Strategies

Final workshop of the DISTILLATE programme
European Economic and Social Committee
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UCL

Contents

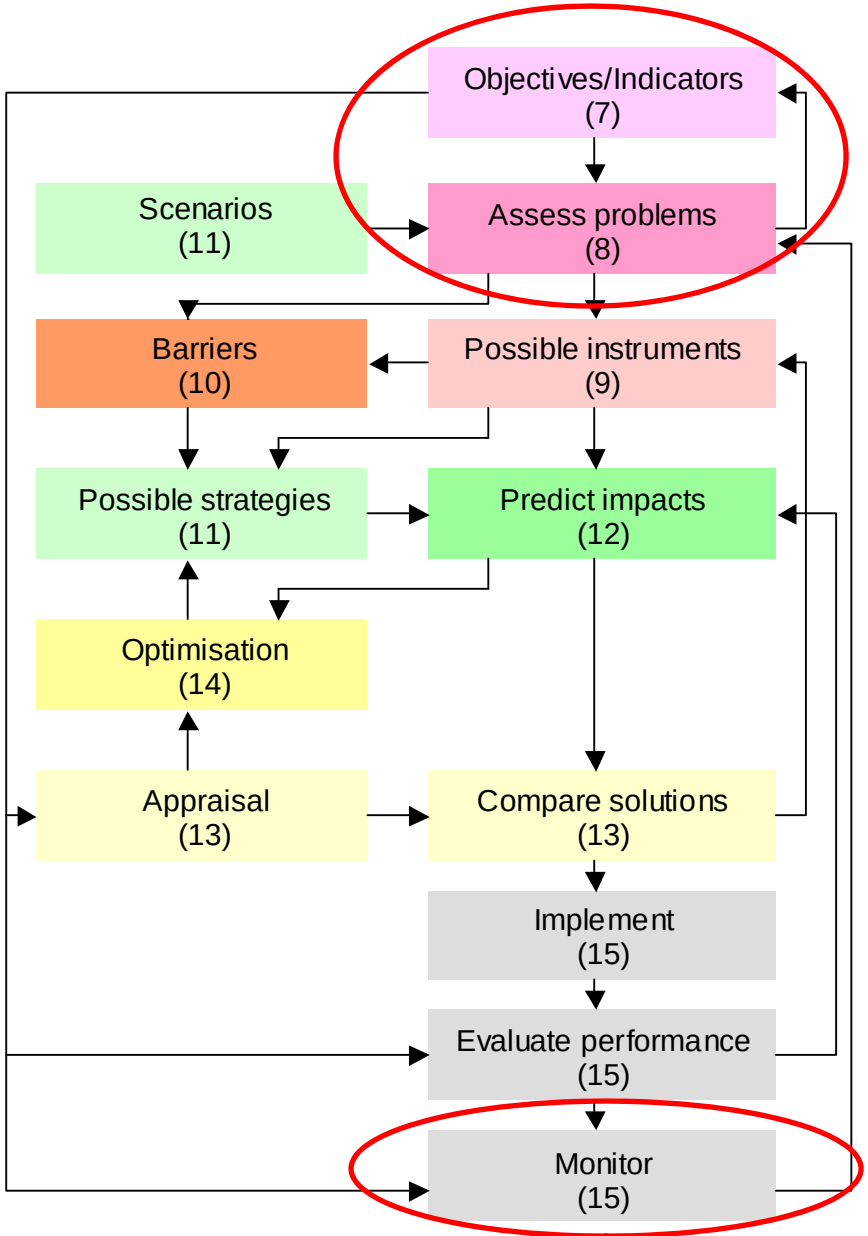
A. Improved indicators for sustainable transport and land use planning

B. Generating strategic options and exploring distributional impacts

C. Strategic modelling: MARS policy simulation and optimisation

A: Improved Indicators for Sustainable Transport & Land Use Planning

Objectives

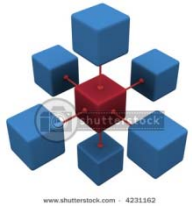


- To develop approaches for
  - Designing a monitoring strategy
  - Selecting suitable indicators
  - Using them consistently across sectors

3 Best Practice Guides

1. Designing a monitoring strategy

2. Advice on selecting indicators

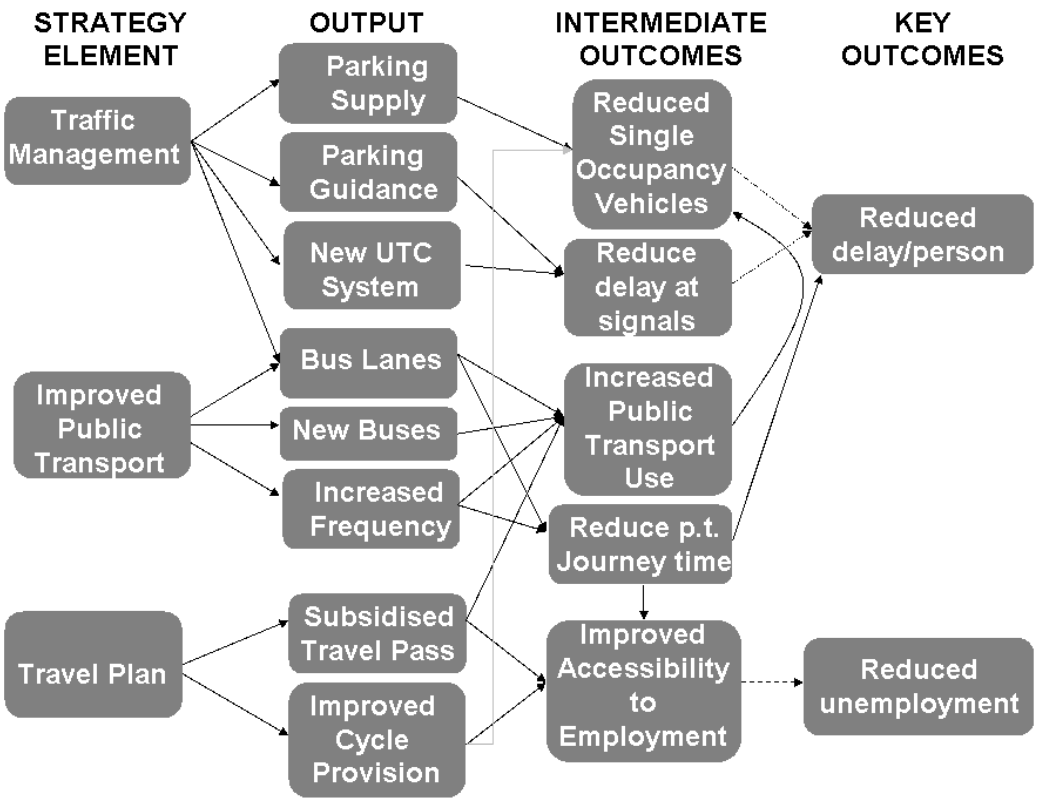


3. Monitoring across sectors & spatial levels

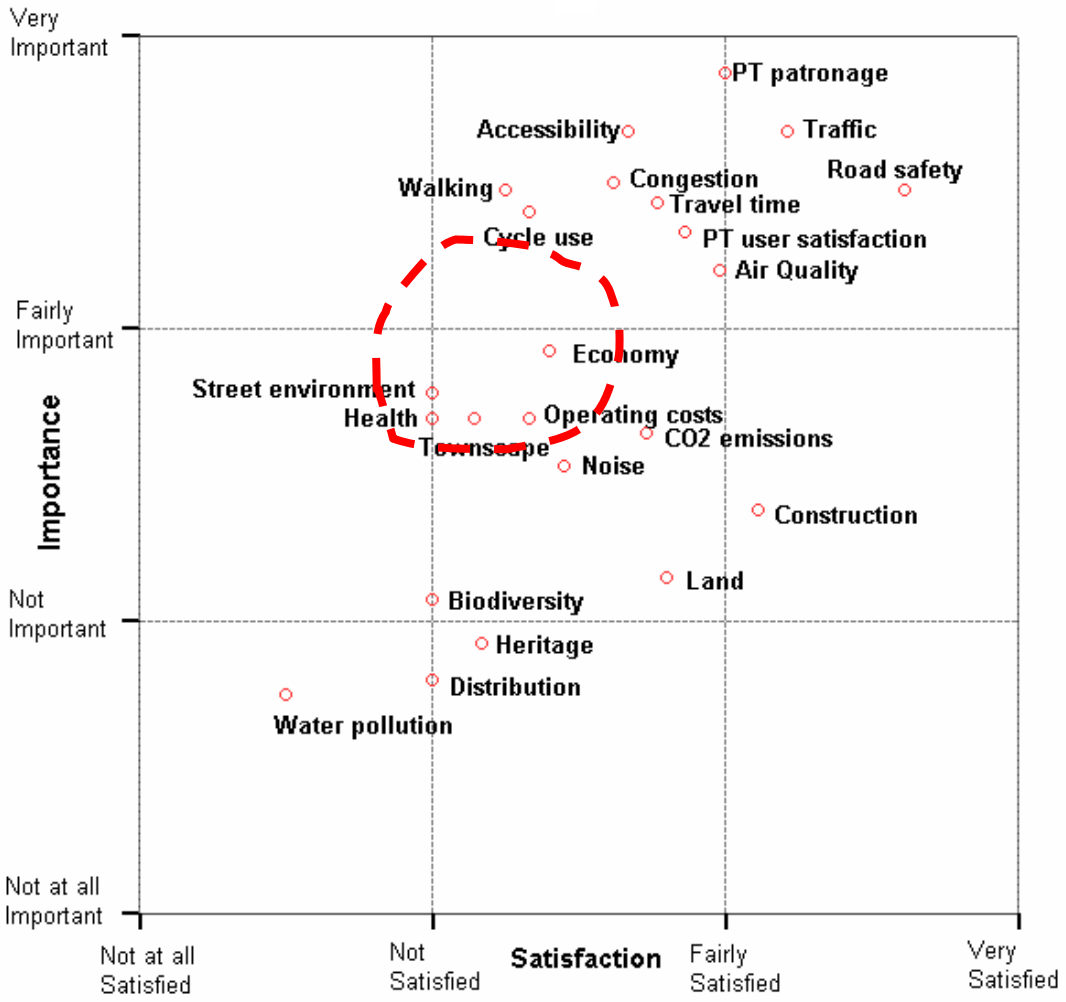
1. Designing a monitoring strategy

- How to establish/review/use a monitoring framework
  - The types of indicators you can measure
  - What you can use monitoring for
  - How to fit monitoring together
  - How to prioritise what to monitor
  - How the guide has been used

Designing a monitoring strategy

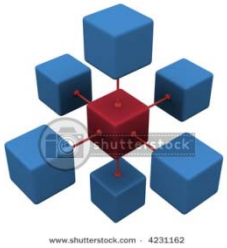


2. Advice on selecting indicators



Advice on selecting indicators

- How do we identify & justify new indicators?
- Audit
  - Is it clearly defined?
  - Is the indicator largely controllable by management actions?
  - Is it measurable?
  - Will it respond to policy interventions in a reasonable time frame?
  - Is it easy to understand and communicate?
  - Issues of disaggregating, time series and targets



3. Monitoring across sectors & spatial levels

Advice on:

- When to standardise measurement
- What to standardise
- Importance of data management
- How to integrate with broader ‘policy’
- Use of information in partnership working

B: Generating Strategic Options and Exploring Distributional Impacts

Four Option Generation Products

	Strategies	Schemes
'Inside' the box	Packages of urban measures [KonSULT]	Streetspace main road redesign (Bloxwich)
'Outside' the box	Accessibility Planning options (Barnsley Dearne)	Community space design (Blackpool)

KonSULT:
Generating Packages of Measures

- KonSULT is a web based knowledgebase
- Assesses potential contribution of over 40 transport and land use policy instruments, to achieving a range of objectives/ addressing problems
- Uses both a first principles assessment and review of case studies
- Provides information about previous applications of selected instruments

Step 1

Uses information within KonSULT to assess each policy instrument, based on the criteria supplied by the user. Scores and then ranks each one.

Step 2

Takes data from Step 1 and adds information on synergy or barriers to create potential packages of pairs of instruments.

Input Criteria for Step 1

KonSULT Option Generation Filter

This filter has been developed by the Institute for Transport Studies, University of Leeds

The filter allows users to create a list of ranked policy instruments based on individual search criteria

To start using the filter, select your user group and area type

SELECT USER GROUP

- Decision Makers from National Organisations
- Decision Makers from Regional Organisations
- Local Authority Decision Makers

SELECT AREA TYPE

- Any Area Type
- Town or City Centre
- Inner Suburb
- Outer Suburb
- District Centre
- Corridor
- Large Town or City >100K
- Small or Tourist Town <10

CONTINUE

Please select policy STRATEGY/STRATEGIES

You can assign weights (1 to 5) to indicate the re
importance, 5 = high importance

- [x] Any Strategy
  - [ ] 1 Reducing the need to travel
  - [ ] 1 Reducing Car Use
  - [ ] 1 Improving the Use of Road Space
  - [ ] 1 Improving the use of Public Transport
  - [ ] 1 Improving walking and cycling
  - [ ] 1 Improving Freight

Back | Start over | RUN FILTER

Filter

Please select PROBLEMS, OBJECTIVES OR INDICATORS.

You can assign weights (1 to 5) to indicate the relative importance of each category you have selected. 1 = low importance, 5 = high importance

Objectives	Problems	Indicators
1 Efficiency	1 Congestion	1 Congestion
1 Liveable streets	1 Community Impacts	1 Bus reliability
1 Protection of the environment	1 Environmental Damage	1 % of people who think it is easy and safe to walk in their area
1 Equity and Social Inclusion	1 Poor Accessibility	1 CO2 emissions
1 Safety	1 Social and Geographic disadvantaging	1 Local pollution
1 Economic Growth	1 Accidents	1 Energy efficiency (/ trip)
1 Finance	1 Suppression of Economic Activity	1 Accessibility to key services
		1 Average cost of journey
		1 Mode share walk
		1 Mode share cycle
		1 Safety
		1 Regional GDP

Back | Start over | CONTINUE

Example Output Step 1

Ranked policy instruments based on individual search criteria

Code	Instrument	Score	Cost
607	Road pricing	81.82	neutral
102	Development Densities Mix	63.64	high
403	ITS	61.82	high
402	UTC	58.18	medium
305	Light Rail Systems	49.09	high
301	Park & Ride	49.09	high
412	Lorry Fleet Management	47.27	medium
100	PT Focused Development	47.27	high
406	Regulatory Restrictions	45.45	low
201	Company Travel Plans	43.64	medium
303	New Rail Stations	43.64	high
413	Bus Fleet Management Systems	41.82	medium
405	Parking Controls	40.00	low
604	Fare levels (decrease)	40.00	medium
306	Cycle Routes	40.00	high
400	Accident Remedial	40.00	medium
600	Private parking charges	36.36	neutral
205	Ride Sharing	36.36	medium
300	Guided Bus	36.36	high

Presentation Options

Number of policy instruments: 42

Minimum score: -100

Show only instruments with cost: All

Show only instruments of type: All

Sort instruments by: Score

DEFAULT LIST | APPLY CHANGES

SAVE OUTPUT...

Back | Start over

Step 2 (Packages)

- .xls spreadsheet model
- Uses output from step 1
- Individual can select / unselect the indicators to be included in packages
- It creates a ranking of pairs of indicators using the combined score of the two policy instruments from step 1 and then modifies this score using either the synergy or barrier matrices

Example Output Step 2

Option Generator output (OG v0.30 ~ file saved 13/09/2007 09:33:00)
KonSULT input file: optgen.txt
Interaction matrix file: c_matrix1.csv
Policy instruments selected: 9
Unique combinations: 36

Rank	Combin	Instrument1	Score1	Cost1	Rank1	Category1	Instrument2	Score2	Cost2	Rank2	Category2	Combin-ed Score	Matrix Score	Total Score
1	403&607	ITS	61.82	high	3	Management	Road pricing	81.82	neutral	1	Pricing	143.64	-5	138.64
2	402&607	UTC	58.18	medium	4	Management	Road pricing	81.82	neutral	1	Pricing	140	-5	135
3	102&607	Development Densities Mix	63.64	high	2	Land Use	Road pricing	81.82	neutral	1	Pricing	145.46	-20	125.46
4	412&607	Lorry Fleet Management	47.27	medium	8	Management	Road pricing	81.82	neutral	1	Pricing	129.09	-5	124.09
5	406&607	Regulatory Restrictions	45.45	low	9	Management	Road pricing	81.82	neutral	1	Pricing	127.27	-5	122.27
6	305&607	Light Rail Systems	49.09	high	6	Infrastructure	Road pricing	81.82	neutral	1	Pricing	130.91	-10	120.91
7	201&607	Company Travel Plans	43.64	medium	10	Attitudes	Road pricing	81.82	neutral	1	Pricing	125.46	-10	115.46
8	100&607	PT Focused Development	47.27	high	7	Land Use	Road pricing	81.82	neutral	1	Pricing	129.09	-20	109.09
9	102&403	Development Densities Mix	63.64	high	2	Land Use	ITS	61.82	high	3	Management	125.46	-20	105.46
10	102&402	Development Densities Mix	63.64	high	2	Land Use	UTC	58.18	medium	4	Management	121.82	-20	101.82
11	305&403	Light Rail Systems	49.09	high	6	Infrastructure	ITS	61.82	high	3	Management	110.91	-10	100.91
12	305&402	Light Rail Systems	49.09	high	6	Infrastructure	UTC	58.18	medium	4	Management	107.27	-10	97.27
13	201&403	Company Travel Plans	43.64	medium	10	Attitudes	ITS	61.82	high	3	Management	105.46	-10	95.46
14	102&305	Development Densities Mix	63.64	high	2	Land Use	Light Rail Systems	49.09	high	6	Infrastructure	112.73	-20	92.73
15	201&402	Company Travel Plans	43.64	medium	10	Attitudes	UTC	58.18	medium	4	Management	101.82	-10	91.82
16	102&412	Development Densities Mix	63.64	high	2	Land Use	Lorry Fleet Management	47.27	medium	8	Management	110.91	-20	90.91
17	402&403	UTC	58.18	medium	4	Management	ITS	61.82	high	3	Management	120	-30	90
18	100&403	PT Focused Development	47.27	high	7	Land Use	ITS	61.82	high	3	Management	109.09	-20	89.09
19	102&406	Development Densities Mix	63.64	high	2	Land Use	Regulatory Restrictions	45.45	low	9	Management	109.09	-20	89.09
20	102&201	Development Densities Mix	63.64	high	2	Land Use	Company Travel Plans	43.64	medium	10	Attitudes	107.28	-20	87.28
21	305&412	Light Rail Systems	49.09	high	6	Infrastructure	Lorry Fleet Management	47.27	medium	8	Management	96.36	-10	86.36
22	100&402	PT Focused Development	47.27	high	7	Land Use	UTC	58.18	medium	4	Management	105.45	-20	85.45
23	305&406	Light Rail Systems	49.09	high	6	Infrastructure	Regulatory Restrictions	45.45	low	9	Management	94.54	-10	84.54
24	201&305	Company Travel Plans	43.64	medium	10	Attitudes	Light Rail Systems	49.09	high	6	Infrastructure	92.73	-10	82.73
25	100&102	PT Focused Development	47.27	high	7	Land Use	Development Densities Mix	63.64	high	2	Land Use	110.91	-30	80.91
26	201&412	Company Travel Plans	43.64	medium	10	Attitudes	Lorry Fleet Management	47.27	medium	8	Management	90.91	-10	80.91
27	201&406	Company Travel Plans	43.64	medium	10	Attitudes	Regulatory Restrictions	45.45	low	9	Management	89.09	-10	79.09
28	403&412	ITS	61.82	high	3	Management	Lorry Fleet Management	47.27	medium	8	Management	109.09	-30	79.09
29	403&406	ITS	61.82	high	3	Management	Regulatory Restrictions	45.45	low	9	Management	107.27	-30	77.27
30	100&305	PT Focused Development	47.27	high	7	Land Use	Light Rail Systems	49.09	high	6	Infrastructure	96.36	-20	76.36
31	402&412	UTC	58.18	medium	4	Management	Lorry Fleet Management	47.27	medium	8	Management	105.45	-30	75.45
32	100&412	PT Focused Development	47.27	high	7	Land Use	Lorry Fleet Management	47.27	medium	8	Management	94.54	-20	74.54
33	402&406	UTC	58.18	medium	4	Management	Regulatory Restrictions	45.45	low	9	Management	103.63	-30	73.63
34	100&406	PT Focused Development	47.27	high	7	Land Use	Regulatory Restrictions	45.45	low	9	Management	92.72	-20	72.72
35	100&201	PT Focused Development	47.27	high	7	Land Use	Company Travel Plans	43.64	medium	10	Attitudes	90.91	-20	70.91
36	406&412	Regulatory Restrictions	45.45	low	9	Management	Lorry Fleet Management	47.27	medium	8	Management	92.72	-30	62.72

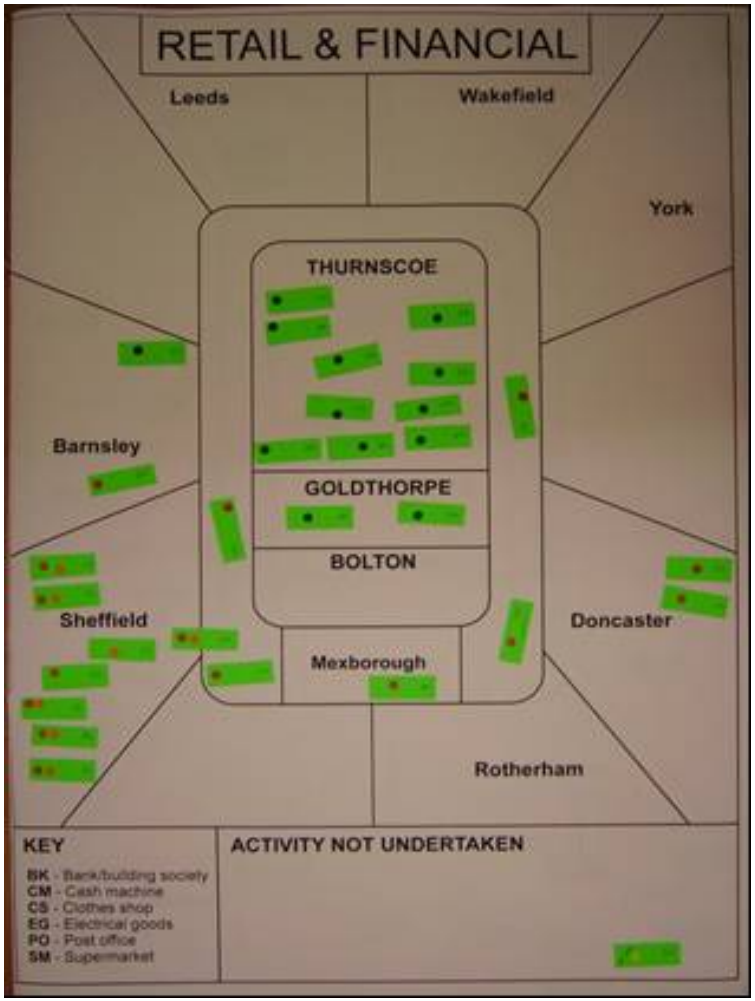
Accessibility Planning Options

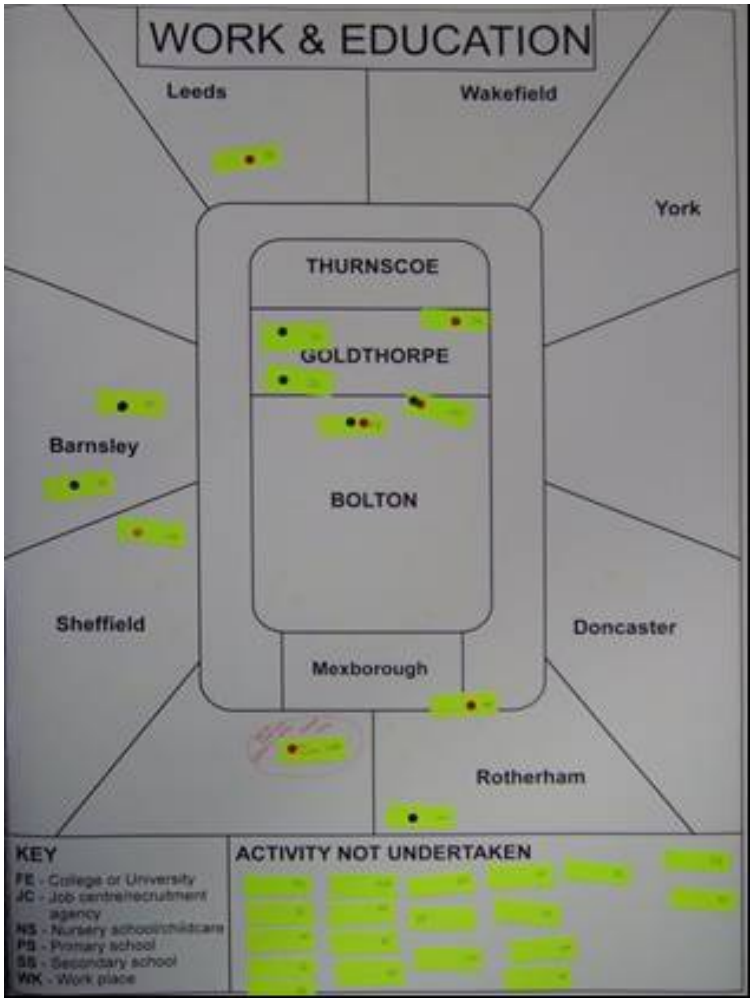
Development of several techniques:

- To assist with problem diagnosis as well as option identification
- Some designed for use with local residents
- Others designed for application by sector professionals
- Includes consideration of distributional impacts

Resident Discussion Groups:

Existing Access Patterns





Resident Discussion Groups:
Exploring Options

Professional Workshops:
Investigating Spatial Strategies

Defining Type of Service Provision

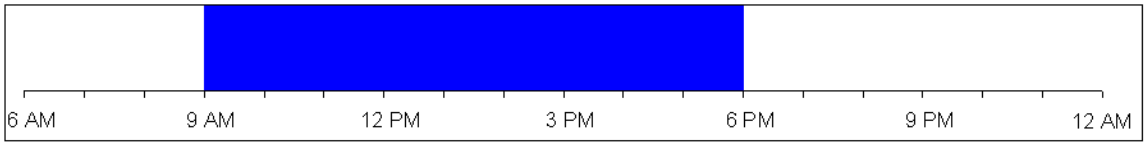
What	**Hospital Outpatients**		
Where	At Home	Home Service/Delivery	○
		Telephone/ Internet	○
	In Villages	Mobile Service	○
		Local Service	○
	In Wider Area	Direct Public Transport Access	○
		Public Transport Access via Interchange	◉

When

Monday-Friday

Add service

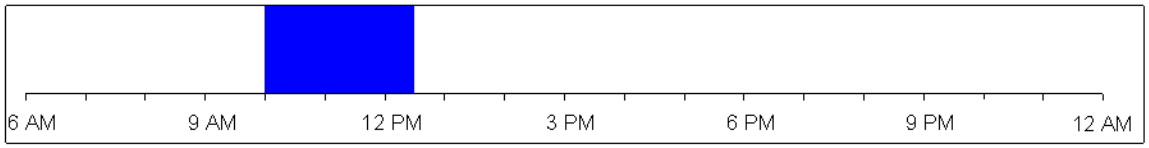
Reset



Saturday

Add service

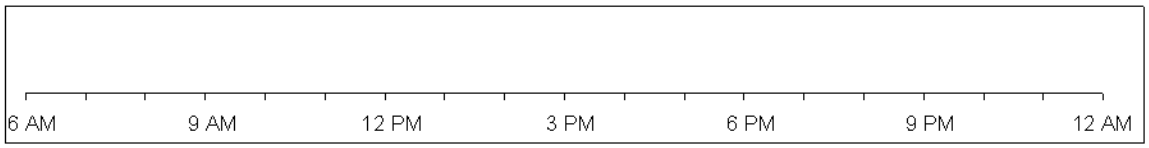
Reset



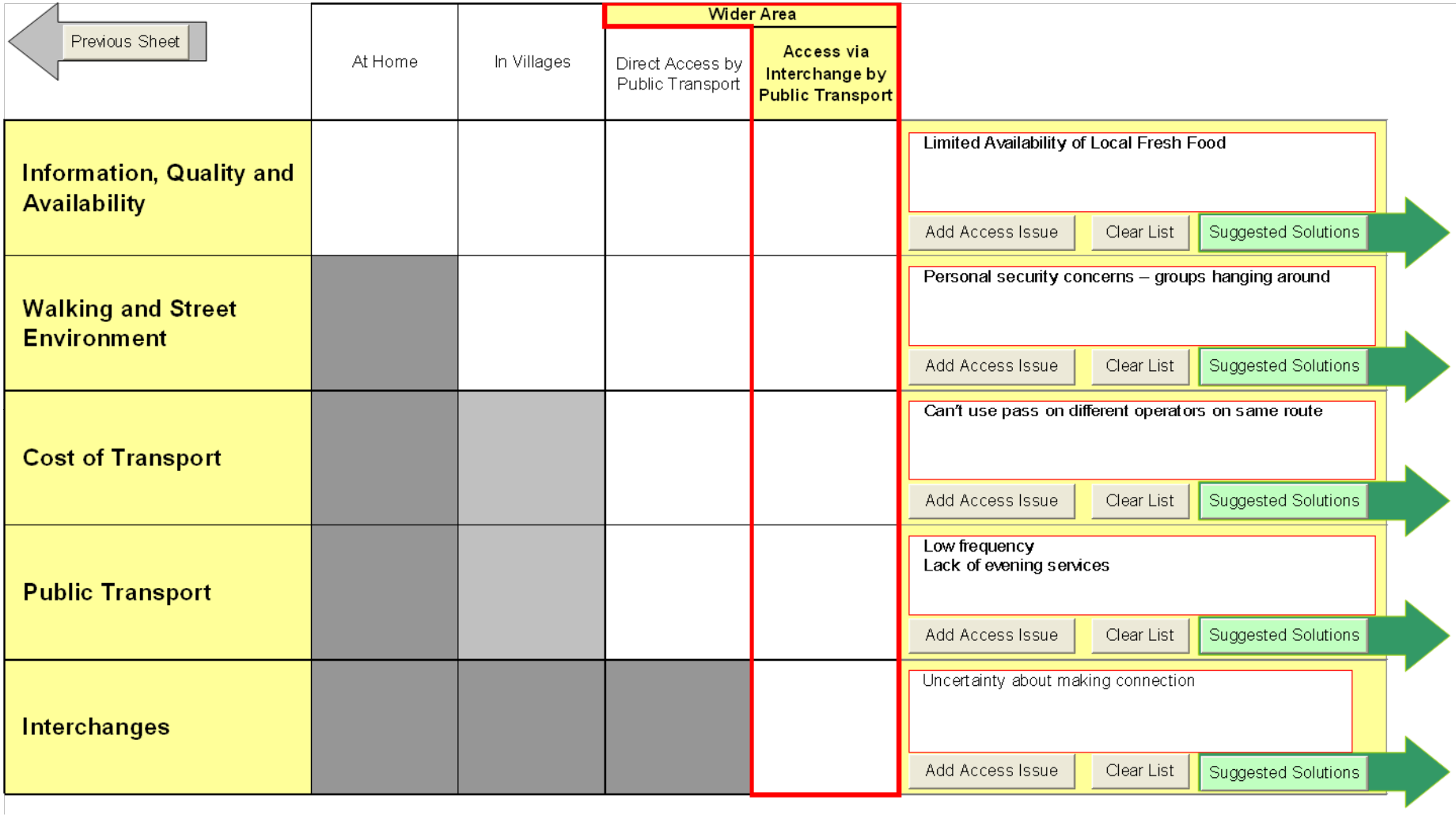
Sunday

Add service

Reset



General Problems Relating to Residential Location



Solutions: Known Options

Walking and Street Environment			
Problems	Solution 1	Solution 2	Solution 3
Pavements not suitable for buggies and wheelchairs (too narrow or pavement parking)	Widen footways	Ban pavement parking and enforce	Designate priority walking routes, with better physical conditions, maintenance and enforcement
Cars drive too quickly on residential streets	Introduce physical speed reduction measures: speed humps, chicanes	Use of regulations: 20 mph speed limits, give way at junctions, park on alternate sides of street	Enforcement of speed limits
Unsafe crossing places at junctions	Provide informal crossing facilities: refuges, speed tables	Provide zebra, pelican or puffin crossings	
Unsafe crossing places at bus stops/stations	Provide informal crossing facilities: refuges, speed tables	Provide zebra, pelican or puffin crossings	Resite bus stops to safer locations
Personal security concerns – poor lighting	Improve lighting levels and colour	Remove potential hiding places and improve sight lines	
Personal security concerns – groups hanging around	Provide community wardens	Improve leisure facilities for young people	School sessions, to encourage more responsible behaviour

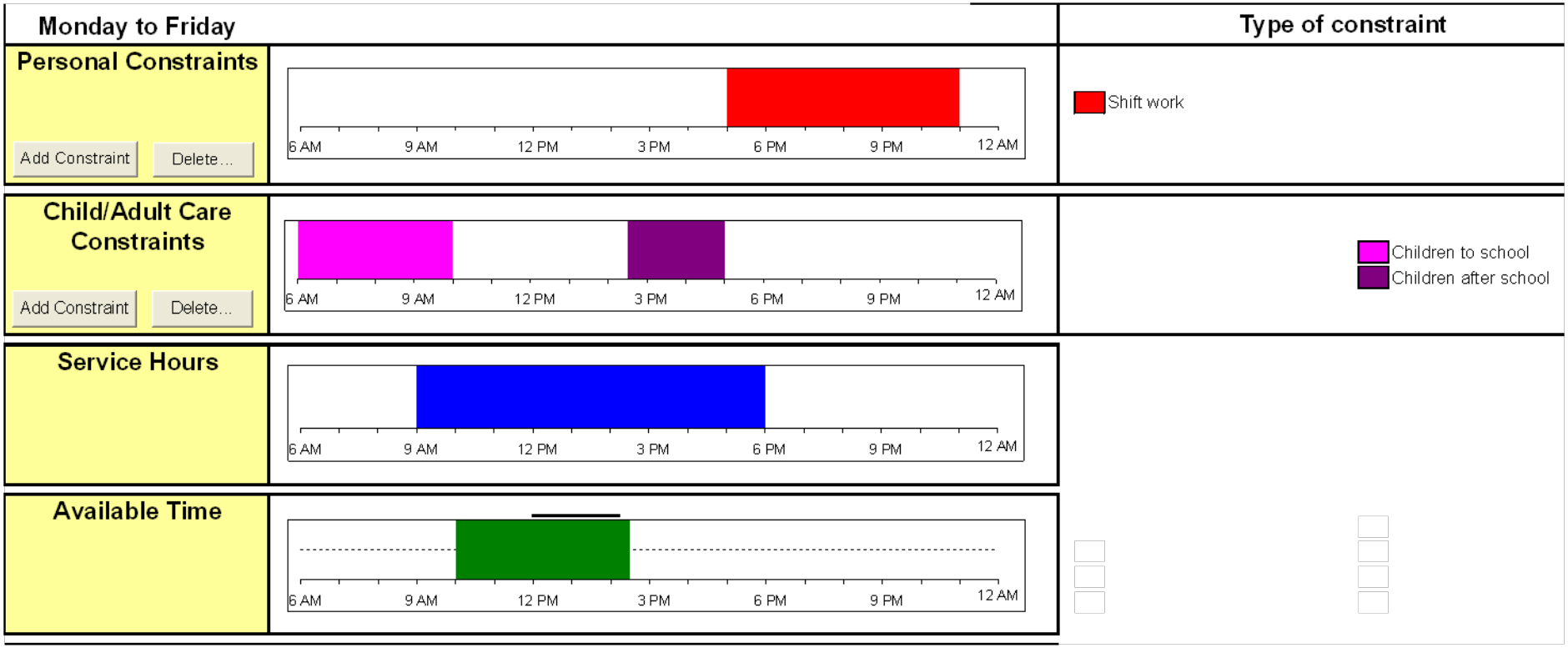
Solutions: More Open Options

- Re-DEFINE types of services provided?
  - Align more closely to customer needs
- Re-LOCATE points of service delivery?
  - Become closer to customers/users
- Re-TIME patterns of service delivery?
  - Align with customer timing needs
- Re-FRESH services?
  - To improve quality
- CO-OPERATE with other agencies?
  - ‘Joined-up’, seamless service delivery, for better efficiency and effectiveness

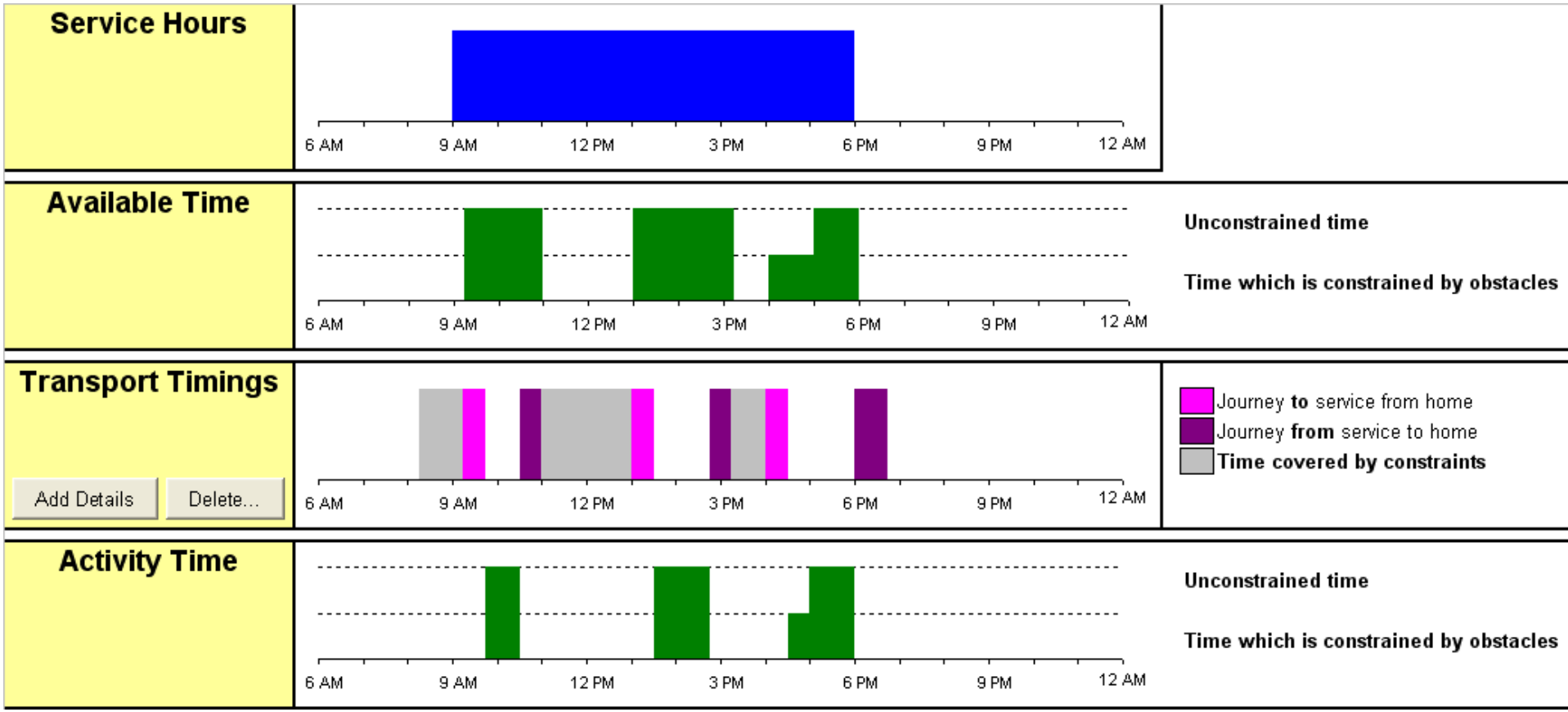
Distributional Impacts

- For different groups of people
- For different residential locations/public transport service patterns
- For different sector agencies

Constraints: Young Families



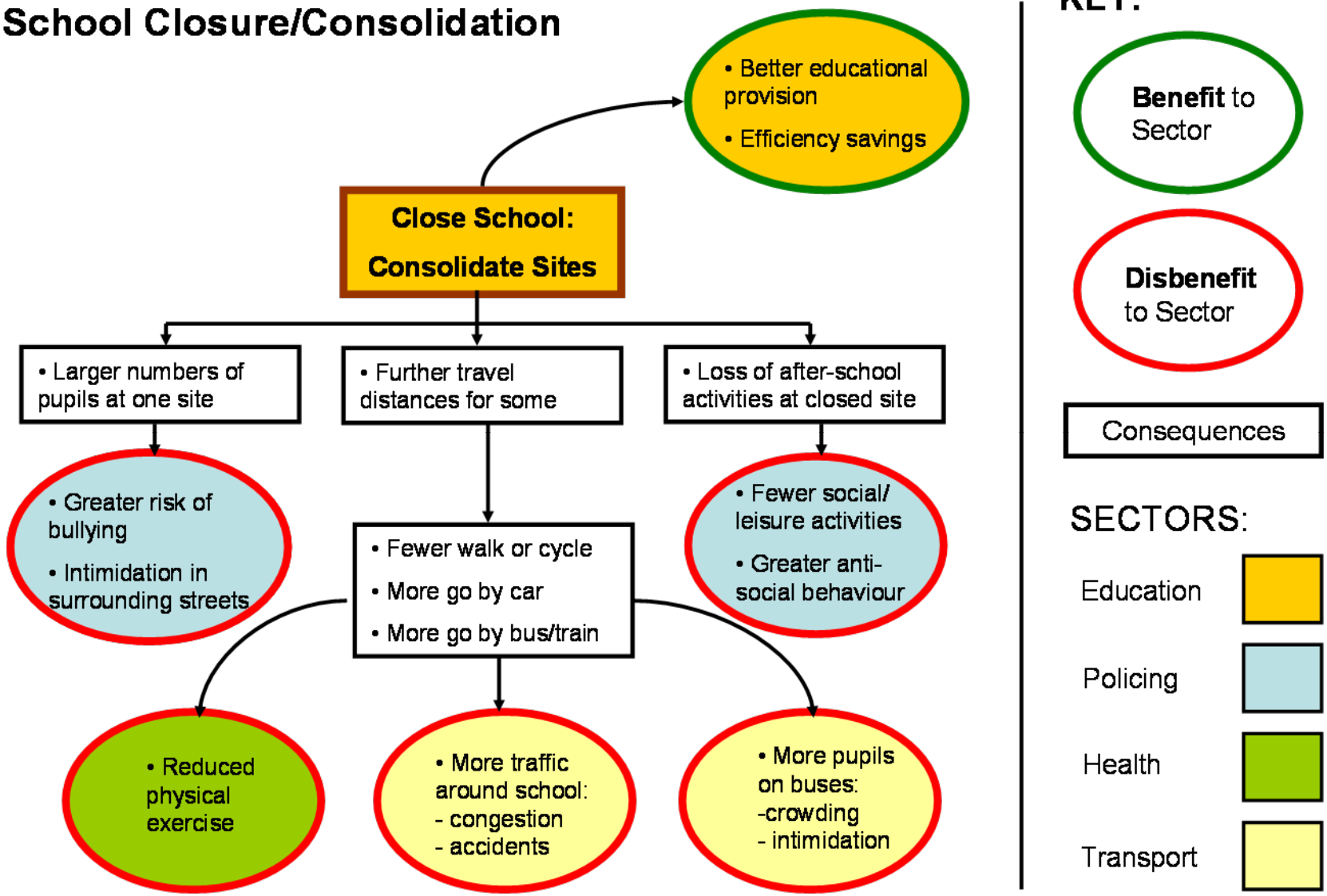
Problems Relating to Location: Public Transport Timings



Distributional Impacts: Agencies

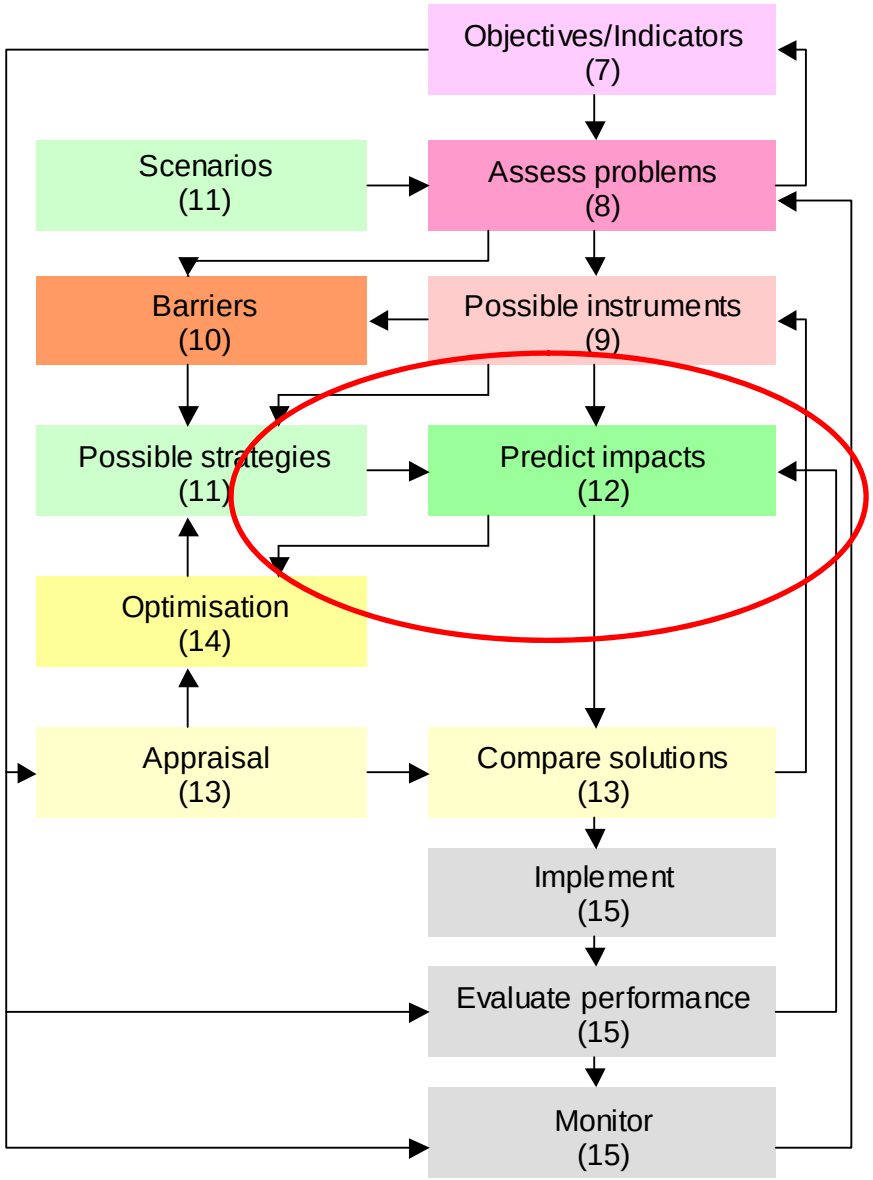
- Sectors work to tightly drawn targets, or profit seeking criteria
- Efficiency savings are sometimes based on externalising internal costs
- So, changes in service delivery patterns in one sector can have (negative) impacts on others

Cross-sector Impacts



C: MARS Strategic Policy Simulation and Optimisation

Objectives

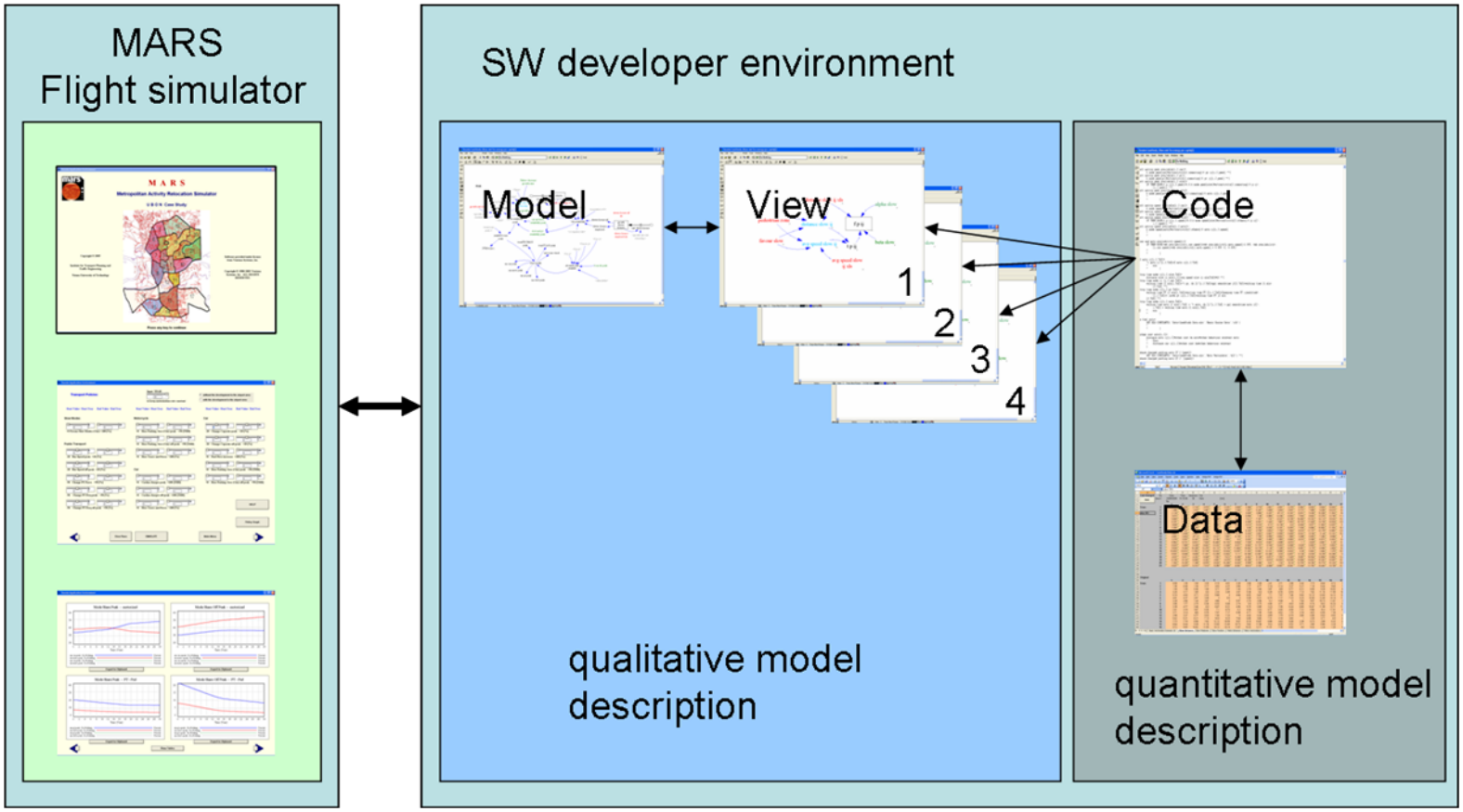


To enhance sketch planning models so that they can be used by a wider range of stakeholders

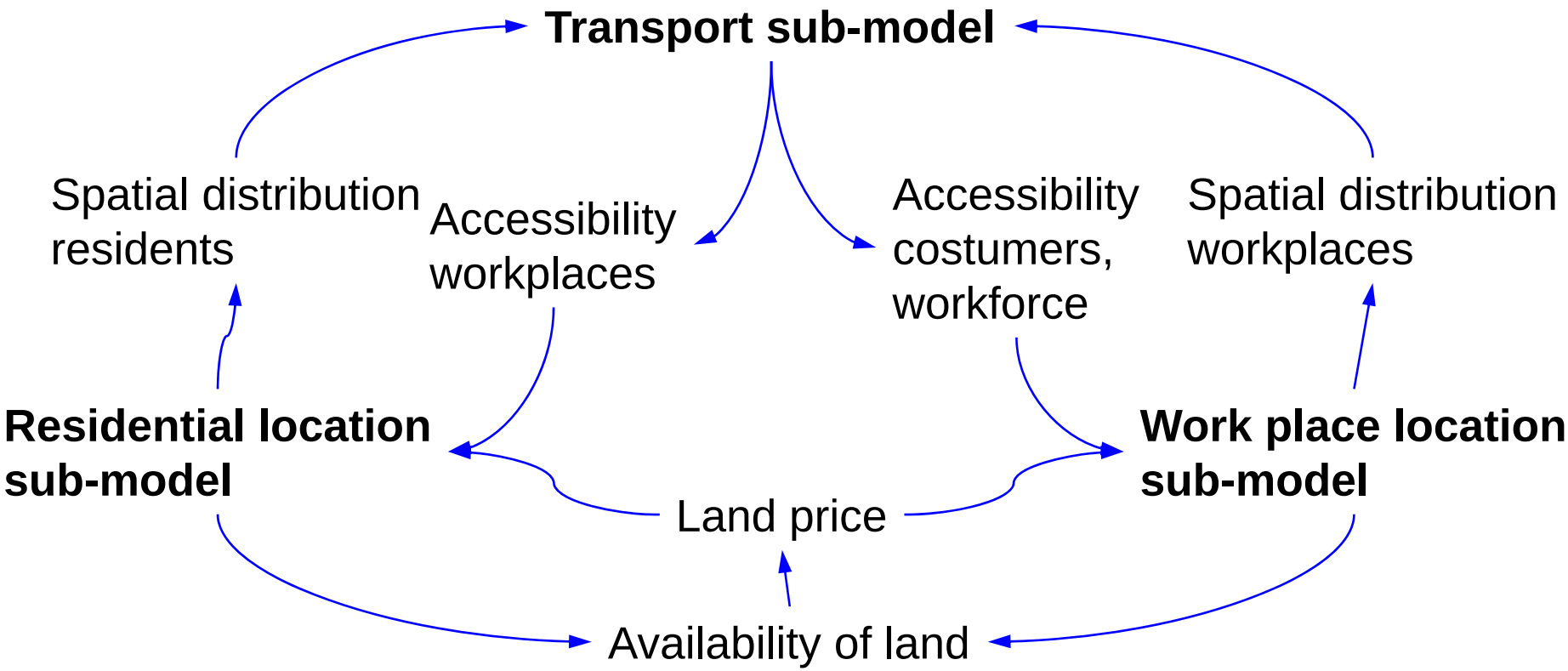
The dynamic land use & transport interaction model MARS

- Works on a rather high spatial aggregation.
- Includes feedback loops between land use and transport systems.
- Includes the relevant regional means of transport.
- Deterministic in each iteration but it’s markets are not necessarily in equilibrium.
- Designed to identify best performing land use and transport strategies.
- As transparent as possible („White box“).

MARS – Overall structure



Sub-models, basic structure



Reference:
P. Pfaffenbichler, G. Emberger, S. Shepherd: "*The integrated dynamic land use and transport model MARS*"; XIV Congreso Panamericano de Ingeneria de Tránsito y Transporte, Las Palmas de Gran Canaria. 2006.

Changes made in DISTILLATE

- Heavy Rail model incorporated for urban stations in Leeds
- Congestion added to the off-peak
- Quality factors for bus corridors
- Representation of increased parking search time due to parking capacity
- Over crowding on public transport
- Add awareness campaigns as a policy instrument
- Improve the flight simulator front-end
- Link output to the dynamic GIS software Animap

Reference:
S. Shepherd, J. Shires, P. Pfaffenbichler, G. Emberger: "Improving the capabilities and use of strategic decision making tools"; 11th World Conference on Transport Research (WCTR), University of California, Berkeley, CA/USA. 2007.

MARS – Starting screen

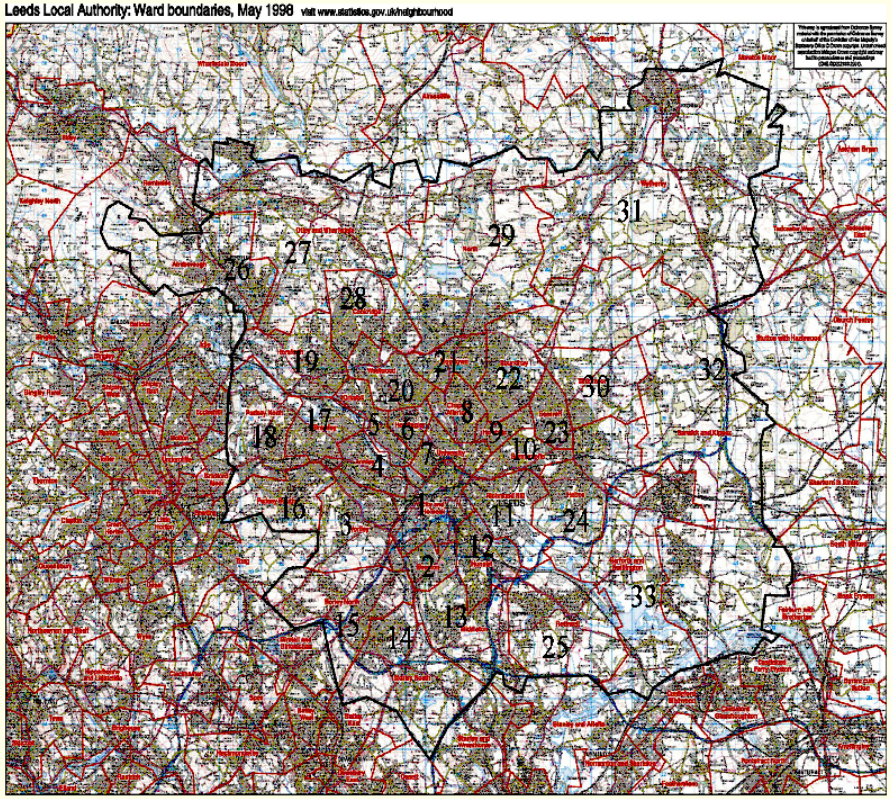
Vensim Application Environment

mars

M A R S

Metropolitan Activity Relocation Simulator

L E E D S Case Study

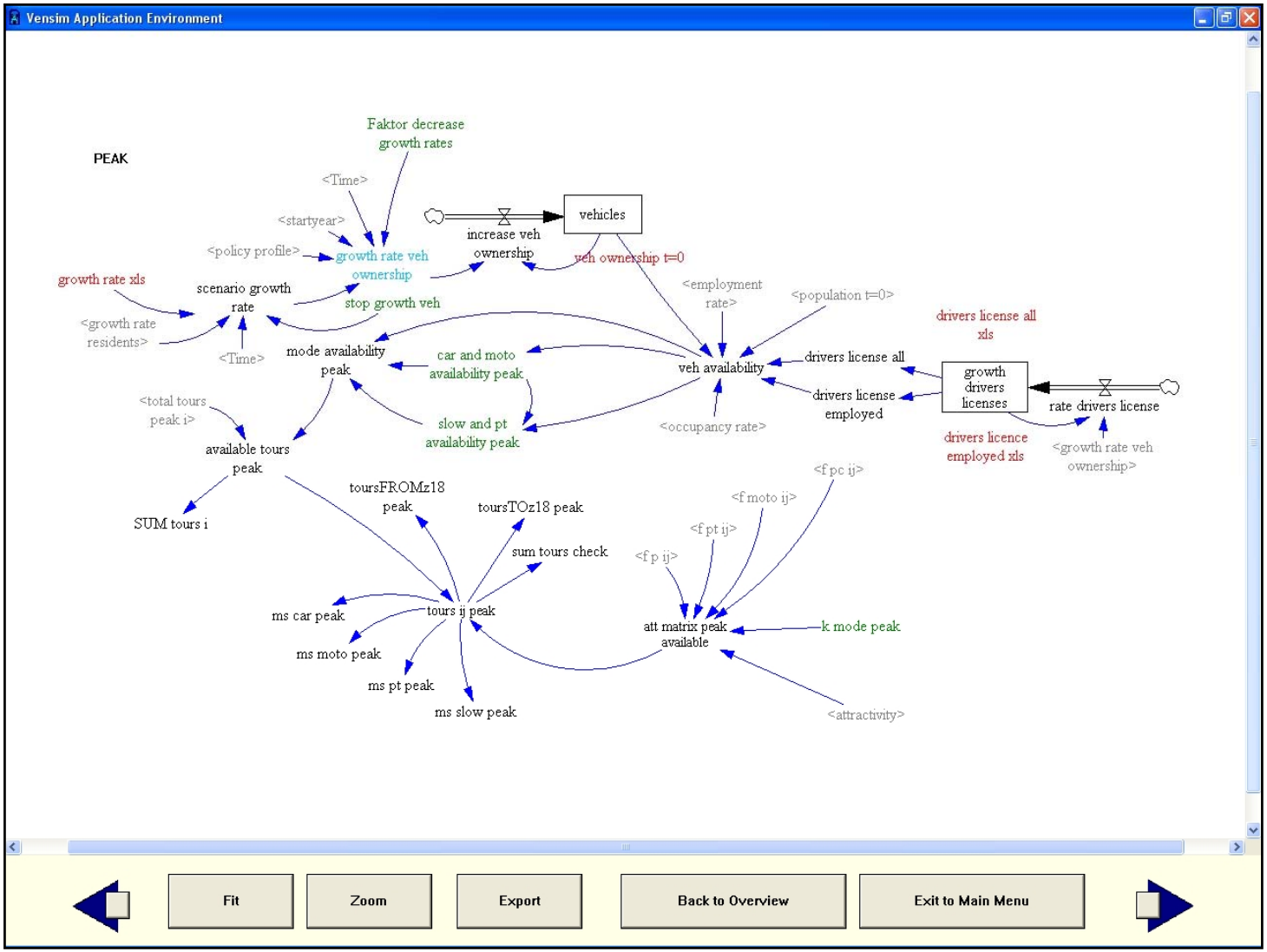


Press any key to continue

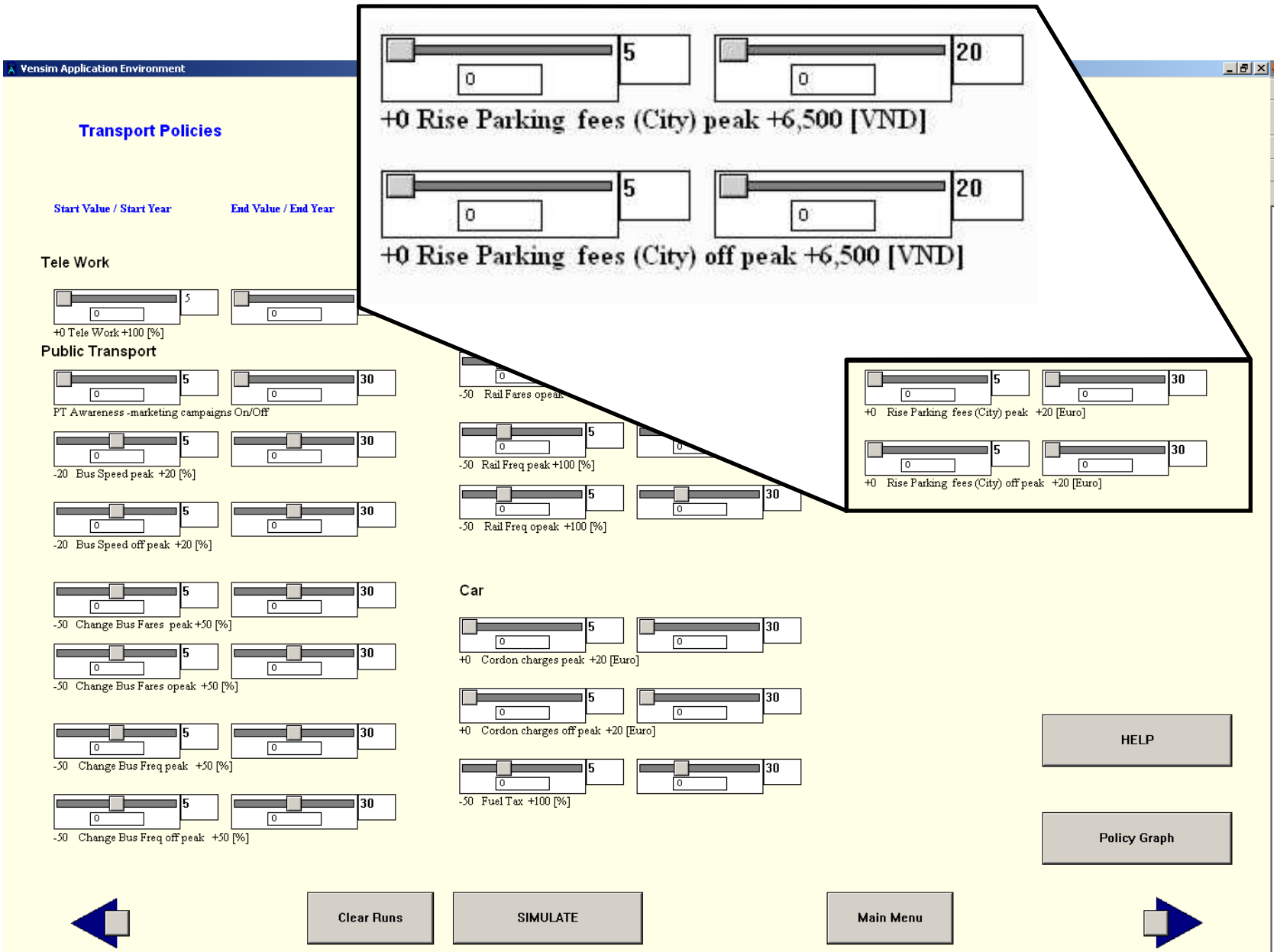
Institute for Transport Planning and Traffic Engineering

Vienna University of Technology

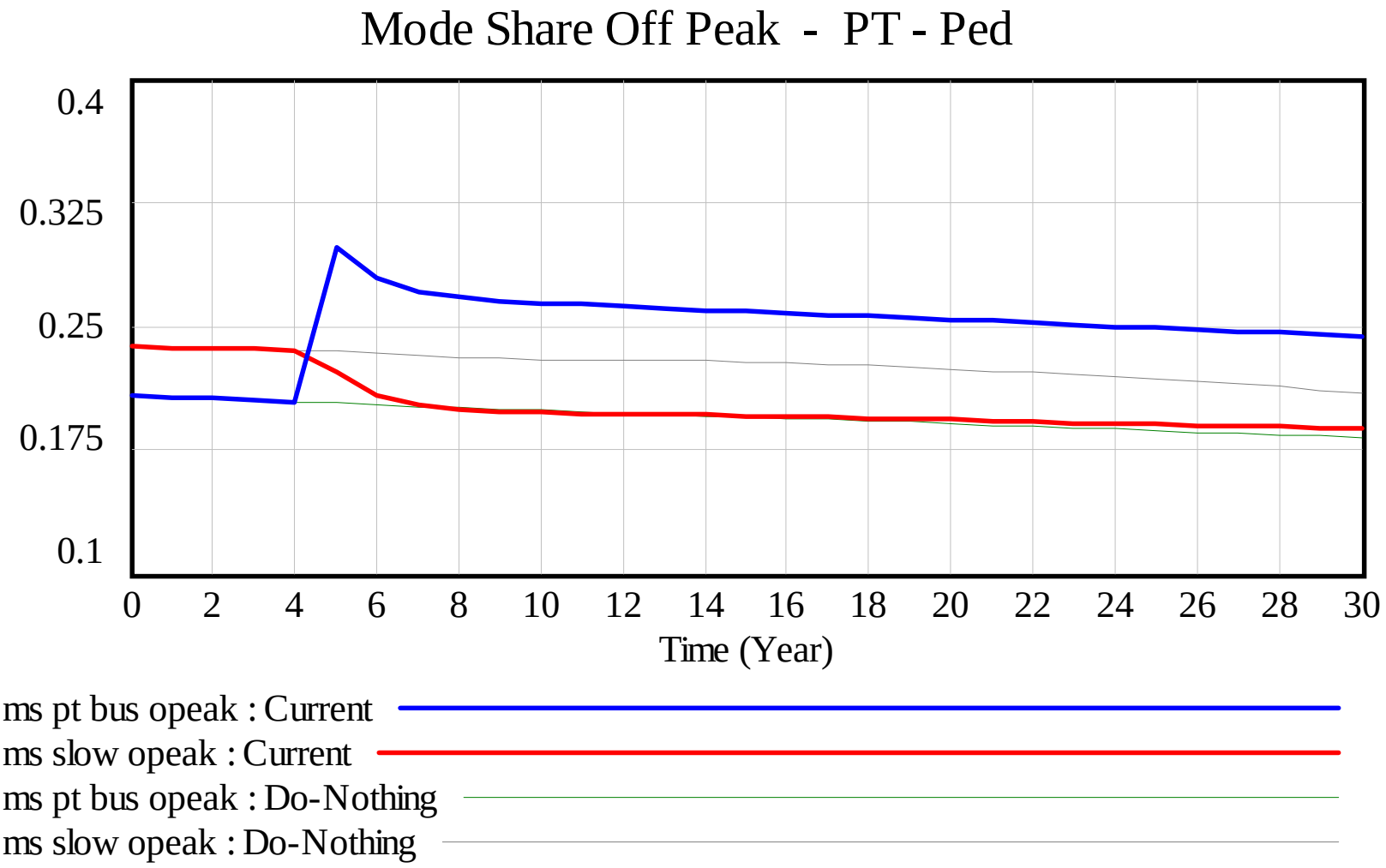
MARS – Review structure

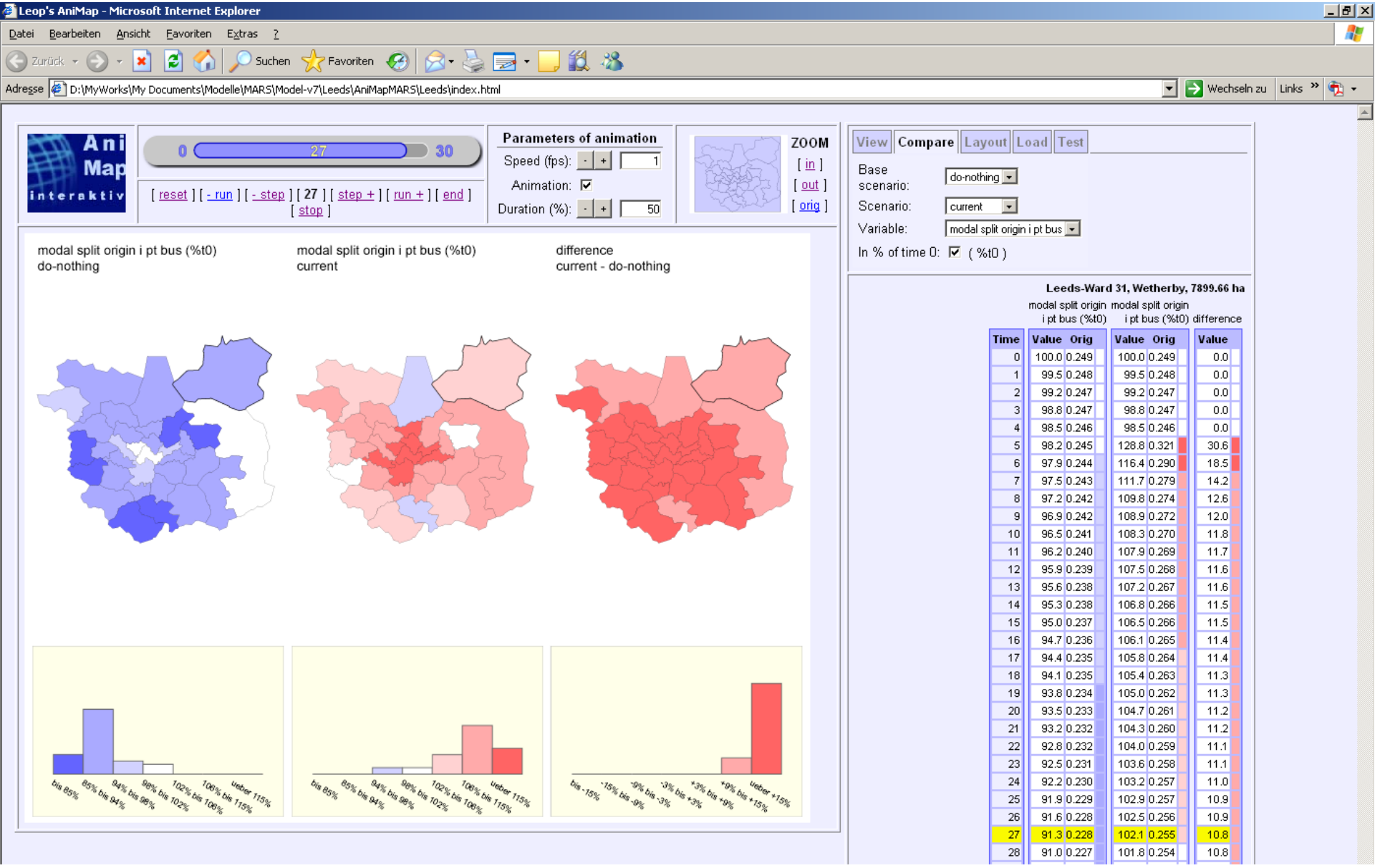


MARS – input screen



MARS – Output tools





Hocevar, A., Lunak, D., and Riedl, L. "Darstellung von Zeitreihen räumlicher Daten mittels WebMapping." Schrenk M. (Hrsg.): Beiträge zum Symposium CORP2004, Wien