Application Development for Mobile and Ubiquitous Computing

Mensa+

Adaptation Concept Presentation

Vincenz Herz, Patrick Stiller
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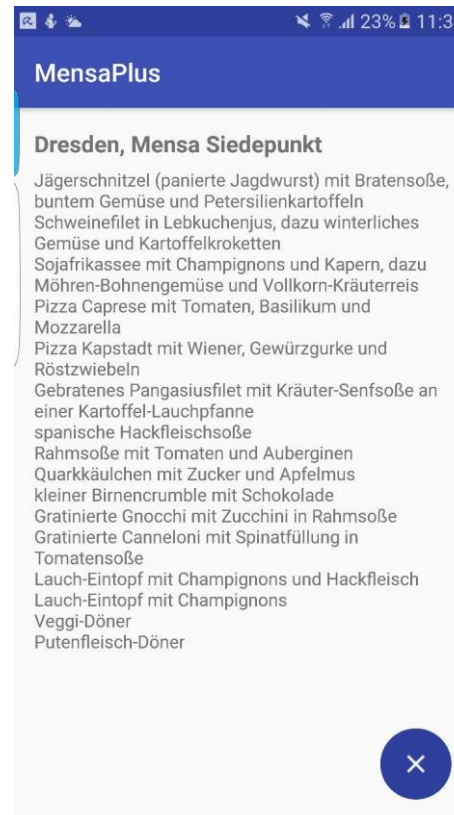
Application Scenario

Mensa Application

- check mensa traffic

- check menu
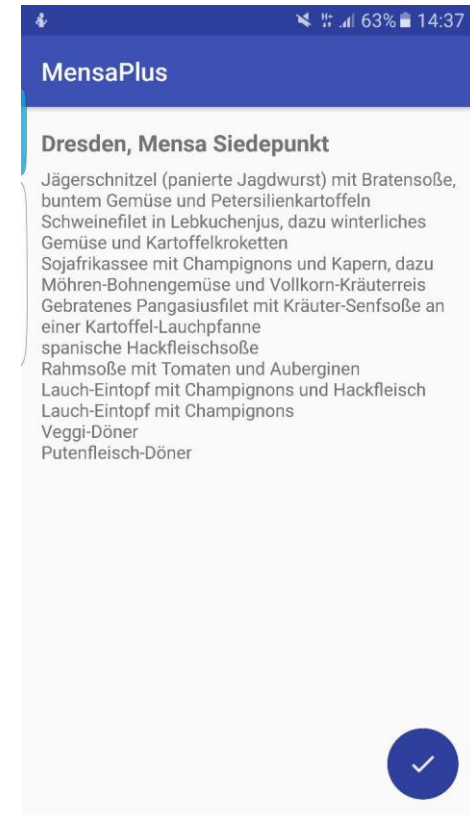
- edit food preferences

- check card balance

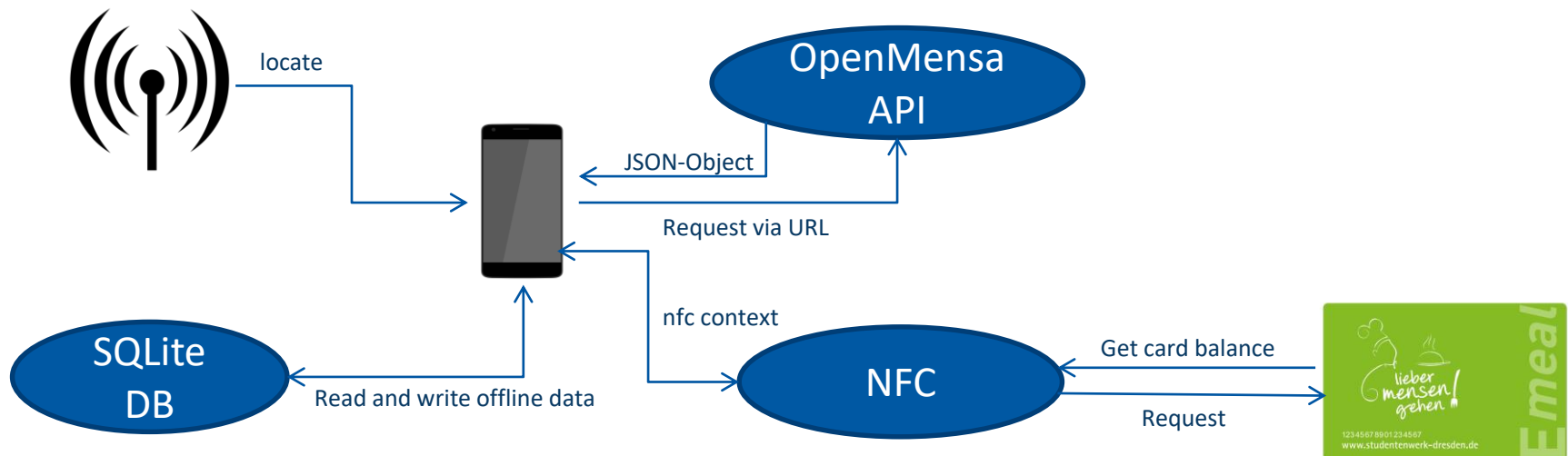# Intermediate Result

Main Screen

Mensa nearby

Checked in

Architecture and Technologies

locate

OpenMensa
API

JSON-Object

Request via URL

nfc context

SQLite
DB

Read and write offline data

NFC

Get card balance

Request

Offline Challenge

- menu available without internet connection

  - check current connection using the Connectivity Manager

  - caching current week using a SQLite database

  - download necessary data when back online

- save user profile locally

Energy Challenge

- GPS used only on demand by using a FAB

  - no background usage

  - option to disable GPS completly when battery is low (check battery level with the BatteryManager)

- fetch data once per week

```java
FloatingActionButton fab = (FloatingActionButton) findViewById(R.id.fab);
fab.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        mensaCheckIn();
    }
});
```

```java
IntentFilter ifilter = new IntentFilter(Intent.ACTION_BATTERY_CHANGED);
Intent batteryStatus = context.registerReceiver(null, ifilter);
int level = batteryStatus.getIntExtra(BatteryManager.EXTRA_LEVEL, -1);
int scale = batteryStatus.getIntExtra(BatteryManager.EXTRA_SCALE, -1);

float batteryPct = level / (float)scale;
```

Usability Challenge

- clean intuitive user interface

- checking in automatically opens the respective menu

- automatic NFC detection (if available)

  - User gets a pop-up (toast) when a tag is detected

Workplan

04.11.16	first presentation	✓
	design concept and start implementation	✓
	build first prototype	✓
16.12.16	adaptation concept presentation	
	complete implementation	
	testing and bug fixing	
	finish application	
27.01.17	final presentation	

Thank you for your attention.