

Department of Computer Science Institute for System Architecture, Chair for Computer Networks

Application Development for Mobile and Ubiquitous Computing

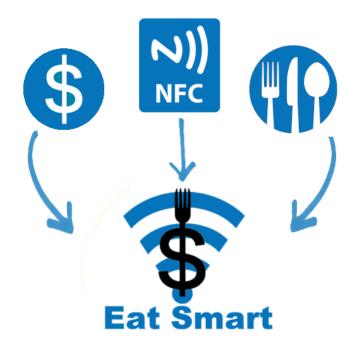
Seminar Task Adaptation Concept Presentation

Group No. 14 Team: Thomas Hauptvogel, Daniel Matusek



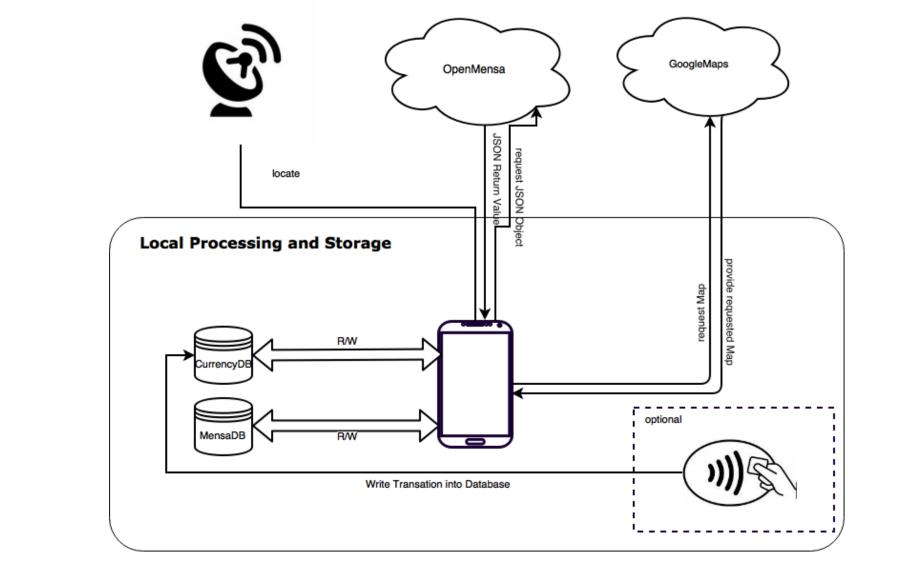
Dresden, 18.12.2015







Architecture and Technologies





Solved Challenges

- Offline Challenge
 - Caching menu plan
- Usability
 - No NFC needed
 - Use of GPS is possible
- Battery life
 - Location Services are restricted
 - Replacement with last known location
 - Checked before transmission

Unsolved Challenges

- •Offline Challenge
 - Weekly prefetching
- Usability
 - •Favorites

18.12.2015



Disconnected Operations

•Context: Network availability

- Detection by checking internet speed and connection (ConnectionManager)
- Check bandwidth and latency and availability of internet connection
- Updates only with good bandwidth and good latency to guarantee a good "workflow"

•Why? Processing Mensa Information and Meals every time

•Offline availability, less network and power consumption

- Disconnected Work with MobileDBs
 - Replication of Mensa Information from OpenMensa (Hoarding)
 - Manipulate data in local DB for adding new Spots (Emulation)
 - Manipulation even with established connection
 - Synchronization of local DB with OpenMensa explicitly



Caching

- Caching of meals for a week with help of a database
- Long-term need of caching for availability
- Need for cache updates detected by accessing meal plan for next week or accessing application at the weekend

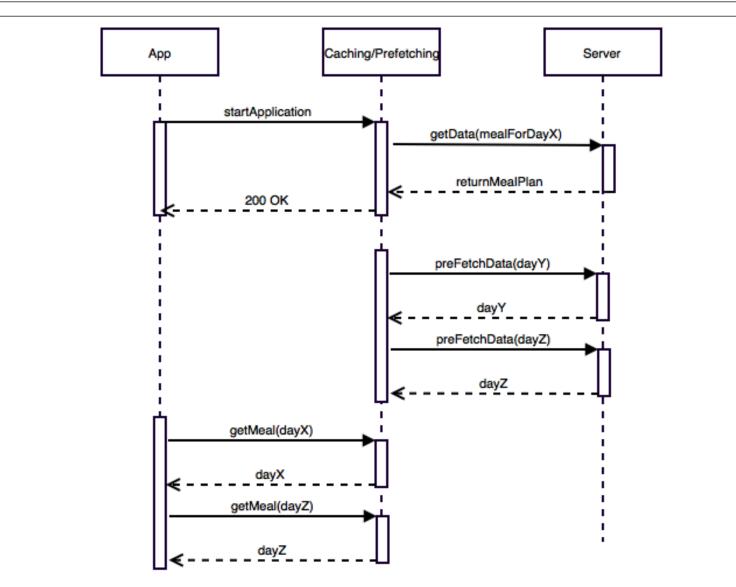
• Prefetching (collecting data before accessing it)

- Triggering of prefetching by initial start of application
- •When accessing e.g. meal plan for a Mensa, prefetching for all other days of week •-> Flawless work
- •Send request for meal plan and current Mensa for a whole week
- Request meal plan for favored Mensa, too
- •Filtering: Permanent updates only for favored Mensa

Technology: Embedded Mobile Database









Location Based Services

- GPS is used
 - Permission is requested
 - Not necessary to use maps
- reduction of data volume
 - Loading Map Tiles (Lazy Evaluation)
 - alternative View (Selection)
 - data accessed via local database
- Filter rules for selected canteens





- Prototyping took more time than expected
- Backend almost finished
- Open task: Frontend Design
- Integration of different features into an working application

Task name	Otent time	Duration week	Assigned to	Actions																	
	Start time				42 Week	43 Week	44 Week	45 Week	46 Week	47 Week	48 Week	49 Week	50 Week	51 Week	52 Week	53 Week	01 Week	02 Week	03 Week	04 Week	05 Week
> Total Estimation	atı 2015-10-15	14.86					Today														
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Planni	nį 2015-10-15	2.00	Developer	+ 🧪 🗙		Planning															
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Data F	e 2015-10-31	3.00	Empty	+ 🧪 🗙				D	ata Fetching												
User I	nt 2015-11-21	2.00	Empty	+ 🧪 🗙							User Inte	rface									
Data p	orc 2015-11-21	4.00	Empty	+ 🧪 🗙								Data proc	essing								
Bugfix	in 2015-12-27	4.00	Developer	+ / ×													Bugfixing a	and testing			
Submi	itti 2015-12-11			+ 🧪 🗙										Submitting se	cond presenta	ition					
Final p	ore 2016-01-27			+ 🧪 🗙									Ť							Fin ²	al presentation
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