Optimization of Individual Travel Behavior through Customized Mobility Services and their Effects on Travel Demand and Transportation Systems

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Today, users can choose between a large variety of different mobility services and options. To reduce the complexity of these services, customized solutions to support the users are needed. Therefore, we developed a mobility assistance system. The assistance gathers information from timetables and real-time information systems in public transportation, is connected to mobility services like car sharing, knows the user’s schedule and only presents relevant information for the ongoing situation. It supports the user’s travel behavior by providing information on mode, route or alternative starting times of trips. According to the user’s preferences, the assistance may adapt and reorganize the user’s weekly activity schedule. To evaluate the impact on travel behavior caused by the mobility assistance, we use the travel demand model mobiTopp. We develop a new module in the model to generate activity patterns. That enables us to get more insights into travel behavior and to evaluate the changes occurred by the usage of the mobility assistance on personal level as well as on network level.

actiTopp - Week Activity Schedules
- Utility-based approach

mobiTopp
- Microscopic travel demand model
- All trips for a whole week

Modeled travel behavior of all inhabitants of the Greater Stuttgart Area

Example

1. Generating travel behavior
2. Input data – synthetic activity patterns
3. Optimization of activity patterns
4. Output data – adapted activity patterns
5. Evaluation of impacts on travel behaviour

Notification
- Triggered by different events:
  - Incoming date inquiries
  - Traffic information
  - Periodically scheduled

Trip Planning
- Rescheduling of appointments
- Calculation of new inter-modal trips with regard to user preferences

Visualization
- Visualization of proposed trips and trip adjustments
- Trip adjustment and solving capabilities

1. User Notification
2. Trip Planning
3. Trip Visualization

BiE
Mobility Assistance
Activity Generation Module actiTopp

Analyzes – individual level:
Changes in number of trips, trip distances, trip durations and modal split

Analyzes – aggregated level:
Changes in traffic volumes, in system’s modal split, effects on environmental aspects

Information on global traffic conditions
Individual user preferences

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