method: *Thinking Aloud*

Include potential users in the finishing state of the application. Conduct user studies, using the *Thinking Aloud* method. Adapt application features according to the findings of the user studies.

Technologies

Client-Side Technologies & Tools

Server-Side Technologies & Tools



Work Plan

- **November**
  - ~~Presenting different app ideas~~
  - ~~Deciding on the final app idea~~
  - ~~Discussing the technologies to be used~~
  - ~~Defining the scenarios and the mockups~~
  - ~~**08.11.2019 -** First Presentation~~
  - ~~Getting familiar with the new technologies~~
  - ~~Component and architecture discussion~~
  - ~~Starting implementation~~
- **December**
  - ~~Working on implementation~~
  - ~~Tackling the defined challenges~~
  - **13.12.2019 -** Second Presentation
  - Finished first prototype
- **January**
  - Testing first prototype
  - Minor enhancement and optional features
  - **31.01.2020 -** Final Presentation

Thank you for your attention !