Assignment 1: PDDL

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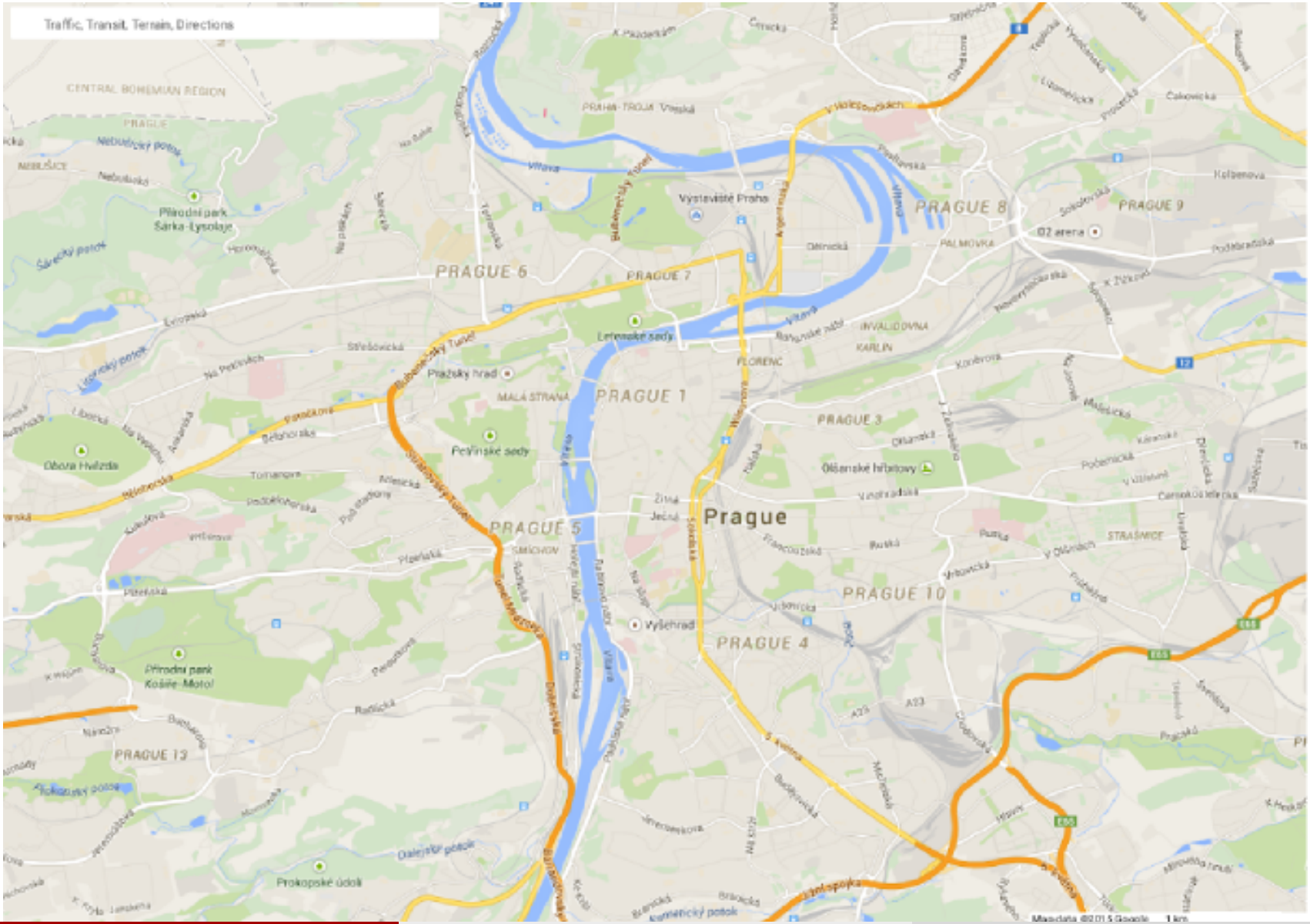
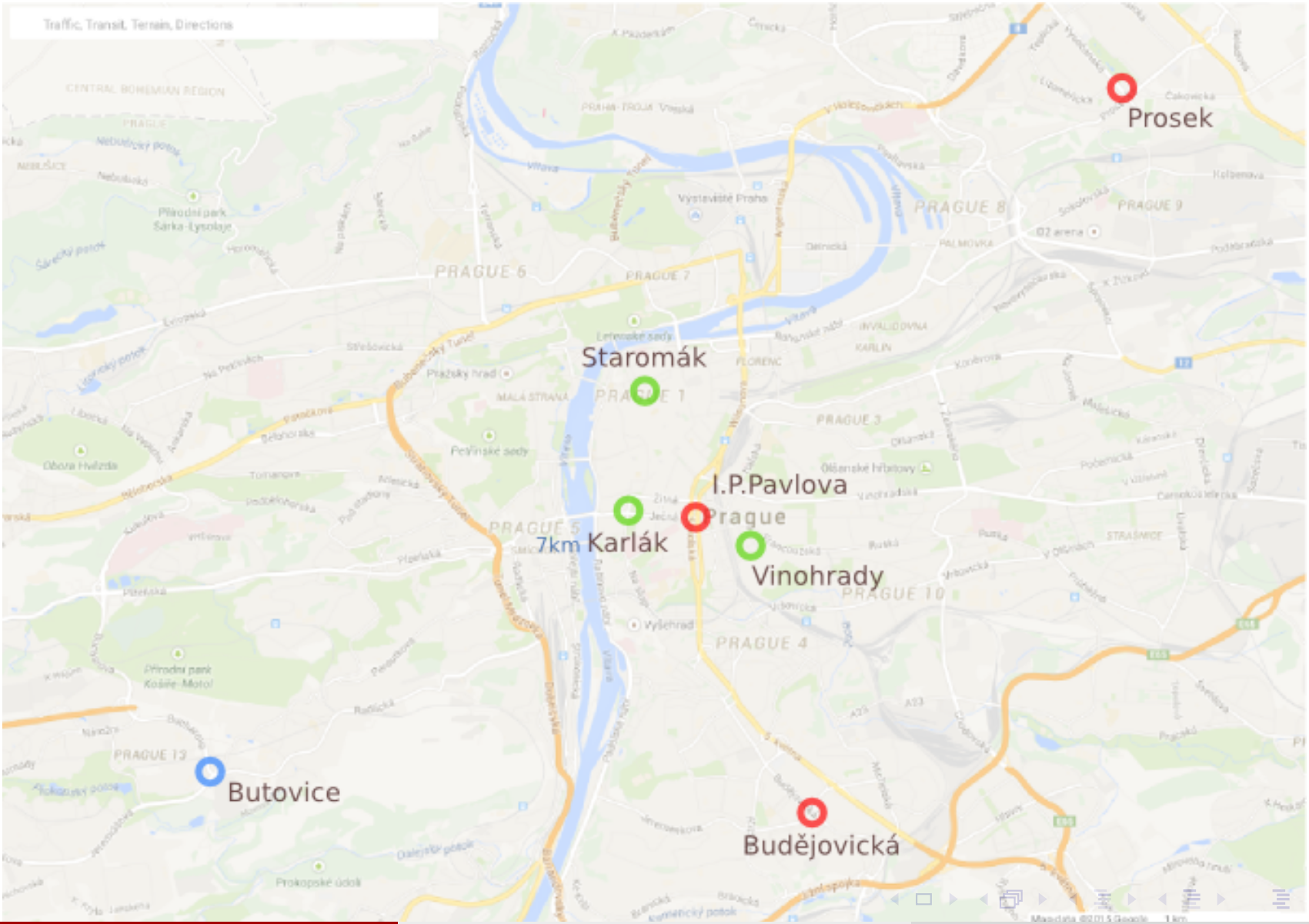
PAH (Planning and Games)

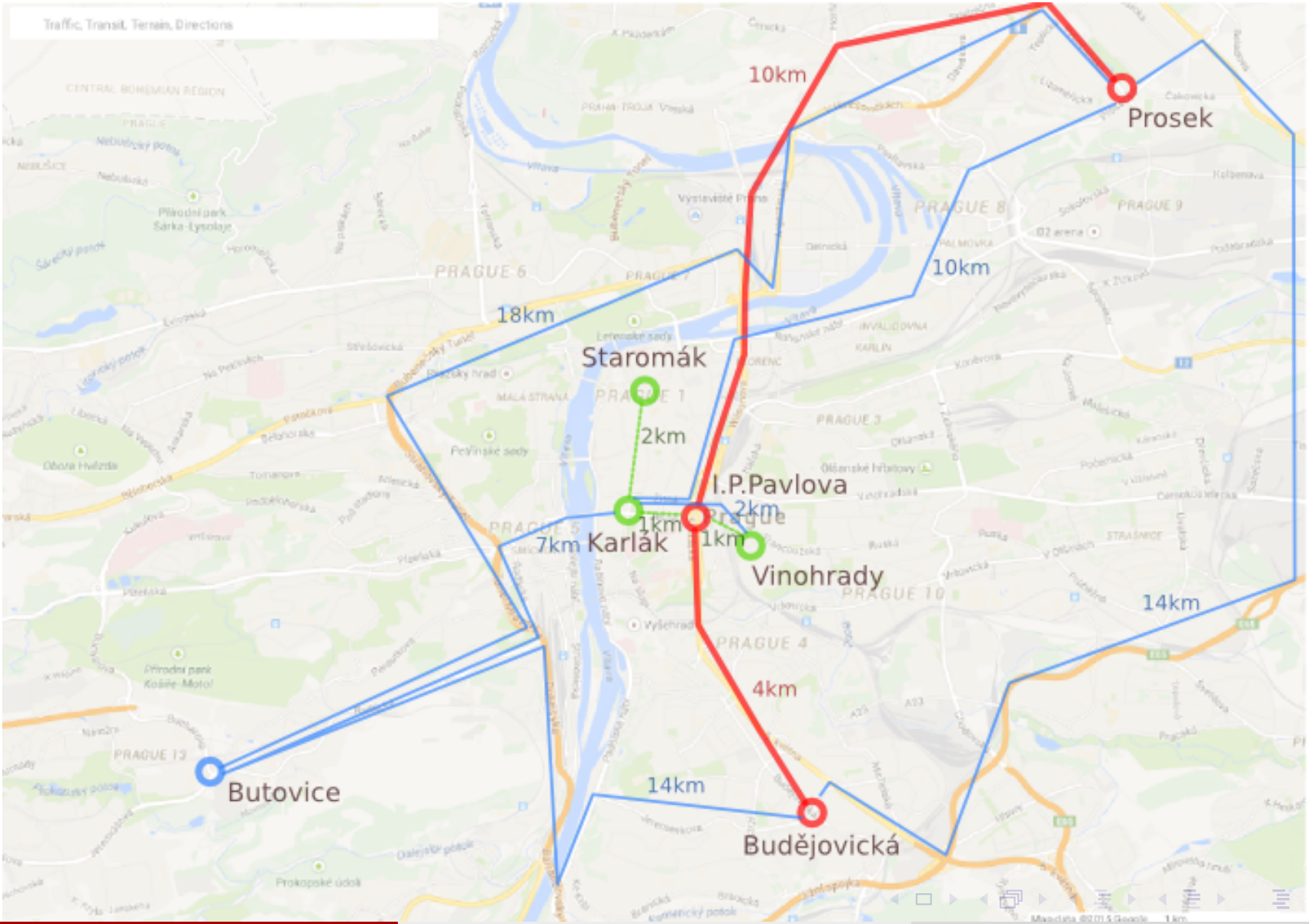
A City


Traffic, Transit, Terrain, Directions
CENTRAL BOHEMIAN REGION
PRAGUE
Přírodní park Šárka-Lysolaje
PRAGUE 6
PRAGUE 7
PRAGUE 8
PRAGUE 9
Výstaviště Praha
O2 arena
Letenské sady
Pražský hrad
MALÁ STRANA
PRAGUE 1
PRAGUE 3
Petřínské sady
Obora Hvězda
Prague
PRAGUE 5
PRAGUE 10
Vyšehrad
PRAGUE 4
Přírodní park Košíře-Motol
PRAGUE 13
Prokopské údolí
FLORENC
KARLÍN
INVALIDOVNA
PALMOVKA
STRAŠNICE
SMÍCHOV

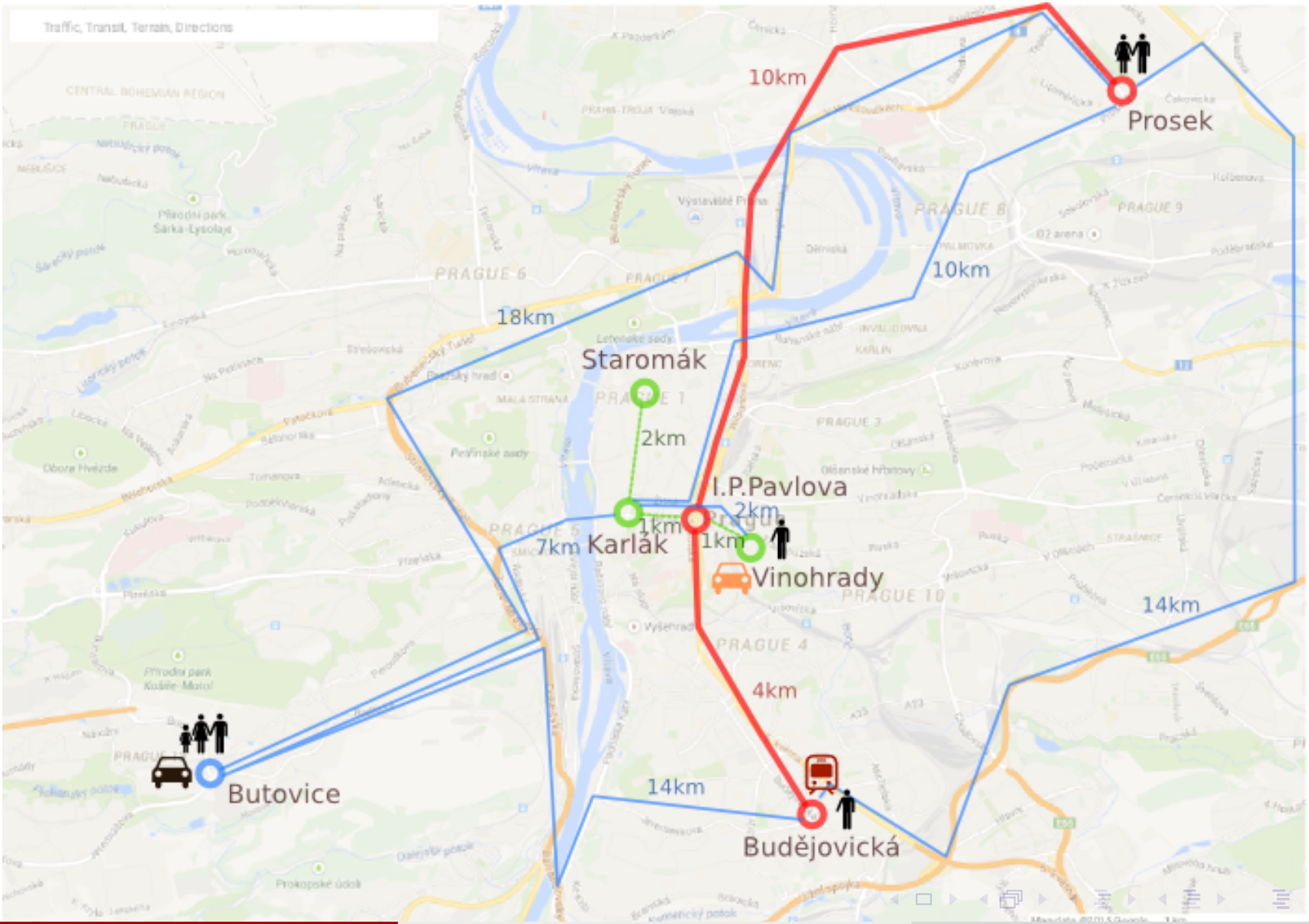
A City with Locations



A City with Transportation Graph



... and People


Traffic, Transit, Terrain, Directions
10km
Prosek
10km
18km
Staromák
2km
I.P.Pavlova
2km
1km
7km Karlák
1km
Vinohrady
14km
4km
Butovice
14km
Budějovická

Sim-City

- Formalize the “simcity” problem
  - Each person lives somewhere and works somewhere
  - Some people may be related (family)
  - Goal: Find a “day plan” for a set of people
  - The people travel on a multi-modal transport graph using various vehicles
- http://cw.fel.cvut.cz/wiki/courses/a4m36pah/assignments/assignment1

Sim-City

Vehicles

- Each vehicle needs a driver to operate
- Not all people can board all vehicles (a family car)
- Driving a taxi or public transport counts as work

Sim-City Level: Basic

- Basic problem description
- Some walk-only edges
- At least one car
- At least one taxi
- At least one public transport vehicle

Sim-City Level: Costs

- Add costs
  - A cost of boarding a vehicle, a cost of riding a vehicle
  - Based on “real” distances
  - Not all vehicles have both
- Try two types of cost
  - Money, time, ...

Sim-City Level: Complex

- Add some of the following:
  - Capacity of vehicles (using only STRIPS)
    - (car have only 4 seats)
  - Leave vs. Park
    - Difference between leaving a vehicle and parking it (at a parking place)
  - Fuel (using only STRIPS)
- Come-up with your own (non-trivial) extension

Your Task

- Formalize problem “Sim-City” in PDDL
- Use 3 selected planners to evaluate
- Create PDF report

Your Task

Formalize problem “Sim-City” in PDDL

- 3 domains, 2 problems for each
- Domains
  - 1x domain per level
  - 1x domain basic, 2x domain cost/complex (can be the same)
  - 3x domain basic
- Problems
  - Each problem different if the domain is the same
  - The same problem in each domain/level
  - At least two different problems per domain/level
    - Different sizes, metrics, etc.

Your Task

Use 3 selected planners to evaluate

- Select 3 of the provided planners
  - One should be optimal: fd-ms, fd-lmcut or symba
- Run all planners on all problems
- On each problem, at least one planner must find a solution
  - Can be different planner every time

Your Task

Create PDF report

- (Ideally in LaTeX)
- Description of the location, transport graph, people, vehicles (brief)
- Specify which problem levels and features were formalized
  - Specify your own enhancements in-detail
- Brief description of (all) used predicates, actions and functions
- List of the selected planners, parameters of the testing env.
- Execution time and solution quality graphs
- Conclusion