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Assignment 1 (The Problem)

Ausgewählte Kapitel aus Ubiquitous
Computing (PI.AKM.AK.VU)

Peter Paul BERAN

0200945

Problem: Find My Way

How to get from A to B just in time?



Finding a location including route planning to get from the actual origin (A) to the destination (B) (without having a street map or an internet connection)

- my appointment take place on a (a priori) unknown location
- I only know the address (city, district, street)
- I do **not** know any striking waypoints or relevant places near my destination
- I have no street map with me, respectively the exact position of the street number in the map is **not** determinable



Situation & emerging questions



I wake up at 9 o'clock in the morning. The first thing I do is to check my personal calendar (on my mobile phone) to see the appointments of the day. Oh, damn... I have to sign up my electricity contract for my new flat until 10 o'clock at the Wien Energie Kundenzentrum (Spitalgasse 9, 1090 Wien).

- do I get there in time?
- when do I have to leave?
- how do I get there?
- how long does the trip take?
- which public means of transportation do I have to use?
- ...

I think I have to plan my trip right now!



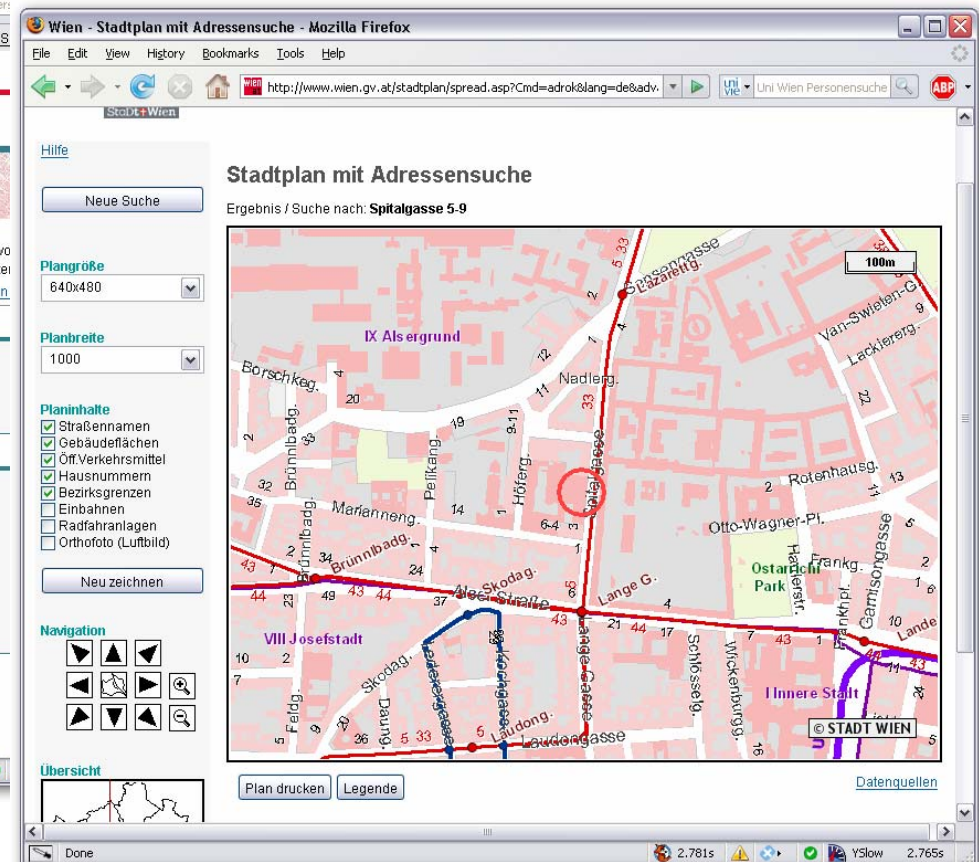
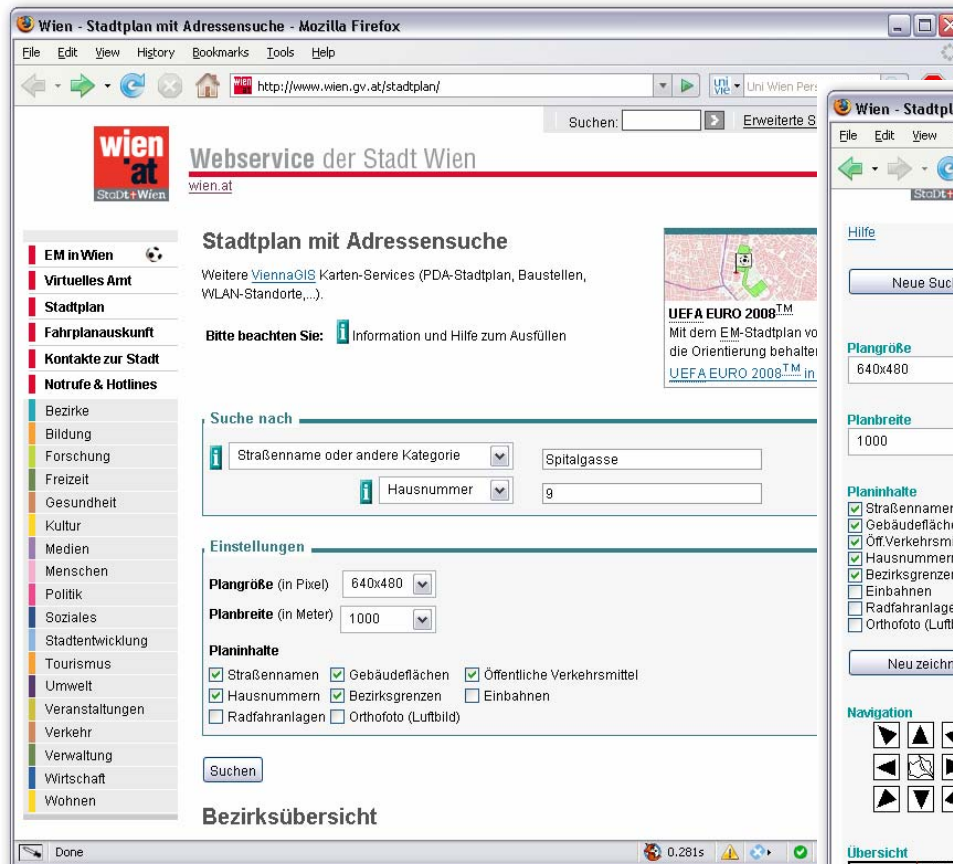
Current solution work flow

Step 1



foresighted planning of route and travel time via web tools

- have a look in the web accessible city map of Stadt Wien (Stadtplan mit Adressensuche, www.wien.gv.at/stadtplan)



Current solution work flow

Step 2a (by public transportation)



foresighted planning of route and travel time via web tools

- have a look at the time table information site of Wiener Linien (Fahrplanauskunft, http://efa.vor.at/wvb/index_de.htm)

The screenshot displays the Wiener Linien website interface in a Mozilla Firefox browser. The main content area shows a route planner with the following details:

- Start Stadt/Geme:** Haltestelle, Straße/Hausnumr, Wichtiger Punkt
- Ziel Stadt/Gemei:** Haltestelle, Straße/Hausnumr, Wichtiger Punkt
- Datum Uhrzeit:** Tag/ Uhrzeit, A

The route planner shows a list of 8 trips (Fahrten) for the date 01.04.2008. The first trip (1. Fahrt) is highlighted, showing a route from Pilzgasse 23-29 to Floridsdorf, then to Alser Straße, and finally to Lange Gasse. The route is visualized on a map in the FILELOAD window, showing the path from Pilzgasse 23-29 to Wien, Spitalgasse 11.

Current solution work flow

Step 2b (by car)



foresighted planning of route and travel time via web tools

- use Microsoft AutoRoute (on Home-PC) to calculate the driving route



Zeit	km	Anweisung	Teilstre...	Richtur
09:00	0,0	1 Abfahrt Pilzgasse 23, 1210 Wien [Pilzgasse 23: 0,3 km		
09:01	0,3	RECHTS (Nordwest) auf B3 [Donau Bundesstraße]	0,5 km	
09:01	0,8	LINKS (Süd) auf E461 [B7]	1,2 km	
09:03	2,0	Richtung Südwest auf Floridsdorfer Brücke	1,1 km	
09:04	3,0	Richtung Südwest auf Friedrich-Engels-Platz	0,1 km	
09:04	3,2	Richtung West auf Adalbert-Stifter-Straße	1,3 km	
09:06	4,4	Richtung Südwest auf Gürtelbrücke	0,5 km	
09:07	4,9	Richtung West auf B221 [Gürtelbrücke]	0,7 km	
09:07	5,6	LINKS (Süd) auf Währinger Gürtel	70 m	
09:08	5,7	Richtung Süd auf Nussdorfer Straße	1,1 km	
09:10	6,8	Richtung Süd auf Spitalgasse	0,7 km	
09:11	7,5	2 Ankunft Spitalgasse 9, 1090 Wien [Spitalgass		

ÜBERSICHT

Entfernung: 7,5 Kilometer
Reisedauer: 11 Minuten
Fahrzeit: 11 Minuten
Kosten: € 1,32

Österreich Wien Wien Wien-XX

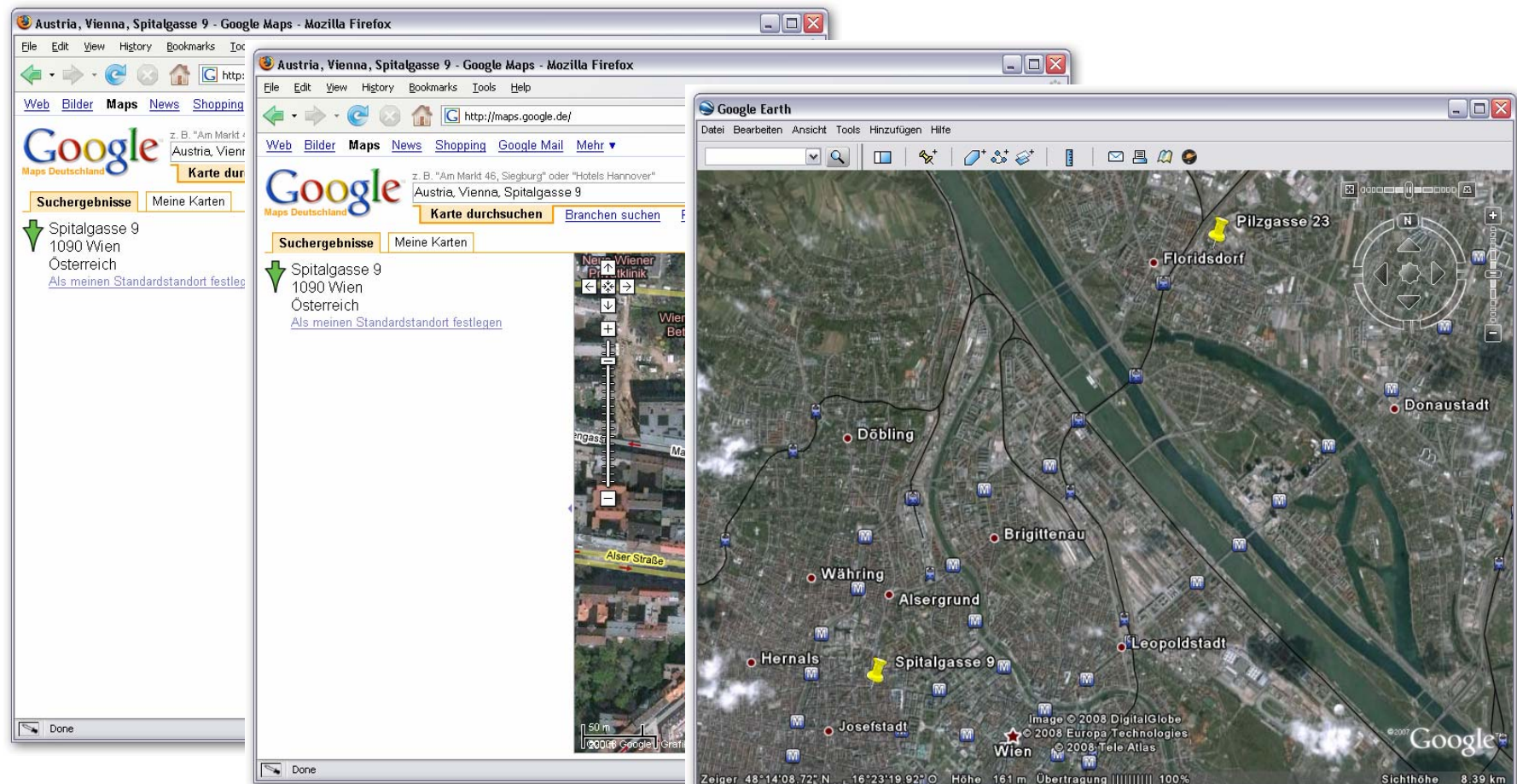
Current solution work flow

Step 3 (advanced)



foresighted planning of route and travel time via web tools

- have a look at some map tool with satellite material to find some unique waypoints, e.g. using Google Maps (on Work-PC, <http://maps.google.at>) or Google Earth (on Home-PC)



Drawbacks of the current work flow



- very time consuming activity
- lot of work to do for such a primitive task
- problem with new appointments that suddenly emerge (probably I have no internet connection or access to a web browser and so I can't find my way)
- mostly I have to print out a custom map (zoomed region of a map) and carry it with me to find the destination

Visions for an appropriate solution



<<Just in time location finding and route planning>> (especially without even having a internet connection)

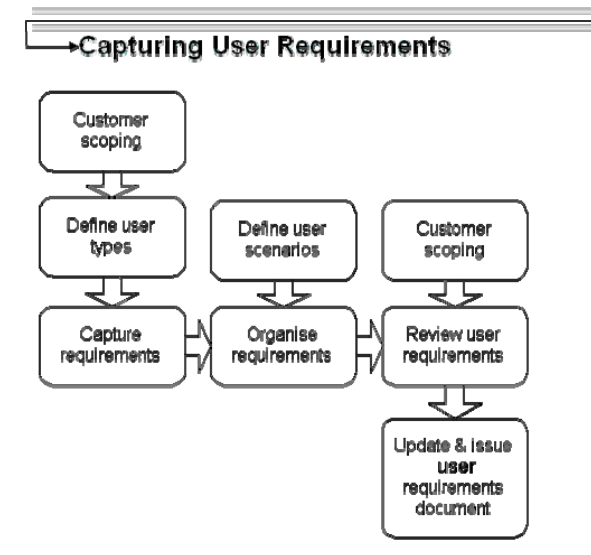
- use mobile phone or mp3 player as user interface device
- use your already available calendar appointments (and their locations) as input
- use your current position (determined via GPS, Wireless LAN)
- use near field communication appliances (Bluetooth, WLAN) to obtain:
 - time tables of transportation vehicles (subway, bus, tram)
 - geographical/cartographical material (for surrounding map)



Requirements of this solution



- fast (in terms of reaching the user goals)
- easy (simple to use, strictly without requiring a keyboard)
- handsome (love to use it)
- ad-hoc (with low preparation time)
- use available information (e.g. calendar data, location data)
- integration and use of existing services on actual devices (do not reinvent the wheel, e.g. Bluetooth, GPS, Fahrplan, Karte)
- automatic/optimal route planning



Who will benefit, when and where?



- **Who:** user groups that are listed below
- **When:** applicable all over the day
- **Where:** in urban/rural surroundings (particularly in the periphery of other devices)
- finding a university campus building (students)
- finding the domicile of a customer (salesmen)
- finding the next park or bus stop (promenaders)
- finding prominent locations/places (tourists)
- finding stores & shopping centers (shoppers)



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Thanks for your attention !!!

