TECHNISCHE UNIVERSITÄT DRESDEN

Application Development for Mobile and Ubiquitous Computing

Seminar task

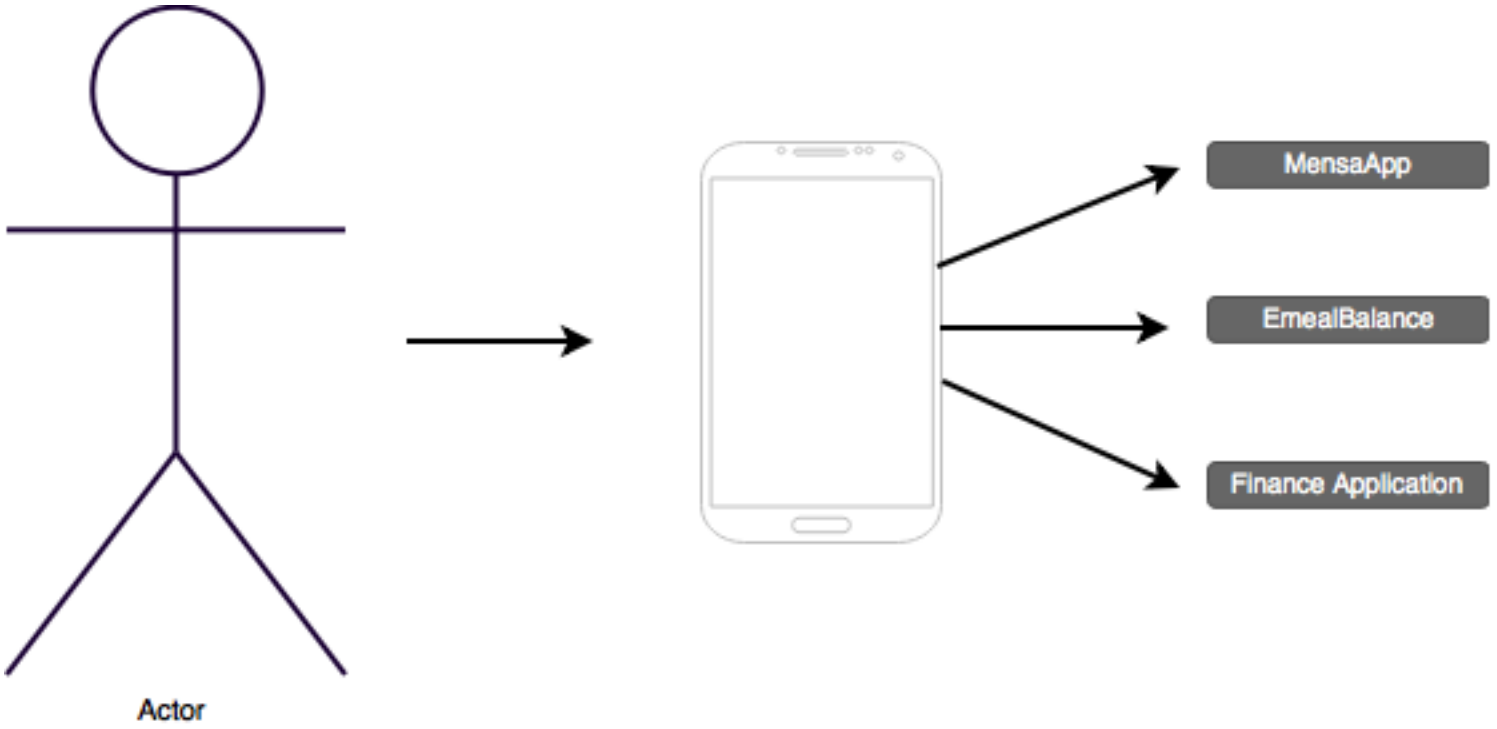
Final Presentation

GroupNo. 14
Team: Thomas Hauptvogel, Daniel Matusek

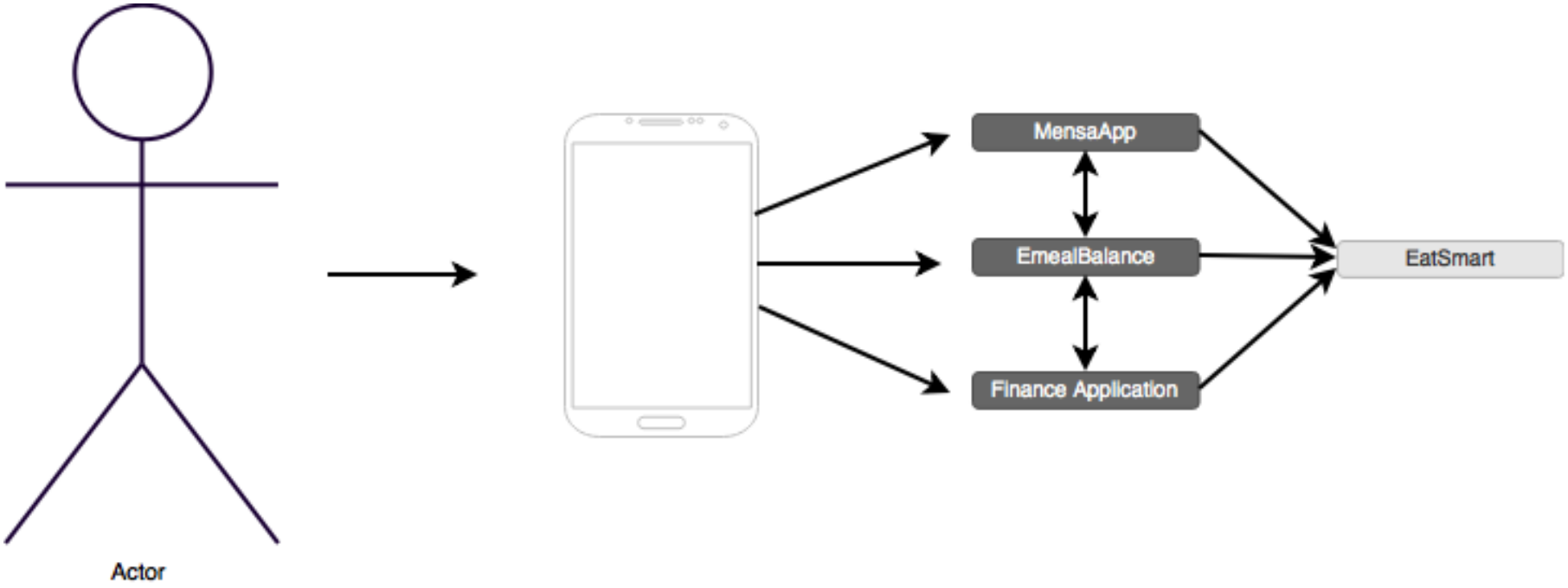
DRESDEN concept
Exzellenz aus Wissenschaft und Kultur

Dresden, 29.01.2016

Application Scenario: Before EatSmart

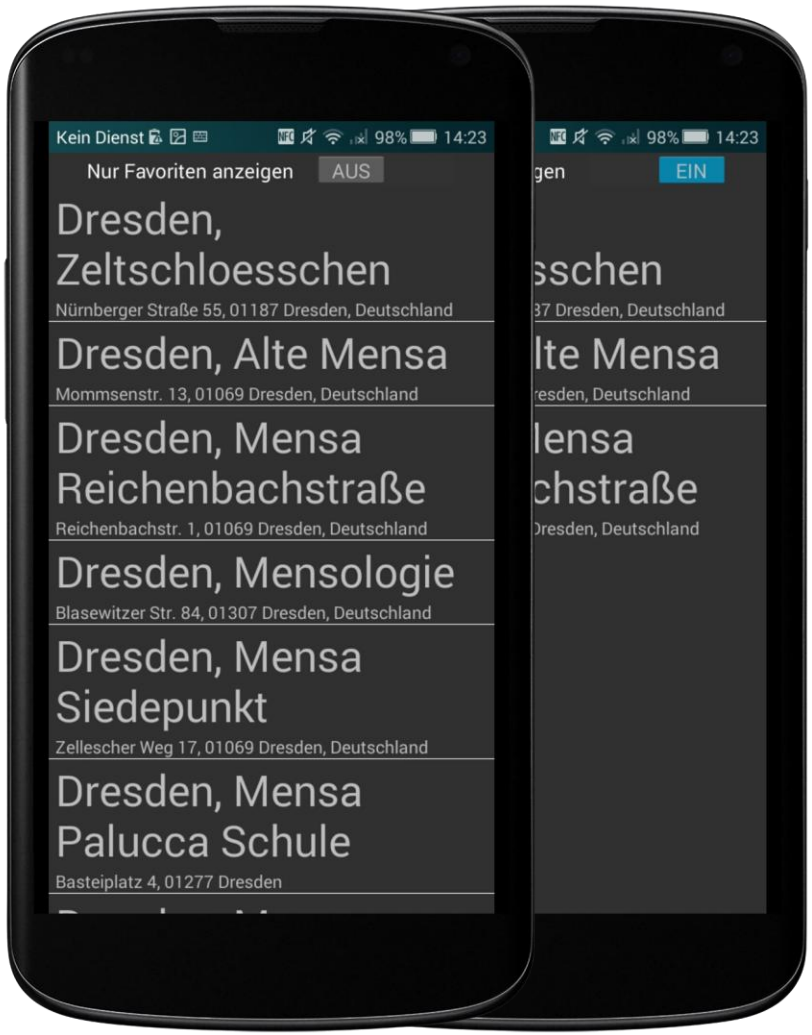


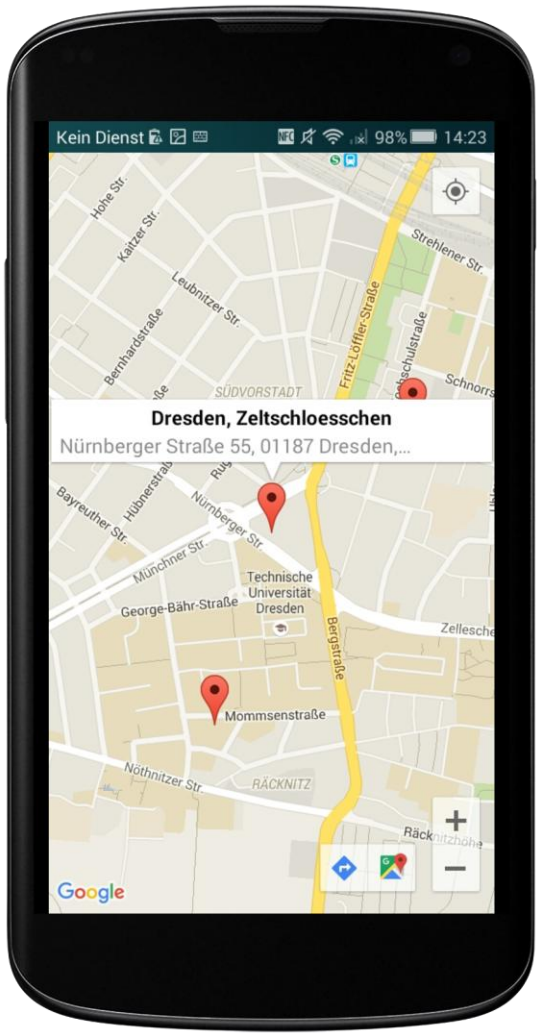
Application Scenario: With EatSmart



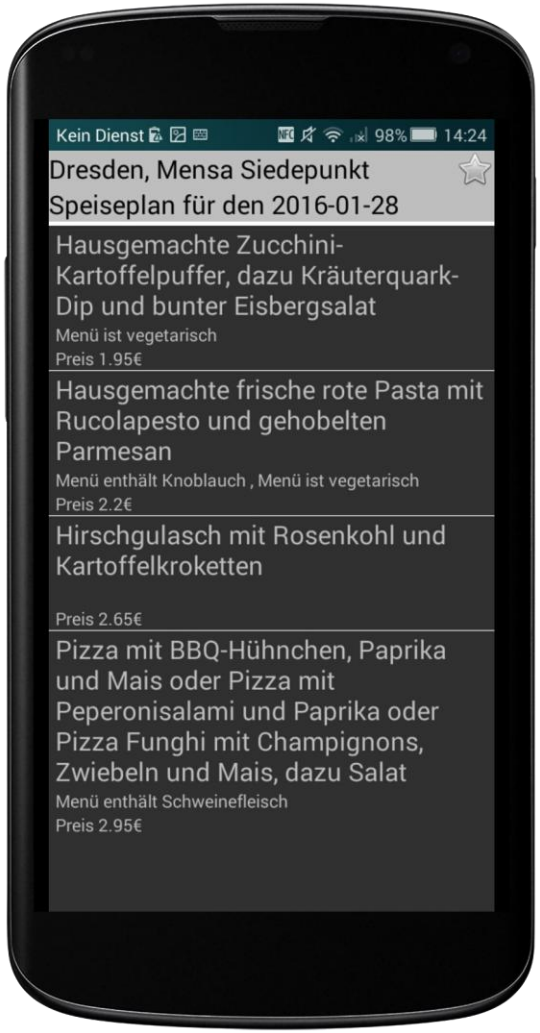
Application Scenario: Prototype

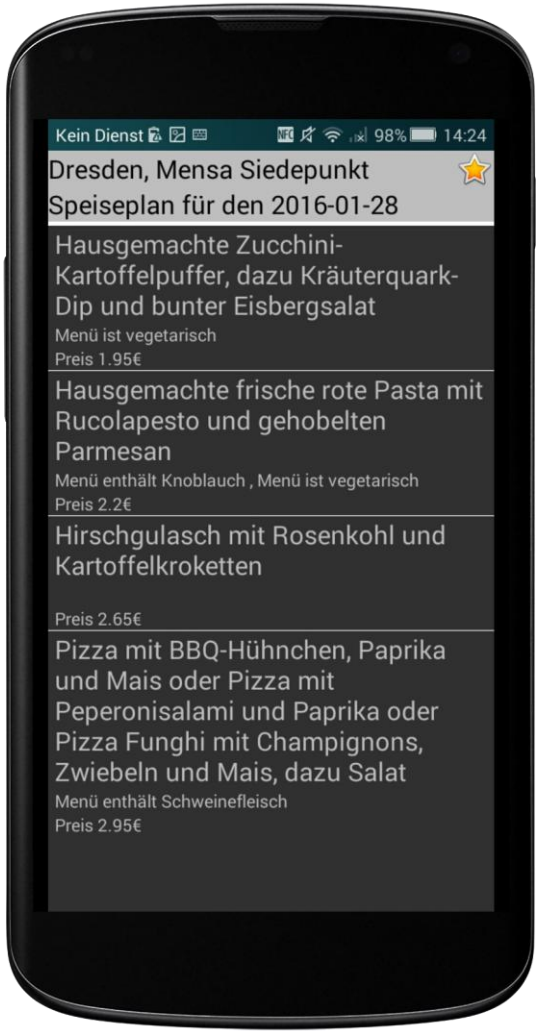
Application Scenario: Prototype



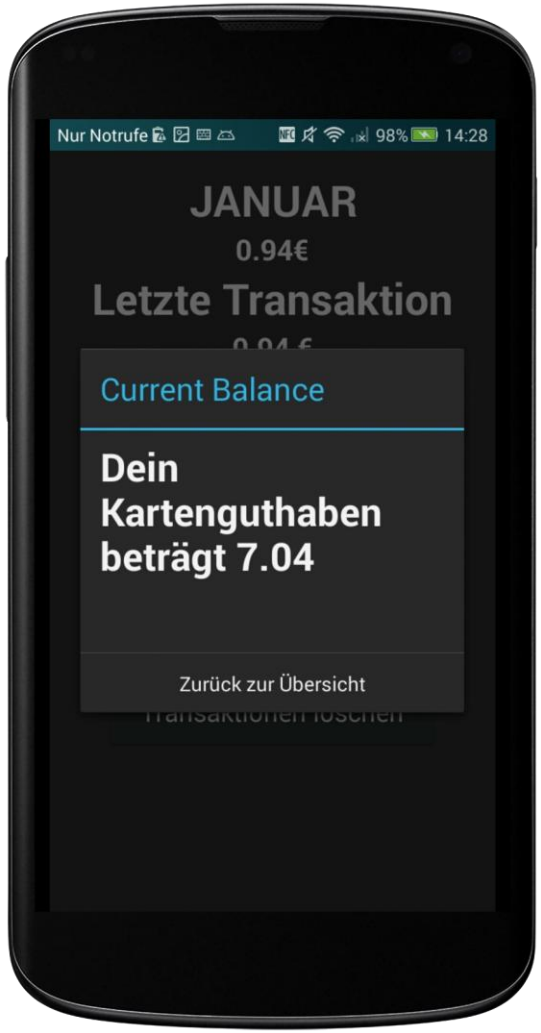


Application Scenario: Prototype

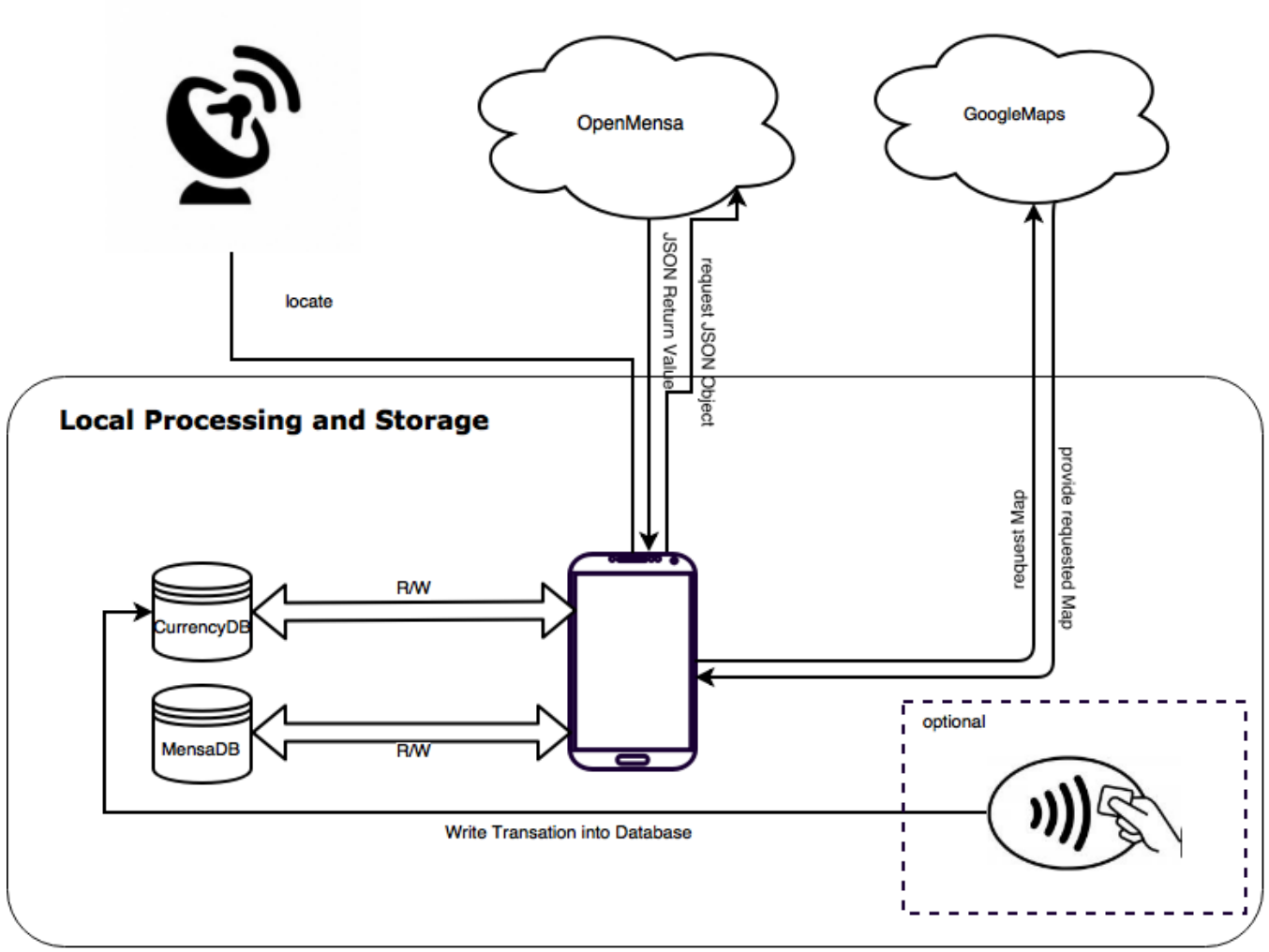




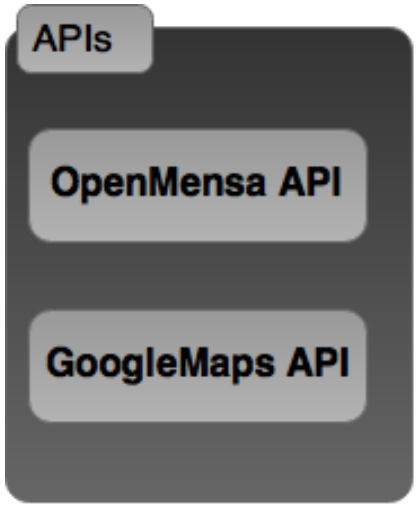
Application Scenario: Prototype

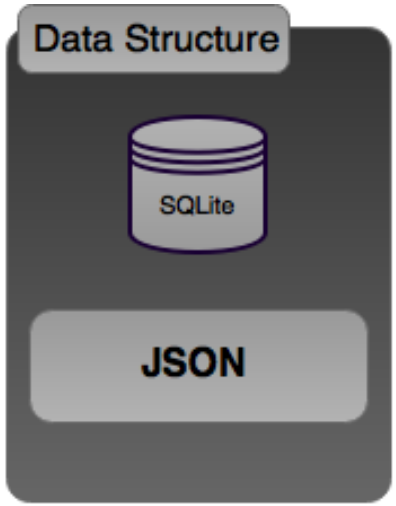


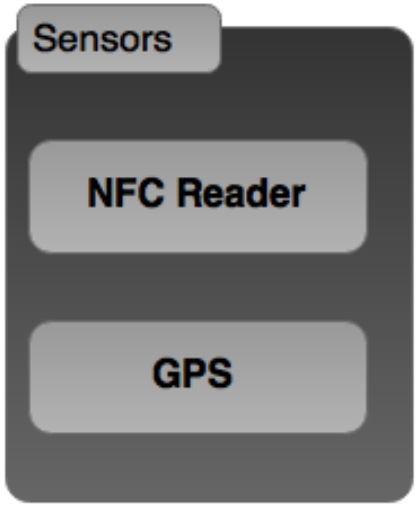
Architecture



Technologies







Implementation Details

- Network activities in an Asynchronous Task
  - JSON Request to OpenMensa via http-request
- Storing data in two SQLite Databases
  - Mensa DB with meals and information(e.g. address)
  - Transaction DB for finance feature
- Different ways of prefetching data depending on user's preferences and context (internet speed and connection)

Implementation Details

- Filling ListViews dynamically via Adapter
  - Using data from database
- Use of Google Maps API
  - Adding markers with data from MensaDB
  - InfoWindows start the MealPlanActivity
- Add and delete canteens via button from favorites in MensaDB

Tackeled challenges

- Offline challenge
  - Caching menu plan
  - Weekly prefetching
- Usability
  - No NFC needed
  - Use of GPS is possible
  - Favorites
- Battery life
  - Restricted Location Services
    - Replacement with defaultlocation
    - Checked before transmission
  - Restricted downloading of menu plans
    - User permitted to restrict usage of internet

Context and adaptation

- Context Information
  - Network speed and availability
  - Location
  - Availability of sensors (e.g. NFC-Reader is not necessary)

- Adaptation mechanisms
  - Hoarding (Replication of mensa information from OpenMensa)
  - Emulation (manipulate data in local DB for adding new spots)
  - Filtering (Permanent updates only for favorite Mensa)
  - Caching of data in a local DB
  - Prefetching (collecting all needed Information before accessing it)

Lessons learnt

- Introduction into Android Programming
- UI Programming is not that easy
- Context-awareness requires a lot of effort
- Restructuring the application takes a lot of time
- Different Android APIs make it difficult to implement for all devices