Challenges in multi-modal transport planning

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Introduction and context

Transport causes large part of CO₂ emissions

- Transport related CO₂ emissions from EU: 1156Tg
- Proportion of the total CO₂ emissions from EU: 25.91%
- Source: European Environment Agency, for 2005

But who will tell me?

- Lots of people, however…
- … no single website ⇒ not enough time
- ….or else, commercially integrated

Lack of accessible tools that allow people to act
### Finding your way

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<th>With current solutions</th>
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Demonstration and background
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<th>Challenge 1: Algorithmic complexity</th>
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<td>Many possible routes</td>
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<td>Multiple criteria</td>
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<td>Usability requirements</td>
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<td>Performance requirements</td>
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Challenge 2: Data complexity

Multitude of data
  • Air, rail, road, ...

Heterogeneity of data

Live and changing
  • Low cost, ...

Accuracy

Multitude of agents
  • Same seat, different fare

Applicable rules and fares
  • Business travel
Challenge 3: CO2 methodology

Accuracy
• Road maintenance
• Energy mix

Standards and discussion

Insufficiency

Data availability
• Occupancy

Independent verification

Endorsement
Challenge 4: Risk methodology

Types
  • Relevance

Model

Data/Statistics
  • Availability
Challenge 5: Evaluation of savings (1/2)

Savings while travelling clear

- But quantify

In terms of cost, time, emissions Productivity, risks, overall, etc.

Assumptions otherwise

- Pilot study: Exploratory examples, questionnaire behaviour, assumptions
- Simulated optimum routes for variety of user types and criteria
- Linear regression and weighted least squares model fitting
- ‘Average’ user, for example, could stand to save around 35% / 2.5h
Challenge 5: Evaluation of savings (2/2)

Individuals and businesses
Estimate prior and report after
Microeconomic and macroeconomic
Savings while planning
Educational and other impact
Travel and transport
Research

routeRANK, with EPFL, supported by CTI

European projects

• ORIGAMI
• COMPASS
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