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The pipeline and its requirements

KW Axhausen

IVT
ETH
Zürich

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 Institut für Verkehrsplanung und Transportsysteme
Institute for Transport Planning and Systems

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Alternatives to MATSim

/SUE	Scheduling	DTA	Simu-	UE	lation
CEMDAP/Vista		X	X		
Bowman-style		X			X
Tasha		X			X
Albatross		X			X
Mobitopp		X		X	
PCATS/DBNets			X	X	
Dynasmart		X	X		

Alternatives to MATSim

Scheduling approach

CEMDAP/Vista	Set of choice models
Bowman-style	Nested logit choice models
Tasha	Rule-based schedule generation Logit-choice models for destination/mode
Albatross	Rule-based schedule model
Mobitopp	Rule-based schedule generation Logit-choice models for destination/mode
Dynasmart	Set of choice models
PCATS/DBNets	Set of choice models

Degrees of freedom of activity scheduling

- Number ($n \geq 0$) and type of activities
- Sequence of activities
 - Start and duration of activity
 - Group undertaking the activity (expenditure share)
 - Location of the activity
- Connection between sequential locations
 - Location of access and egress from the mean of transport
 - Vehicle/means of transport
 - Route/service
 - Group travelling together (expenditure share)

Pipeline: On-going/coming/*possible* projects

- SVI 2008/001 - Widmer/Vrtic
- SVI 2004/012 - Weis
- *DFG/SNF - Robinson/Nagel*
- *ASTRA - PTV Swiss/rundum*
- *kti – White Project/Mobility*
- *ETH*

Einfluss des Parkierungsangebotes

- Survey of search strategy preference
- Measurement of parking search (SPR+ data)
- Modelling of parking search
- SP experiments about parking type/location-, mode and location choice

Aktivitäten-orientierte Analyse des Neuverkehrs

- One week Mobidrive/Thurgau diary
- HATS experiment of activity scheduling
- Schedule modelling (especially activity selection and sequencing)
- MATSim experiments (reliability, opening hours, cost levels)

2000W city ... model of urban metabolism

- Accounting for energy consumption of the vehicles and in the buildings
- Commercial traffic via simulated chains calibrated against OD matrices and VMT estimates
- Data collection for the urban building model
- Choice/allocations models of energy saving investment (building vs vehicle; vehicle type) (SP experiments)
- Impact of changes in cost levels (via taxation or resource costs)

Potenzial für Fahrgemeinschaften

- Interface with PTV Swiss matching algorithm
- SP experiments about the acceptability of the offered matches
- MATSim evaluation of the total impact of the ride sharing systems

Car sharing (Taxis)..

- Model of car sharing resource allocation and pricing
- Mode choice considering car sharing service levels (dynamic or average)

Shoup's parking pricing regime

- Price setting agent by link (levels)
- Parking facility agents (building, price setting (levels))

MATSim: Groups

- Links to potential ride sharing partners

MATSim: Persons

- Preferred search strategy
- Car sharing membership
- Season tickets by zone size

MATSim: Facilities

- Parking spaces/capacities by link
- Parking facilities
- Plug-in locations
- Car sharing facilities
- Taxi ranks

MATSim: Vehicle description

- Differential weight (PCU) by vehicle type
- Energy consumption characteristics (average; by speed; by speed and acceleration patterns)
- Person capacity

MATSim: Location-specific cost accounting

- Parking (linear, decreasing/increasing marginal costs, initial offsets; by time of day; by occupancy)
- Link tolls (linear by distance or time; by time of day; by speed level)
- Zone charging (linear or non-linear with entry or time present; by time of day; by speed level)

MATSim: Location-specific cost accounting

- Fares paid public transport (by stage; by trip; by time period -zone)
- Fares paid - taxi (by stage; minimum and distance, waiting times)
- Fares paid - car sharing (by stage; by time and distance)
- Fares paid or received – ride sharing (by stage; minimum and distance)

MATSim: Location-specific cost accounting

- Fuel (linear by consumption)
- Electricity (linear for recharging or delivery; by time of day)
- Activity (linear, decreasing/increasing marginal costs, initial offsets; by time of day; by occupancy)

MATSim: Resolution

- Shift from trip/activity to stage/activity
- Multimodal routing (walk to/from vehicle)

MATSim: Utility function

- Personal values of time
- Cost terms
- (Wage terms)
- Quality of locations
- Travel time elements (by mode; search time, waiting times, travel time)
- Penalties for no/delayed service at a facility/service

MATSim: Schedule choice

- Improved parametrisation (HATS, Diss Feil)
- Implementation of Hettinger's aggregate approach
- planomat extension (Feil)

MATSim: Location choice

- Parking facility choice
- Access point to the modes (expanding the routes)

MATSim: planomat

- Joint optimisation of mode choice for (arbitrary) groups around car sharing

MATSim: Traffic flow simulation

- Conditional choice of a route for parking search
- Queues for facilities (parking facilities; taxi ranks; busses /trams/trains; taxis; car sharing)
- Restricted replanning by search strategy;

MATSim: Freight transport

- Simplified tour optimisation based on OD-matrices

MATSim: Learning process

- Stability of multi-player games with different actor types
- Path dependence
- Speeding up convergence (number of iterations, intelligent replanning shares)
- Reuse of past solutions
- Network equilibrium and scheduling equilibrium

MATSim: Data preparation

- Generation of choice sets (routes; scheduled connections)
- Measurement of similarities (routes, schedules)

MATSim: Further basic scenarios

- “Saturday”
- “Sunday”

- “Big event scenario”