# Hiking Trip Selection Based on Reachability By Public Transport

Stefan **WAGNER**[1], Gerhard **NAVRATIL**[2], Hans **FIBY**[1]

[1] ITS Vienna Region

[2] TU Vienna

# Contents

- Motivation and Question

- Available Data and Services

- Design Decisions

- Implementation

- Results

- Discussion and Conclusions

# Motivation and Question (1)

- Smart services should use available infrastructure efficiently

- Using individual motorized transportation to reach locations for outdoor activities is not smart

- How to change this?

- **Can we reach hiking locations by public transportation and how to assess it?**

# Motivation and Question (2)

- Set up a homepage to inform people about choices

- User centred approach requires the following steps
  - User preferences are collected
  - Choices are determined
  - User selects a destination and receives all information

- Similar question: Neis et al. (2007) for housing market

# Available Data and Services

- **Hiking data**: Outdooractive ~95,000 outdoor activity tours (1,353 hiking paths), provides API (not free of charge)

- **Public transport data**: available from the ITS routing platform AnachB (restricted to Austria)

- **Routing service**: available at AnachB (POST method, result as XML)

# Design Decisions

- Hiking trips should be finished within a day including trips to and from hiking location
- Results are precomputed
- Reasonable starting locations were selected
- Varying schedules included (working day, Saturday, Sunday, holidays)
- Duration of daylight is ignored
- Public transportation restricted to rail, tram, and bus
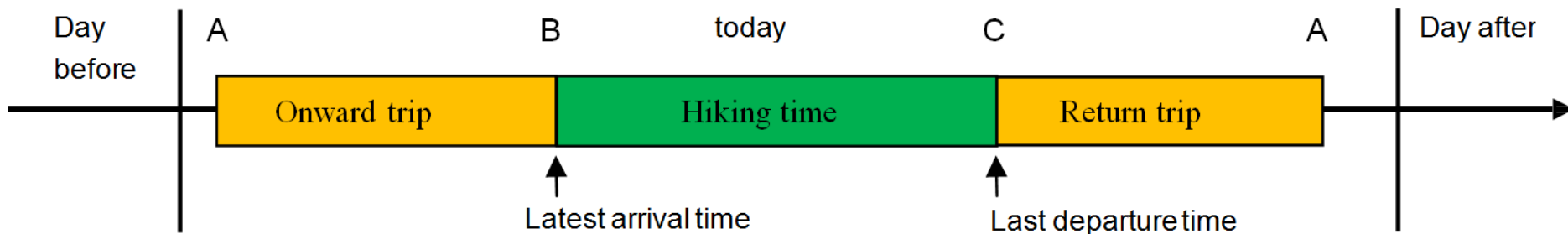
# Implementation

- Blue: XML-Files
- Violet: Connection request
- Green: Calculations

- Conversion coordinates to stops done by AnachB
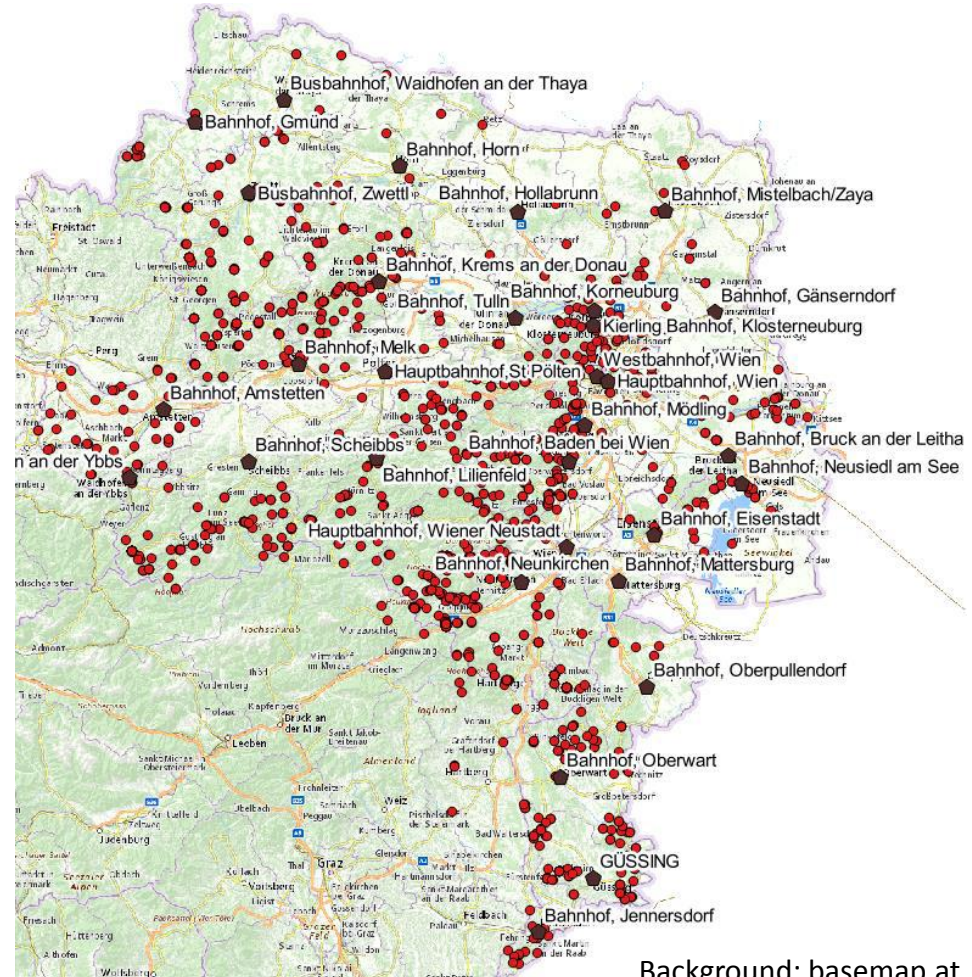- Challenge: Calendar vs. day of operation (Wr. Linien)
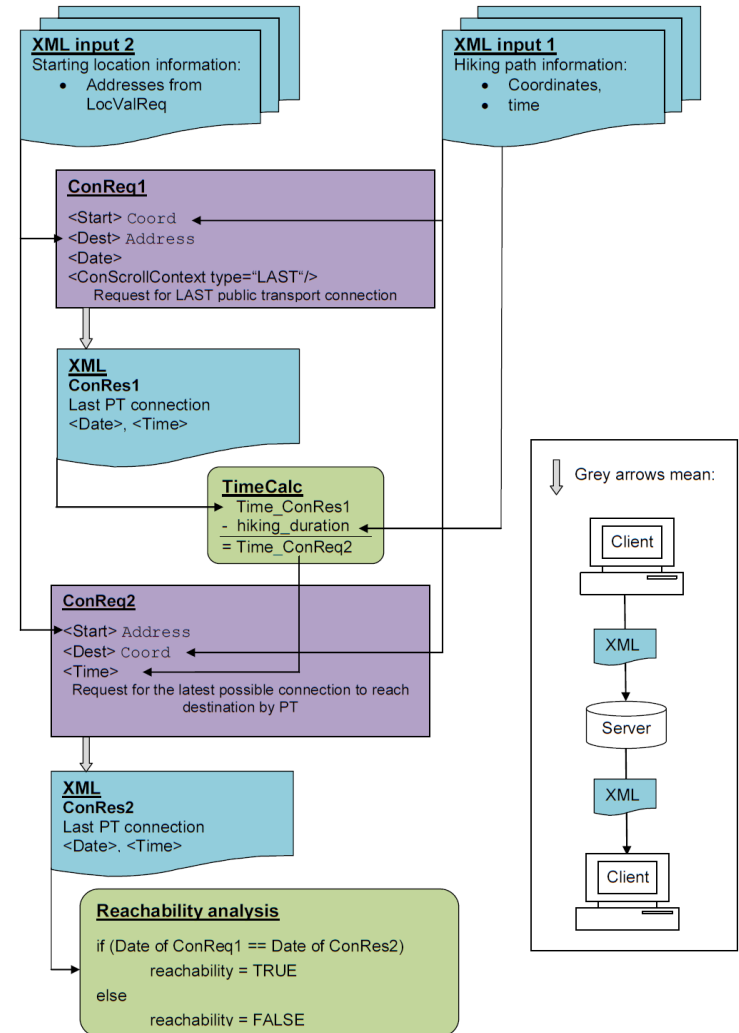
# Results (1): Start Data

Dark dots: starting positions

Red dots: hiking paths

Data restricted to Austria



Background: basemap.at

# Results (2): Precomputed Result

## Analysis for Vienna, Westbahnhof

- Green: possible
- Red: Impossible
- Yellow: does not fit selection (hiking trip exceeds a day)



Background: basemap.at

# Results (3): Days of the week

Monday - Friday



Saturday



Sunday & Holidays



Background on all images: basemap.at

# Discussion & Conclusions (1)

- Realization of concept was possible
- Design decisions had an effect on the result
- User preferences not yet added (difficulty level etc.)
- Proportion between public transport and hiking trip length ignored
- This then leads to multi-criteria selection (requires a direct manipulation user interface)

# Discussion & Conclusions (2)

Challenges

- Data supply – implementing a transnational service?

- Computing time (15 minutes per starting point)

Observation: **There are numerous hiking paths close to Vienna – making it visible helps citizens to make clever decisions**