True Mobile Coverage

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Client: Paweł Moll, ARM

ARM

Problem

- Network signal strength coverage maps
  - Inaccurate, based only on digital models (i.e. predictions)
  - Limited in range of different signal strength levels
  - Without guarantee that data is up to date

Example #1

Example #2

Solution

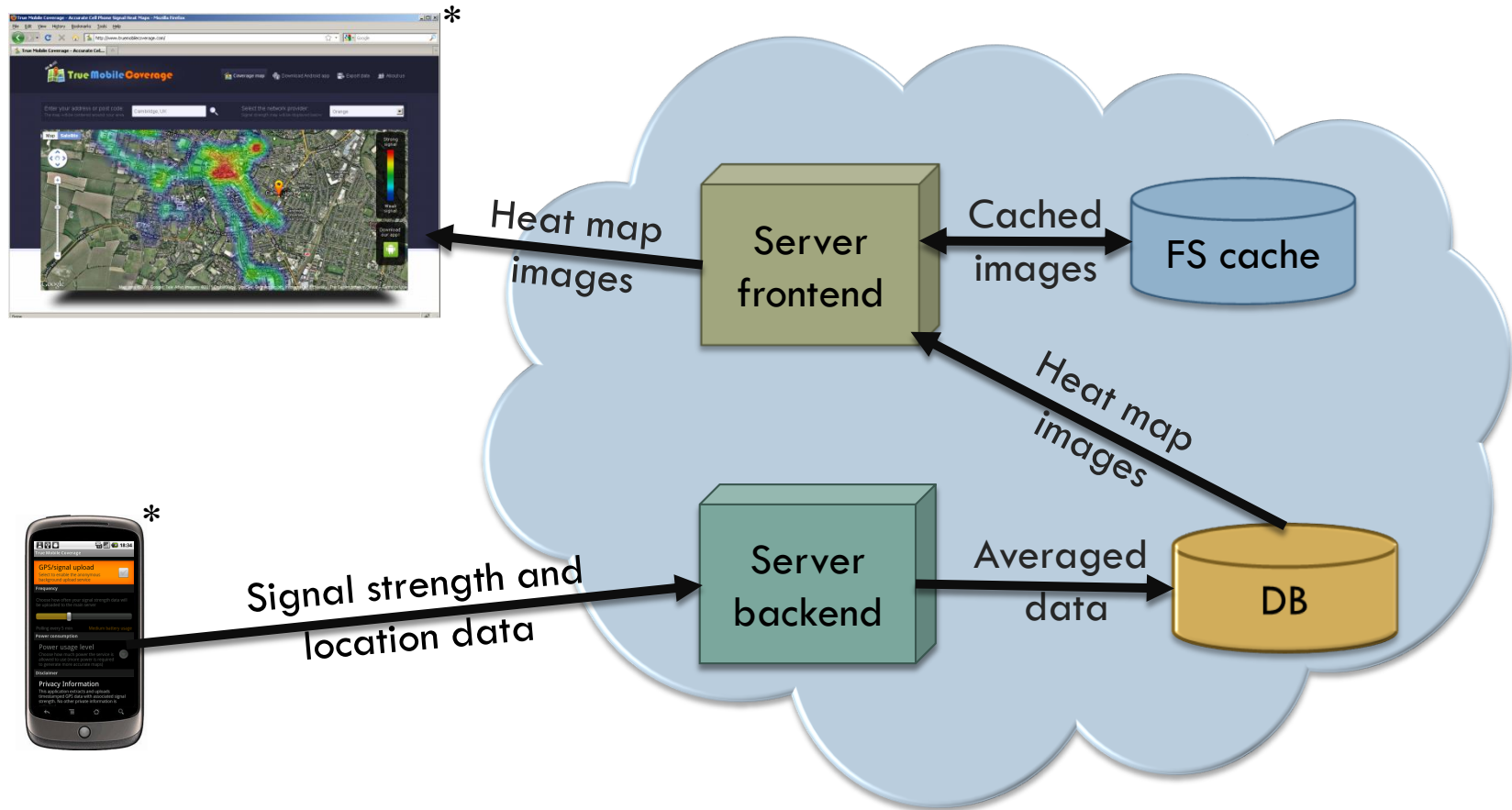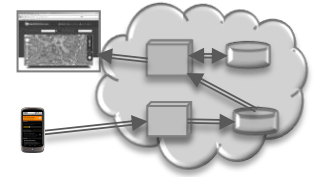- Crowd-source accurate mobile phone signal strength data!
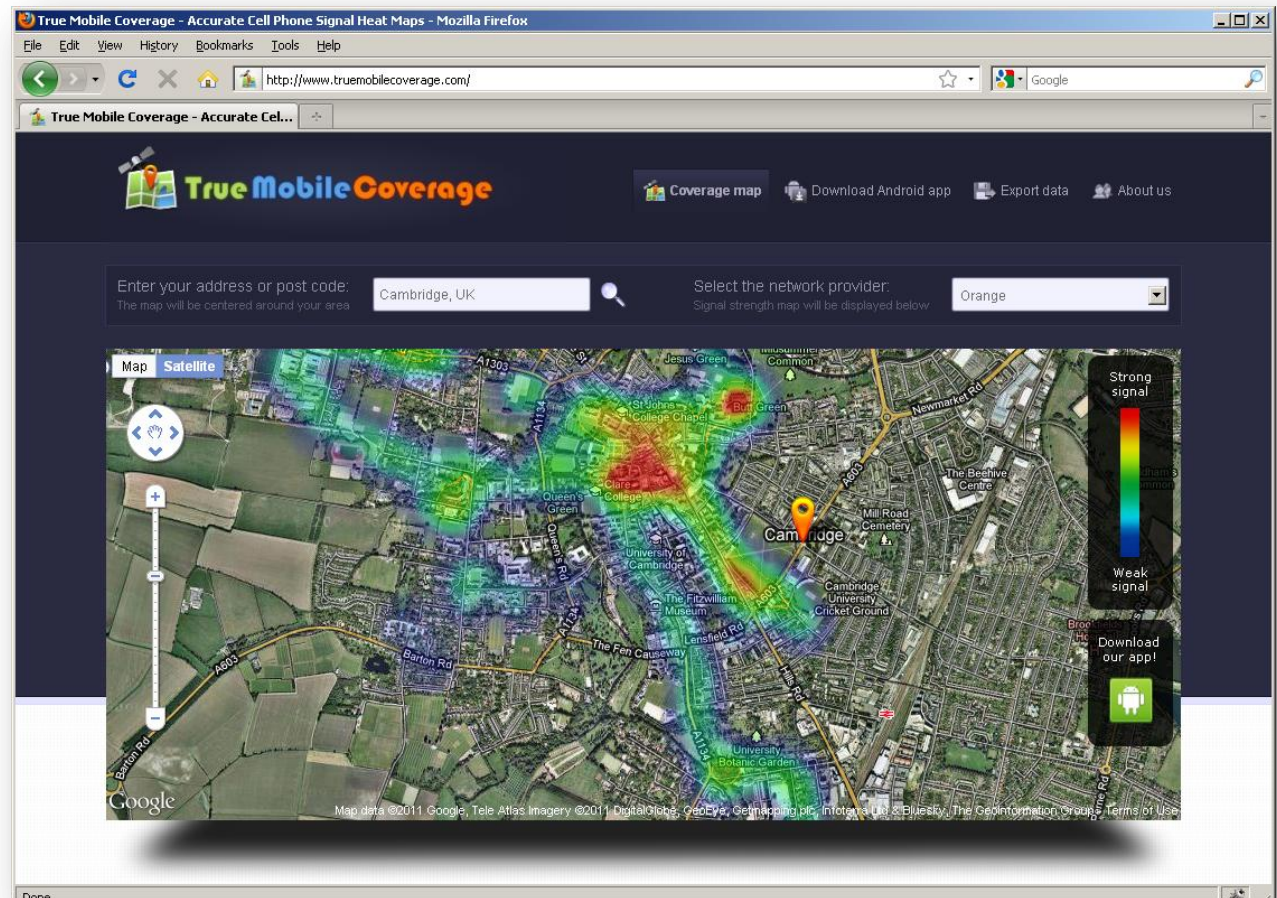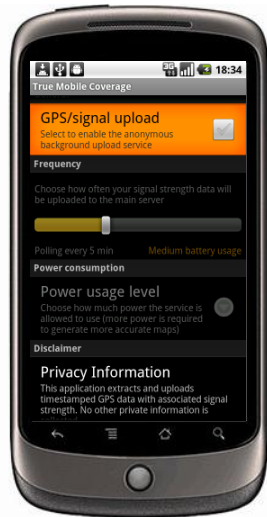
Priorities

- Usability
- Reliability
  - Half of the project time allocated for testing
- Iterative development
  - First working version finished before the 1st client meeting
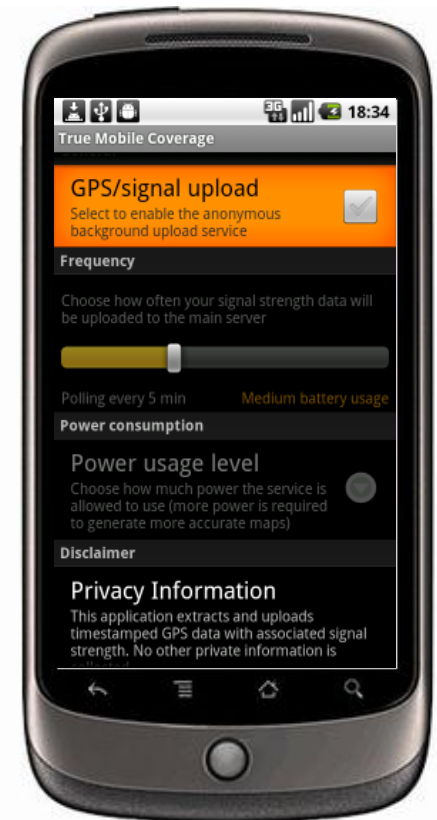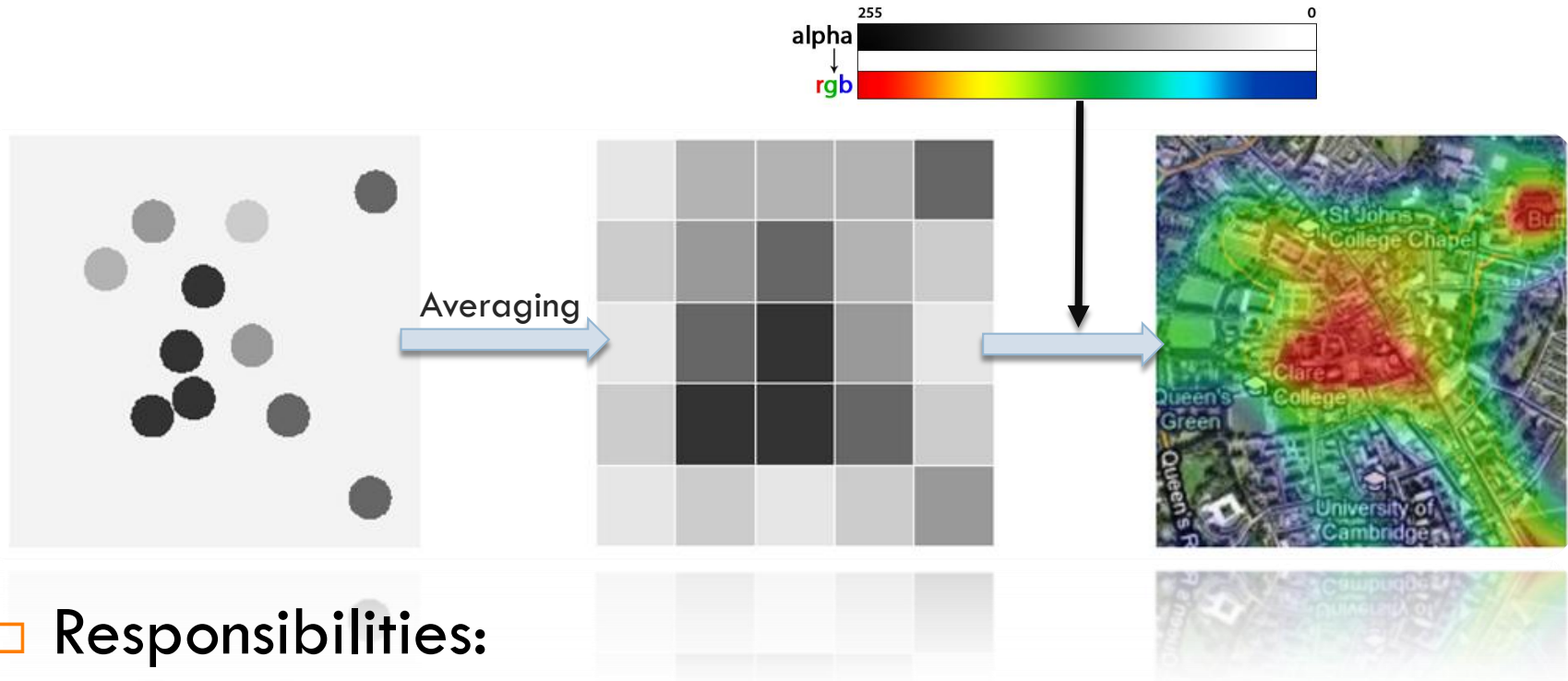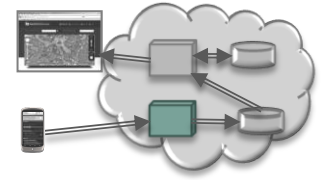- "Featuritis" avoidance

Solution

- High-level design:

Phone client

- Responsibilities:
  - Polls GPS location and signal strength data
  - Uploads them to the server

- Design criteria:
  - Ease of use
  - Low power consumption
  - Privacy maintenance
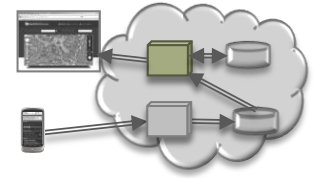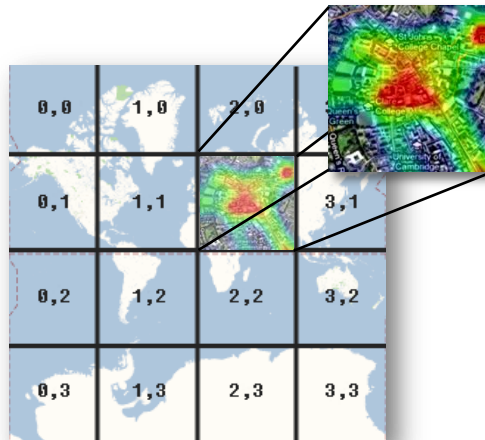 - Maximisation of the number of gathered data points

Server backend

Averaging

255   0
alpha
rgb

☐ Responsibilities:

    ☐ Stores averaged data points
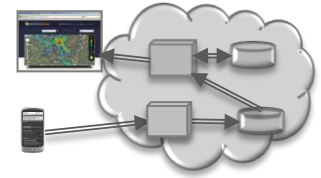
    ☐ Generates image tiles

Server frontend

- Responsibilities:
  - *Efficiently* serves heat map images (overlayed on top of Google Maps by the browser)
    - Caching strategy (overlay images are updated every 2 hours)
  - Provides data export to XML functionality
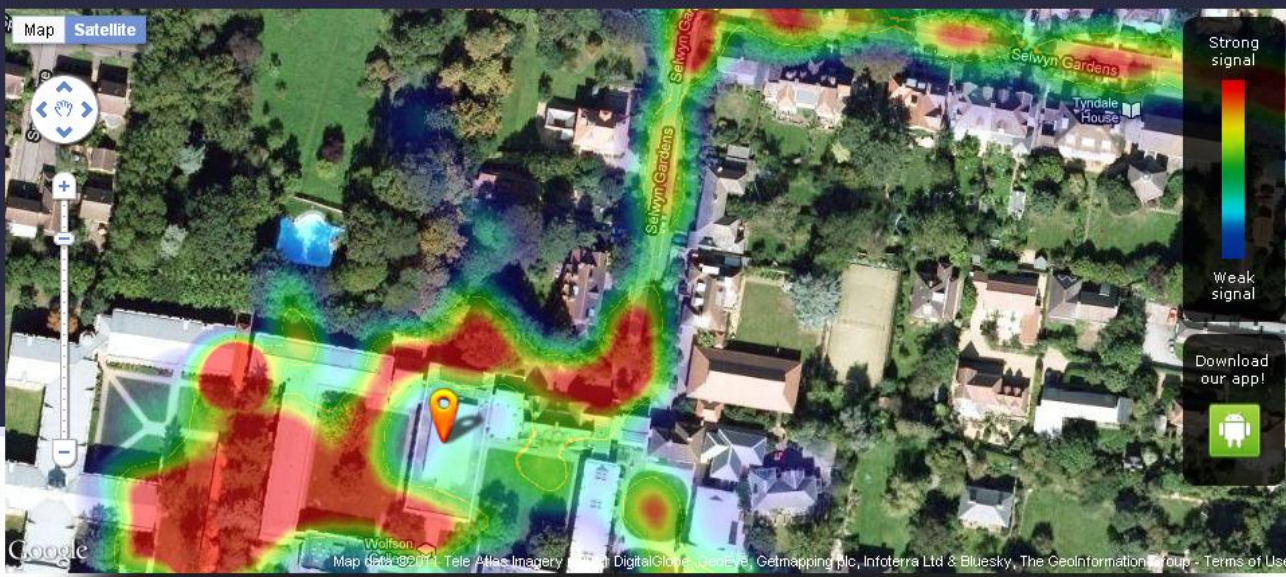
Website

Extensions

- App for an iPhone
- Cell tower location mapping
- Dynamic upload frequency adjustment combined with movement detection
  - Using accelerometer/gyroscope
  - Using triangulation from cell towers
- ...