



Successful Travel Awareness Campaigns
& Mobility Management Strategies



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6.2 Sustainable Development

1.6.2 Sustainable Surface Transport Objective

3.1.1.1.3 Advancing Knowledge on innovative measures in urban transport

Title of Report:

Comprehensive State of the Art Report

Annex B1.2

Assessment Tools

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MAX - introduction

MAX is the EU's latest framework research project on Mobility Management (MM) and Travel Awareness (TA) in transport. Four thematic Work Packages (WP) will link these topics to develop products of use to MM and TA practitioners:

- WP A New approaches and innovative campaigns in MM
- WP B Development of a new behaviour change model and a prospective assessment tool
- WP C Linking MM to Quality management - leading to MM certification
- WP D Integrating planning and MM

Accompanying Work Packages 1 - 5 will integrate the research efforts. MAX started in October 2006, the State of the Art analysis will be finished in April 2007 and the main research will be carried out over the following 18 months.

Previous EU research on MM has in the main studied MM and TA separately, but MAX aims to link them to demonstrate the synergies between them and, importantly, to develop products that will be of wider applicability and usefulness than the pilot demonstrations that tended to predominate in earlier projects.

A special focus is on new Member States, as reflected in the partners from 16 EU countries, 4 of them new Member States. The consortium will provide excellence, know-how and experience from various disciplines, including marketing, psychology and social science. The main results will be translated into the most important languages of these countries, while the final conference will be in the largest new EU Member State, Poland, in the city of Cracow, in September 2009.

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1 Annex B –State of the Art WP B 1.2 prepared by TFC

In WP B an extensive research concerning the state-of-the-art of prospective assessment tools for MM measures and campaigns has been conducted. Not surprisingly, no assessment tool that fits this purpose has been found. But some tools could be detected that have been set up for the ex-post assessment of MM measures and/or campaigns, looking at a wide range of levels of change. Others have been applied in similar fields (especially travel demand management) but concentrated only on the aggregated impact of TDM programs on the transport system without taking the individual behaviour changes into consideration. All those approaches can nevertheless offer important details for the development of a prospective assessment tool for MM measures and campaigns in MAX and are therefore roughly described in the following.

1.1 Ex-Post Assessment Tools for MM Measures and Travel Awareness Campaigns

The following tools have been developed in the past for the ex-post assessment of MM measures and/or travel awareness campaigns and have been looked at in detail for this state-of-the-art report:

MOST-MET, the Monitoring and Evaluation Toolkit of the MOST-project

SUMO System for Evaluation of Mobility Projects by Trivector

CAG, the Campaign Assessment Guidance of the TAPESTRY-project

1.1.1 MOST-MET and SUMO

For the assessment of all ranges of MM programmes (e.g. mobility centres, mobility management for companies, schools, leisure sites and tourist destinations) the *MOST Monitoring and Evaluation Toolkit MOST-MET* has been developed as a step-by-step guidance that leads the user through the assessment process.

The *SUMO System for Evaluation of Mobility Projects* is a user-friendlier further development of MOST-MET that has been adopted by the Swedish Road Administration (SRA) for the evaluation of SRA co-financed travel behaviour projects. Another further development is the SARA database that will accumulate results of projects that have been evaluated with SUMO.

The project assessment of both approaches is based on the comparison of the situation before and after the implementation of MM programmes and the comparison of the achieved changes versus measurable objectives that have been defined at the beginning of the process. The indicators that are used to measure changes result from the levels of change that are reflected in the assessment levels as described in figure 1. They show the changes especially on the individual level of the target group members.

Both MOST-MET and SUMO defined a minimum set of data (basic data set or compulsory input) that is required for the use of the assessment tools. As a standardised and comparable set of data it can be used for benchmarking with other MM programmes.

The strength of MOST-MET and SUMO approach are the assessment levels that include all important indicators that are required to measure changes as initiated by MM measures. The assessment levels follow the stages that an individual passes through when changing its behaviour. Hence, success of the applied measures can be measured even before the final step (realised permanent change in travel behaviour) has been made.

Possible input to the prospective model

Although the MOST-MET / SUMO approach is a before and after evaluation tool, SARA's collection of data from several MM programmes might become a valid input for a prospective model. Based on findings made when assessing programmes a statistical analysis could be the basis for a prospective assessment tool (See also “Worksite trip reduction model”). But it will probably take longer than MAX's lifetime to collect enough relevant data to be able to predict changes in the assessment levels based on the combination of measures implemented at a certain site or region.

1.1.2 CAG

The *Campaign Assessment Guidance CAG* is a combined planning, management and assessment tool for campaigns. The most important part for the development of a prospective assessment tool is the “Seven Stages of Change Model”. It offers an ex-post comparison of the situation before and after (or with and without) the implementation of a campaign concerning the assessment levels shown in figure 1 (TAPESTRY, 2003).

The success or effectiveness of a campaign is measured by comparing measurable objectives with the actually achieved outcomes. The attributions of outcomes are measured using a control group design, the monitoring of external factors (where control groups could not be used) and the examination of campaign recall. In addition CAG incorporates input records in terms of costs and output records (materials provided; events/actions realised). Based on this the CAG allows the assessment of the campaign's efficiency.

Possible input to the prospective model

The TAPESTRY approach is currently not meant to be prospective. A statistical analysis of the results from campaigns within and after TAPESTRY might also be a basis for a prospective assessment tool. But as with MOST this will probably take longer than MAX's lifetime to collect enough relevant data to be able to predict changes.

Figure 1 shows the strong similarities between the assessment levels as used in MOST-MET, SUMO and CAG. This is not surprising since they are all meant to demonstrate the individual step by step development of the target group members from awareness rising, thinking about and accepting the offered alternatives to an individual behaviour change. Nevertheless there are some important differentiations. While MOST-MET and SUMO start with the awareness of the offered MM services the CAG concentrates on the awareness of the problems addressed in the campaigns and the acceptance of a personal responsibility for the consequences following the individual behaviour. Obviously it might not help to be aware of MM services when the awareness of the problems is not given. Hence a successful MM approach and/or awareness campaign should start with rising problem awareness. Accordingly it's assessment should include this as well. On the other hand CAG - as a campaign assessment tool - does not measure the demand of and satisfaction with MM services since no services are offered in a pure campaign. A tool that is made for MM and campaigns should probably include all measures. Further consideration should be given on the required levels of an prospective assessment tool if that is developed based on the tools mentioned before.

MOST-MET	SUMO	CAG
	Useful achievements	
		Awareness of problems
		Accepting a level of personal responsibility
Knowledge of MM services	Awareness of mobility services	
Usage of MM services	Degree of use of mobility services	
Satisfaction with MM services	Satisfaction with mobility services	
Acceptance of travel options	Acceptance of the offer	Perception of options
		Evaluation of options
		Making a choice
Experimental individual travel behaviour	Experimental individual behaviour	Experimental behaviour
Satisfaction with travel option	Satisfaction with the offer	
Permanent individual travel behaviour	Permanent individual behaviour	Habitual behaviour
Impact on city wide transport system	System impact	

Figure 1: Assessment Levels of MOST-MET, SUMO and CAG

1.2 Models for the predictive assessment of Travel Demand Management Programmes

Four models for the predictive assessment of TDM programmes have been investigated:

COMMUTER

Worksite Trip Reduction Model

TEEM TDM Effectiveness Estimation Methodology

Workplace Travel Plan Evaluation Tool

The overall aim of those three models is to estimate changes in vehicle travel that result from TDM strategies before their implementation. They have been set up in addition to already existing conventional transportation analysis tools because the latter are unable to address many of the voluntary TDM measures. Furthermore, their

use is in general very complex which limits their application to trained specialist and at the same exclude employers and others interested groups that are engaged in TDM programs in general.

All three models use baseline data of vehicle trips or mode share as input from local sources, e.g. transport models. The predicted changes are calculated as incremental changes based on these baseline conditions. So, instead of re-running the usual four-step process of traditional transport models, it extrapolates any changes from the existing conditions.

The size of the expected changes is based on different empirical analyses as is described in the following.

1.2.1 COMMUTER

COMMUTER is a spreadsheet-based computer model that has been developed to calculate the travel and emissions effects that might result from implementation of voluntary employer transportation management programs. It is most appropriately applied to a single worksite, an employment centre or a subarea. It is not designed for regionally significant projects.

The COMMUTER model addresses two types of users. The Metropolitan Planning Organisations and state Departments of Transportation are supported in assessing the emissions impacts of Transportation Control Measure Strategies. The individual employer can use the model to assess the likely effectiveness of various measures they might be willing to set up.

The model is based on a two step procedure:

As a starting point for the model the user has to provide some basic information to the model in order to establish a baseline, from which to measure changes, as well as to communicate some important local conditions that are used in performing the analysis.

Selection of strategies and development of scenario from given options - the model offers a number of different strategies and uses different procedures for calculating travel response to workplace commuting strategies.

Strategy Clusters	procedure for calculating travel response
<p>Employer TDM Support Strategies: Non-monetary inducements to encourage employees to use alternative modes rather than drive alone. These include rideshare matching services, vanpool formation assistance, on-site transit information and/or pass sales, transportation coordinators, guaranteed ride home.</p>	<p>Look-Up Tables: Relational factors from empirical research, arrayed in look-up tables where increments of change are associated with particular types of programs, reflecting different application assumptions, levels of intensity, and setting.</p>
<p>Alternative Work Schedules: Arrangements such as flexible or staggered work hours, compressed work weeks, and telecommuting.</p>	
<p>Travel Time Improvements: On-site or adjacent area modifications to improve access to work sites from transit, or by walking or biking. Also includes preferential (close-in/reserved) parking for carpools or vanpools, and improvements to transit service.</p>	<p>Logit Pivot-Point Model: A multimodal pivot-point model using coefficients and computational procedures from accepted logit-based mode choice models. theoretical basis: economic utility theory</p>
<p>Travel Cost Changes: Measures such as imposition of parking fees, differential rates or discounts for carpools or vanpools, transit fare subsidies, or in specific modal incentives or disincentives to any or all modes.</p>	

Calculation of emission impacts based on changes of in Peak/Off Peak VMT and trips:

Reductions in VMT and vehicle trips due to the TCM strategies are computed by subtracting existing activity levels from the “final” (after-TCM) activity levels.

VMT-based emissions changes are calculated for peak and off-peak periods, based on changes in VMT and on average regional speeds by period and facility type.

Start-based emissions changes are calculated for peak and off-peak periods, using start emission factors and the change in number of starts.

VMT- and trip-based emission reductions are summed together. Daily reductions are also summed from peak and off-peak reductions.

Although COMMUTER offers the possibility to predict changes based on employer TDM support strategies and alternative work schedules the empirical evidence for these factors are very limited. They are currently based on research and professional judgement. Further restrictions are seen in the substantial variation of framework conditions of a given programme (e.g. characteristics of a worksite, the employees and the effectiveness of the implemented measures). Nevertheless, COMMUTER is the only model that uses various programme levels for this kind of services, reflecting four discrete categories of effort. The most robust predictive power is therefore seen in the measures that directly affect travel time and travel costs. They are modelled using a nested logit approach.

1.2.2 Worksite Trip Reduction Model and Manual

The Worksite Trip Reduction Model predicts the extent that each incentive, disincentive or program would impact traffic volumes and parking needs in a specific worksite. It allows transportation engineers, local planners, developers, employers, and transportation demand management professionals to easily input various

programs, incentives, disincentives, and worksite characteristics to obtain predictions about the change in vehicle trips from that mix of tactics. In the planning phase it allows a quick assessment of different worksite-based transportation demand management strategies on traffic volumes and parking impacts.

The model was built on the basis of several thousand before/after worksite trip reduction plans using data from three urban areas in the United States: Los Angeles, Tucson, and Washington State that have had trip reduction requirements for employers for many years. They require employers to submit plans to reach a particular objective such as a reduction in the levels of single occupant vehicle (SOV) use.

The used data consists of worksite modal characteristics aggregated at the employer level and a listing of incentives and amenities offered by employers. For performance evaluation the datasets were divided in two disjoint sets 'training/testing set' which was used to build the models and 'validation set' which was used as an unseen data to evaluate the models.

The dependent variable chosen was the change in vehicle trip rate (VTR) (e.g., reduction of 4.5 vehicles per 100 employees) that correlates closely with the goals of TDM – reduce trips, decrease air pollution, decrease the need for parking – and is generally proportional to the desired result.

For the model building process two approaches were used: linear statistical regression models and non-linear neural networks. The linear statistical regression models were used as a benchmark for the validity and accuracy of the neural net models. The linear statistical regression models minimize the sum of the error between the real and predicted data, learning simple linear relationships between the worksite characteristics, incentives and the change in VTR, while the neural networks learn more complex non-linear relationships. Sometimes linear regression methods were used to determine which variables the neural net would use to build its models. The best results in all three cities could be achieved by a neural network model.

The incentives and amenities used in the worksite trips reduction plans were combined in the following incentive groups:

- Facilities & amenities
- Guaranteed ride home programs
- flexible timing
- marketing programs
- ride share matching programs
- financial incentives
- parking management
- telecommute programs
- compressed work week programs
- on-site incentives
- non-financial incentives
- commuter tax benefit incentives

These incentive groups have been applied in various combinations in the original worksite trip reduction plans. For the 50 most applied combinations the expected change in vehicle trip rates (VTR) for a locally given transit

share and baseline VTR is given in a number of tables in the manual. These tables can be used to estimate changes in VTR in the planning phase of a worksite trip reduction plan.

Although the model was set up for Los Angeles, Tucson and Washington State in the first place, an easy to use, web-based version has been set up as a generalised model for any urban area

1.2.3 TEEM

TEEM is an analytical tool for the predictive quantification of the effectiveness of TDM and land use strategies in reducing vehicle travel on a regional level. It is a post-processing model drawn primarily from local data sources (incl. Washington State's Commute Trip Reduction program, that comprises data from employers with 100 or more employees about their trip reduction programmes from 1993 onwards). TEEM has been programmed in a complex Excel spreadsheet workbook.

It allows testing 20 different TDM and land use strategies at the neighbourhood, sub-area or corridor level helping the user to quickly identify a bundle of the most effective strategies (cf. figure 2). The calculated impacts of each strategy are based on an individual Strategy Effectiveness Methodology. The required input data come from local and national research as far as applicable.

The predicted effects are calculated as incremental changes of existing local transport model outputs. The model can estimate the changes in travel patterns that would most likely result from a combination of TDM and land use strategies. Therefore, data is required that describe the baseline conditions (population, employment, distribution of employees by employer size, number of person trips by mode and purpose, quantity of transit service, pedestrian and bicycle facilities) that currently exist or would exist in the future without the implementation of any strategy. Baseline data have been developed for the years 2000, 2020 and 2030.

For the tested strategies the incremental changes for any year up to 2030 can be estimated for the following five performance measures:

- PM peak-Period Commute Vehicle Trips
- Daily Commute Vehicle Trips
- Daily Commute Vehicle Miles of Travel (VMT)
- Commute Trip Drive Alone Mode Share
- Non-Commute Travel

TEEM also allows the estimation of costs for the tested strategies using the following cost categories:

- Cost that apply to all people within a population that is targeted for mode shift.
- Cost that apply to all participants in a program.
- Cost that apply to only those who change mode in response to a program.

<p>Mode Shift Support Strategies</p> <ol style="list-style-type: none"> 1. Vanpooling 2. Alternative Mode Subsidy 3. Universal Transit Pass 4. VanShare 5. Guaranteed Ride Home <p>Parking Management Strategies</p> <ol style="list-style-type: none"> 6. Restricted Parking Supply 7. Parking Pricing at Employment Sites <p>Alternative Work Schedules Strategies</p> <ol style="list-style-type: none"> 8. Telecommuting 9. Compressed Work Week <p>Programmatic and Policy Support</p> <ol style="list-style-type: none"> 10. CTR-Type Programs for Smaller Employers 11. Multi-Employer Transportation Management Associations (TMAs) 	<p>Marketing and Promotion</p> <ol style="list-style-type: none"> 12. Marketing and Promotion <p>Bicycle and Pedestrian Facilities</p> <ol style="list-style-type: none"> 13. Improved Bicycle Access 14. Improved Pedestrian Access <p>Non-Commute Strategies</p> <ol style="list-style-type: none"> 15. Shopping Trip Demand Management 16. Special Event Demand Management <p>Land-use Strategies</p> <ol style="list-style-type: none"> 17. Increased Density Near Transit 18. Increased Mixed-Use Development 19. Increased Infill Development and Densification <p>Increased Transit Service</p> <ol style="list-style-type: none"> 20. Increased Transit Service
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Figure 2: TEEM's 20 TDM and land use strategies

The model includes more measures than the COMMUTER or WSTR Model, including many strategies that are best implemented by the public sector (e.g., transit service improvements, regulations, etc.). On the other hand the accuracy and validity of the model's forecasts are difficult to specify (as generally with TDM effectiveness). The experiences with forecast tools like TEEM demonstrate a wide range of effectiveness. The Commute Trip Reduction data demonstrated the effectiveness of TDM programs at reducing commute trips and VMT, but the individual rates of effectiveness vary widely. A review of US experience with TDM and land use strategies showed a wide range in the rates of strategy effectiveness that makes the quantification of the accuracy of predictive assessment tools for TDM strategies difficult.

1.2.4 Workplace Travel Plan Evaluation Tool

The Workplace Travel Plan Evaluation Tool is a tool for the predictive assessment of travel plans in the UK. It predicts quantitative outcomes based on mainly qualitative inputs chosen from a given checklist, based on empirical data of existing travel plans from the UK and the Netherlands.

The tool is closely linked to the UK planning system where travel plans are part of an application for planning permission for a new or expanded site. Hence, it has been developed for the assessment of submitted travel plan documents in the planning process rather than a planning tool for practitioners. The evaluation software assumes that the more of the items that are mentioned in the software framework are referred to in the travel plan document, the greater the likelihood that the plan will have the intended effect.

Each entry in the checklist has a score attached to it; each section of the checklist has a certain weight attached. The final travel plan assessment is based on the total weighted score derived from the checklist. The score of the travel plan is banded and a travel plan can only gain the highest band if it includes disincentive measures and significant public transport incentives, as these have been found to be particularly critical in effective travel plans.

The performance measure used is the predicted SOV reduction based on the range of the overall score the travel plan gained. This reduction is measured against a baseline mode share that is either measured at an existing site or estimated from area-based travel statistics or the TRICS database.

1.3 Databases

All predictive models that have been examined base their forecast on empirical analysis of existing data from travel plans that have been collected over the years. In the US these data has been collected due to requirements of national or state laws. In Europe only two databases are known that might provide a similar bases of travel data: SARA and TRICS.

SARA

SARA will be set up in Sweden in due course in order to accumulate data that has been collected in the process of assessing projects aiming at travel behaviour changes that have been evaluated mainly with SUMO.

SARA is meant to steer the users to use a standardised approach and will store results in a standardised way. This will allow the benchmarking of the outcomes of similar projects as well as the general comparison between different approaches. Eventually, and after deeper analysis, it will be possible to predict results from different kind of projects. These deeper analysis will make it possible to estimate effects in terms of higher traffic safety and better environment in future and to give knowledge on which projects to focus on in the future.

SARA will use the same levels of change as SUMO. Thereby it will be the only database that might allow predictions on peoples awareness, behaviour intentions etc. and is not restricted to aggregated level of the reduction of vehicle usage.

TRICS

TRICS is a database of trip generation data from a wide variety of existing different sites (retail, employment, leisure) around the UK. Surveys are carried out to measure how many people travel to a site, by what mode, at what time of day, and when they leave. The purpose of the database is to provide an estimate of likely trip generation (and mode share of those trips) to/from a new development, by comparing it with trip generation from existing sites.

No effects of neither MM measures nor travel awareness campaigns are included in the database. TRICS could be used to provide estimates of baseline mode shares for individual sites as an input for a prospective assessment model.

1.4 Conclusions

All in all two generally different approaches could be found. On the one hand the ex-post assessment models that are focused on the evaluation of all kinds of MM measures as defined by the European Platform on Mobility Management EPOMM or on the evaluation of travel awareness campaigns. Although not being set up for the predictive assessment they apply a wide range of levels of changes that aim to distinguish the individual development of people starting from a phase of pre-contemplation over awareness rising, usage of MM services, the formulation of an behaviour intention to the individual behaviour change. Seeing that these levels of changes are the basis for a behaviour change, it might be advisable to include them in a prospective assessment model.

On the other hand there are the predictive models that use empirical analysis of large databases and/or professional judgement to predict estimated results of travel reduction programmes. While they can be applied to site-based programmes TEEM can also be used on a regional level. But they all provide results on the aggregated level, showing the estimated reductions of car use at the considered site or region. They do not offer any information on the process of behaviour change at an individual level.

Seeing that MM measures and campaigns do address their target groups on the individual levels of change, a prospective assessment tool should take this process of behaviour change into account. In order to set up a

respective tool, it has to be decided how this can be taken into account and included into the tool. Which levels of change can help to come to early results and help to successfully steer a MM programme or campaign from its very beginning. Therefore a close cooperation within the two parts of WP B will be established.

The empirical data that has been used for the introduced predictive models did not provide data on all levels of change. Only SARA will provide this kind of data in the future. In order to set up, test and validate a prospective assessment tool, empirical data is required. It has to be discussed whether there is any other source that could provide the required data.

In order to set up a prospective model, changes in framework conditions and their resulting external effects (e.g. changes in fuel taxation) on the MM programme or campaign have to be considered. So far, no example for the inclusion of changing framework conditions in a forecast model has been found. All forecast models that were introduced are merely predictive models, that exclude changes in framework conditions.

Baseline data as required by all models can be expected from existing national or regional databases and local transport models in most parts of the EU.

Apart from the predicted results the tool should - if possible - also include information on the expected costs for the planned programme in order to enable planners to identify the expected costs and the benefits.

Most of the models are provided as user-friendly excel-sheets or web-based programmes in order to simplify their usage. The more complex a tool becomes the more important it will be to provide the user with a user-friendly programme and an accompanying user manual or other form of documentation and user guidance. A good example is provided by the COMMUTER Model User Manual.

Finally, a decision has to be made on the kind of MM programmes and campaigns that shall be addressed. Will there be one prospective assessment tool for all kinds of programmes or different tools for programmes on a regional level (e.g. Mobility Centres, Mobility Consulting), site-based approaches (e.g. MM for company, schools, hospitals) and user-groups oriented (e.g. kids, pupils, seniors, citizens, tourists, visitors). Or will there be only one tool for one specific approach?

2**SSRs****2.1 Blank Template - SSR WP B**

Analysed by -Name of organisation and person who did the analysis

List of references / information source -e.g. final report of project, guidelines, URL, list of articles

ACRONYM - full title, name

Level: European, national, regional, local

Start – End Date

Funding institution(s):

country

Name of Institution / Department

...

Consortium / Partners:

country

Name organisation / city...

General Description of the project / case study / campaign**Common Criteria**

Related to WP:

A

B

C

D

Short description of content

Main objectives

Theoretical links / hypotheses / background

science discipline

theoretic assumptions that have served as background and could be of use for MAX

Outcomes and results

qualitative

quantitative

Was there an **empirical evidence of impacts**?

Did an evaluation take place?

Is the methodology convincing?

Weakness and Strength of chosen approach

Success and failure factors

Which **process elements** have been included / investigated?

Selection of stakeholders

Identifying promoters, supporters, opponents

Organisation of process (e.g. in working groups)

Including framework conditions whilst steering the process (e.g. political / cultural environment, legal conditions)

Participation of target groups, affected people

Which of the **process elements** contributed to **success**?

Which **open questions** and **research gaps** have been identified?

Which **suggestions for future research** have been made?

Has the **transferability** of non-transport measures to transport and to content related questions within **WP A-D** been investigated?

Which result?

Has the **transferability** to other **cultural context** or other **countries** been investigated?

Which result?

Opinion on transferability:

Is it transferable and why?

WP B

Criteria WP B 1.1 Predictive Models of Behaviour Change

What is the **purpose** of the

model(s)?

explain / predict behaviour

identify anchorage points to achieve change

(potential) support in designing campaigns

explanations about **progress** but also **stagnation** and **relapse**

Which is the contribution of **campaigns vs. other measures** in

achieving awareness and behaviour change?

role of individual benefits and motives when it comes to triggering change?

role of emotional aspects?

exploitation of models in the area of **sustainable behaviour**, **health promoting behaviour** (dietary changes, smoking, alcohol cessation, physical activity), **traffic safety**, for the area of **travel awareness** and **mobility behaviour** (applicability and transferability)

What are common and differing **structure** and **elements of the models** as well as the relationship of elements?

Is there a **generalisability** or **specification** of the models for different **target groups**?

Method of survey / way of **data collection**

Specification of used / collected data:

duration of survey

time of data collection

which was the target group?

which kind of trips? (purpose)

scale of spatial level (regional trips...)

timescale of forecast

Which are **advantages** and

benefits of **new research designs** for analysing the impact of campaigns (e.g. group randomized trials)?

Which are new **statistical tools** which allow a more adequate empirical test of behavioural change (e. g. latent growth curve models) as typological models (latent class analysis; latent transition analysis)?

Which are **new methods for the synthesis** of research results (e.g. systematic review and meta-analysis)?

Criteria WP B 1.2 Prospective Assessment Tools

Travel awareness or mobility management or both or else?

Level of approach?

site-based (e.g. employment sites, schools)

regional (e.g. mobility centre)

national (e.g. nationwide awareness campaign)

framework conditions for the approach

What are the **target groups** of measured **approach**?

personally known and constant (like employees, pupils)

unknown and changing (like citizens, tourists, visitors)

nature of forecasting?

individual choice, experiential, comparative case studies

What **levels of change** are considered?

awareness, norms, behaviour intention, actual behaviour, impacts on the level of a city-wide transport system

Was the **sensibility to change caused by campaigns** and / or by **measures** investigated?

Which result?

Which **indicators** were used to **measure change**?

Which **performance measures** were used as **outputs**?

VKT (vehicle kilometre travelled),
emission reduction

What is the **role** of initial definition of objectives (target setting), utilisation of and adaptation to baseline?

Ability to **validate results of projections** with actual impacts?

usefulness for **prospective assessment vs. ex post evaluation**?

are there special experiences / validation?

What is the **target group** for the toolkit (not the measures)?

usage of the toolkit where, approx. how many users

complexity and **user friendliness**, suitability for practitioners

2.2 Annex B – COMMUTER: COMMUTER Model

Analysed by Eric Schreffler - ESTC

List of references / information source COMMUTER Model v2.0 – User Manual
<http://www.epa.gov/oms/stateresources/policy/transp/commuter/420b05017.pdf>

ACRONYM COMMUTER Model

Level: National (US)

Start – End Date 2005

Funding institution(s): U.S. Environmental Protection Agency EPA Country USA

Name of Institution / Department ... Office of Transportation and Air Quality

Consortium / Partners: (contractor: Cambridge Systematics, Inc.) Country: USA

General Description of the project / case study / campaign

Common Criteria

Related to WP:	A	B	C	D
		X		
Short description of content	The COMMUTER Model is a spreadsheet-based computer model that estimates the travel and emissions impacts of transportation air quality programs focused on commuting. It is particularly useful for programs such as those recognized under the EPA's Best Workplaces for Commuters and other Commuter Choice programs.			
Main objectives	The main objective is to calculate the travel and emissions effects that might result from implementation of voluntary employer transportation management programs. The tool can be used by regional planning organizations or air agencies who are interested in testing these effects on a region-wide basis, or by individual employers who may be seeking tax credit for implementing a voluntary commuter choice incentive program.			
Theoretical links	<p>The COMMUTER Model uses a three-step procedure:</p> <ol style="list-style-type: none"> 1. Defining a baseline by supplying essential information on local conditions 2. Selection of an analysis scenario from available strategy options (measures): <ul style="list-style-type: none"> - Employer TDM Support Strategies - Alternative Work Schedules - Travel Time Improvements - Travel Cost Changes 3. Calculation of impacts on vehicle trip making and its distribution between peak and off-peak travel periods and estimation of emission changes for key pollutants. 			
Outcomes and results	Changes in vehicle trips			
qualitative	Changes in vehicle miles travelled			
quantitative	Changes in total emissions			
Was there an empirical evidence of impacts?	The methodology is based on empirical data (e.g., look-up tables for the impact assessment of employer TDM support measures and alternative work schedules) or on existing procedures (e.g., the logit mode choice model for the estimation of impacts from travel time improvements and travel cost changes).			
Did an evaluation take place?	The applied Mobile6 emission model for the estimation of emission impacts is used as independent module. Hence, it might be exchanged by a locally tested module that better reflects the local car fleet.			
Is the methodology convincing?	All in all the methodology of the COMMUTER Model is convincing and seems to be transferable to the European context.			
Weakness and Strength of chosen approach	<p>The COMMUTER Model is particularly useful for smaller Transportation Control Measures. It will not perform a well for larger programs, particularly those large enough to impact travel speeds throughout an area. It is intended for use with worksite MM programs, not citywide applications.</p> <p>The model is comprised of individual modules. Each module input can either be exchanged to locally available factors or fitted to the local requirements.</p> <p>In general the model is offers an easy to use approach that is gives accurate estimations for the incremental changes in travel behavior that can be expected from MM measures.</p> <p>The weakness might be the need for empirical data to construct the look-up tables that allow the estimation of impacts of the Employer TDM Support Strategies and Alternative Work Schedules.</p>			

Opinion on transferability: The transferability to the European context is given. The general features to define a baseline and to calculate impacts on vehicle trip making that are used in the model are also used in Europe.

Is it transferable and why? What has to be established for the European context is an empirical set of relational factors that associate observed increments of changes with particular types of MM-programs reflecting different application assumptions, levels of intensity and setting.

Criteria WP B 1.2 Prospective Assessment Tools

Travel awareness or mobility management or both or else? Mobility Management – specifically employer worksite travel planning

Level of approach? Site-based, but could be applied to group of worksites within an employment center (e.g., TMA area)

framework conditions for the approach Baseline mode shares required

What are the target groups of measured approach? Employees/commuters

nature of forecasting? Pivot point model, meaning that incremental changes to MM measures are applied to baseline mode shares to estimate incremental change in mode shares. Model has two distinct elements: all time- and cost- related variables are modelled using a nested logit (individual choice) approach based on national default or locally specified coefficients. All other measures (i.e., support, coordination, alternative work hours, etc.) are modelled using experiential factors of average mode shift from implementing a given measure to a specified group of employees.

What levels of change are considered? Primary change in commute travel behavior in the form of mode shift.

Was the sensibility to change caused by campaigns and / or by measures investigated? The model is very sensitive to changes in measures. However, because of the nature of the logit demand curve, very low or very high starting mode shares show relatively less sensitive changes than starting mode shares in the middle of the range. For example, the same public transport subsidy applied to a worksite where no employees or most employees use this mode will show a smaller impact than the same subsidy applied to a worksite with a 10-20% starting PT mode share.

Which result?

Which indicators were used to measure change? Mode shares

Which performance measures were used as outputs?

- Mode shares, vehicle trips and % reduction
- VMT and % reduction
- emissions and % reduction

What is the role of initial definition of objectives (target setting), utilisation of and adaptation to baseline? Baseline mode split and employment are primary inputs. Objectives, in terms of mode shares or % trip or VMT or emission reduction can be

Ability to validate results of projections with actual impacts? No built-in validation method and few users have validated results after implemented of modelled program enhancements

usefulness for Primarily used as prospective tool. For example, EPA has “Best Workplaces for

prospective assessment vs. ex post evaluation? are there special experiences / validation?	Commuters" certification and some employers use the COMMUTER Model to develop their worksite travel plans. A few regions use the model to assess the employee mode shift results in actual (not planned) employer program enhancements (implementing new measures).
What is the target group for the toolkit (not the measures)?	Employers, regional commute management organizations, TMAs, state air quality planners, researchers
usage of the toolkit where, approx. how many users	Widely used as the accepted and "official" tool
complexity and user friendliness , suitability for practitioners	Model is a substantial upgrade from its predecessor, the FHWA TDM Evaluation Model, developed in the early 1990s but it is sometimes cumbersome to use.

2.3 Annex B – MOST: Mobility Management Strategies for the next Decades - including SUMO: System for Evaluation of Mobility Projects and SARA

Analysed by	Common criteria: Mobiel 21, Ilse Vleugels WPB: MOST-MET - TFC, Timo Finke; SUMO/SARA - Trivector, Annika Nilsson WPC: Mobiel 21, Ilse Vleugels WPD: Uni MB, Aljaž Plevnik, Marjan Lep
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cf. list on www.max-success.eu

D 9 (~250 pp.): The Final Report compiles a general description as well as all findings of MOST in one unique document. It contains the reports D 5, 6 and 7 (see below) in more comprehensive versions, and gives an outline on new insights and the applicability of findings to accession countries.

The MOST MET, the monitoring and evaluation toolkit (~1.5 MB), is meant to support practitioners in their efforts to monitor and evaluate the impacts of Mobility Management.

D 7 (~50 pp.): The MOST report on key recommendations from MOST covers the areas design, implementation, monitoring & evaluation of future mobility management projects. It is mainly addressed to practitioners who plan to realise Mobility Management.

D 6 (~80 pp.): The MOST report on the framework for Mobility Management across Europe summarises the results of an analysis of frameworks on a European level as well as for 14 European countries. The results of the policy research have led to a model for the analysis of framework conditions (P.A.I.R.-scheme), which can help to identify strengths and weaknesses.
all taken from <http://mo.st...>

From MOST–MET to Swedish SUMO and SARA: a great success in evaluating MM projects

Swedish National Road Administration, Publication 2004:98E, SUMO System for Evaluation of Mobility Projects

List of references / information source

ACRONYM	MOST, Mobility Management Strategies for the Next Decades	
Level:	European project with more than 30 local demonstration sites & case studies in 13 countries: Austria, Belgium, Bosnia-Herzegovina, Czech republic, Germany, Greece, Italy, Portugal, the Netherlands, Sweden, United Kingdom and Switzerland	
Start – End Date	1/1/2000 – 21/12/2002	
Funding institution(s):	Project funded partly by the European Commission under the Competitive and sustainable Growth' programme (4 th EU-framework)	country
Consortium / Partners:		country
Name	FGM-AMOR (co-ordinator+ demo health institutions GKK Graz)	Austria
	ILS –Dortmund (partner + demo M · ster-Weissenburg - site development)	Germany
	CH2MHILL (partner)	Spain
	ISB-RWTH-Aachen (partner)	Germany
	Mobiel 21 (former Langzaam verkeer) (partner + demo educational institutions – province of Limburg)	Belgium
	NEA-Rijswijk (partner)	Netherlands
	University of Westminster (partner)	UK
	TMB Barcelona (demo educational institutions)	Spain
	Surry County council (demo educational institutions)	UK
	Camden Borough (case study tourism)	UK
	Municipality of Islantilla (demo tourism)	Spain
	City of Malaga (demo tourism)	Spain
	City of Sintra (demo tourism)	Portugal
	Institut Wallon (demo health institutions)	Belgium
	Region of Navarra (demo health institutions)	Spain
	Sandwell Hospital (demo health institutions)	UK
	City of Bremen (demo site development)	Germany
	IPK-Zlin (case study Site development)	Czech Republic
	City of Karlstad (demo Site development)	Sweden
	PTA-Andalucia (demo site development)	Spain
	LVB Leipzig (demo temporary sites)	Germany
	City of Porto (demo temporary sites)	Portugal
	City of Rotterdam (case study temporary sites)	Netherlands
	STA Roma (case study temporary sites)	Italy
	SGI Trademco Athens (case study temporary sites)	Greece
	ATC Bologna (case study Mobility consulting / centres)	Italy

Mobil Zentral Graz (case study Mobility consulting / centres)	Austria
City of Münster (demo Mobility consulting / centres)	Germany
City of Nottingham (demo Mobility consulting / centres)	UK
PPT Prague (demo Mobility consulting / centres)	Czech Republic
STA Roma (case study Mobility consulting / centres)	Italy
Trivector Lund (demo Mobility consulting / centres)	Sweden
WSW Wuppertal (case study Mobility consulting / centres)	Germany
City of Torino (case study Mobility consulting / centres)	Italy
City of Sarajevo (case study health institutions)	Federation of Bosnia and Herzegovina
ACCESS	EU
CDV Brno	Czech republic
Certu Lyon	France
ESTC – San Diego	USA
FIT Roma	Italy
SocialDATA	Germany

General Description of the project

Common Criteria

	A	B	C	D
Related to WP:		X	X	X

Short description of content	<p>MOST stands for Mobility Management Strategies for the Next Decades. Its pilot projects in 32 European locations implemented Mobility Management strategies both in “traditional” (companies, schools) and new thematic sectors (tourism, events and new sites in their planning stage). Demonstrations and case studies were clustered into 6 fields of MM-application: education, tourism, health institutions, new site developments, temporary sites and mobility consulting/centres. Target groups addressed within the demos included visitors and staff of hospitals, visitors to temporary events, people on short term leisure trips as well as tourists, students, pupils, employees, the general citizens, handicapped people, unemployed people and residents of car free housing.</p> <p>MOST investigated various policy frameworks and implementation strategies, and set up standardised monitoring and evaluation tools. As a result, MOST has deepened its understanding of success and failure factors, and showed ways of integrating Mobility Management into general transport policy.</p>
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Main objectives	<p>(cf. Technical annex) MOST aimed to further develop and to spread Mobility Management (MM) in several ways:</p> <ul style="list-style-type: none"> - Consolidating the know-how developed in previous national and EU-projects like MOMENTUM, MOSAIC, INPHORMM, - Analysing existing MM tools and schemes, especially on long term impacts - Developing innovative MM tools and schemes, especially in new fields - Initiating MM in regions of Europe where it is not so well established - Developing and applying a European cross-site and cross-cluster monitoring
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and evaluation strategy

- Formulate policy and implementation strategies and scenarios
- Spread the concept of MM through sophisticated dissemination, training and exploitation strategies, and by using synergies with ECOMM and EPOMM.

Theoretical links	<p>National, regional and local frameworks are known to be an important factor for facilitating Mobility Management. MOST for the first time has undertaken a structured analysis of those frameworks. The P.A.I.R. scheme was elaborated within MOST to guide policy makers to detect the most important barriers and support structures for Mobility Management in their city, region or country. It identifies four important domains - to watch for improvement or to develop strategies: <u>P</u>olicy (high level guidance), <u>A</u>ctors and <u>S</u>tructures (including personnel, organisations and governance), <u>I</u>ntegration on all levels (modes, transport and non-transport policies,), and <u>R</u>esources (financial and knowledge resources, quality management).</p> <p>MOST prepared a close linkage of quality management to mobility management. In the investigation of the process of implementation MOST adapted the general EFQM model for Mobility Management. Result is a new questionnaire for the self-assessment of the quality of the local projects through the relevant stakeholders. It was tested for a selection of 5 demonstrations and proved to support the planning and implementation process well. It helps to identify barriers and ways to overcome them.</p> <p>The MOST-MET - the Monitoring and Evaluation Toolkit – elaborated to measure the impact of demo's within MOST is built on assessment levels originally from MOSAIC but refined according to the lessons learned in MOST (MOSAIC: "Mobility Strategy Applications In the Community" (1996-1998, Transport RTD programme within 4th framework programme of the European commission). These levels reflect the whole range of impacts Mobility Management can have, reaching from changes in awareness and mobility behaviour to impacts on the transport system in general.</p>
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Outcomes and results	<p>A report, detailing the frameworks for mobility management on a local, national and European level. Countries can learn from each other to see that certain policy tools work even under distinct preconditions.</p>
qualitative	<p>A questionnaire based on the EFQM-scheme for the self-assessment of the quality of the local projects through the relevant stakeholders.</p>
quantitative	<p>The MOST-Monitoring and Evaluation Toolkit is available to the public in an optimised version (Download).</p>

<p>Was there an empirical evidence of impacts?</p> <p>Did an evaluation take place?</p> <p>Is the methodology convincing?</p>	<p>Yes, both qualitative and quantitative impacts of MM in the demo sites were measured. Demonstration projects managed to:</p> <ul style="list-style-type: none"> - increase awareness - promote Mobility Management and its different options among decision makers, financing bodies - develop new mobility services - enhance the accessibility of certain destinations and, hence to increase opportunities for modal choice - increase the use of sustainable modes (or slow down / stop a negative trend) - reduce car use (or work against the continuous growth) - address traffic and air quality problems <p>The table below gives an overview on some of the measurable impacts Mobility Management within the demonstrations had on a change in actual mobility behaviour as measured through (1) usage of offered services or alternatives, (2) mode shift, (3) car use reduction and (4) km or emission reduction.</p>					
	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 15%;">MOST demo</td> <td style="width: 20%;">(1) Participation/</td> <td style="width: 20%;">(2) Mode Shift</td> <td style="width: 20%;">(3) Car Use</td> <td style="width: 25%;">(4) km or</td> </tr> </table>	MOST demo	(1) Participation/	(2) Mode Shift	(3) Car Use	(4) km or
MOST demo	(1) Participation/	(2) Mode Shift	(3) Car Use	(4) km or		

site	Usage		Reduction	Emission Reduction
Limburg, MM for schools	75% of parents participated in car free school week	Bike/walk ↑ 3.5% among students	Car use ↓7%	
Camden, MM for administration, car free day			Car use ↓12% among staff	PM10 ↓11% on car free day
Zug, MM for weekend tourists, esp. families	452 people on 8 Action –Days (an average of 56 persons per day)	Most participants used alternative modes or carpoled (only 14%-23% drove to events)		
Münchaga, MM for tourists	6,100 tourist bus tickets/month			
Sandwell, MM for hospital staff	100+ PT season passes sold; 40 scooter users			
GKK Graz, MM for outpatient medical centre		Observed reduction of cars parked on-site		
Bremen, MM for leisure site		25% of PT users came by car last visit; 51% of visitors came by car, compared to 50%-72% in before case		
Karlstad, MM for university	50% of students use free PT pass	More students cycling to University		2,872 km saved per participating student or staff per year
Münster, MM for residential area	Car ownership ↓; carsharing ↑			
Münchaga (PTA), MM for business park		Carpool use ↑ 46% PT use ↑ 34%	Car use ↓ 12%	
Athens, car free days		PT use ↑ 20% comparing the mode share of 2 subsequent car free days	Car use ↓22% between car-free days	
Rotterdam, MM for sports event		PT use ↑ 60% during Marathon	Car use ↓ 38% during Marathon	
Rome, MM for pilgrims during Jubilee year	366,000 riders on new J-lines			
Lund, MM for whole city		9% of residents changed travel		Each bike rider saved 4,300 km per year;

		habits		each bus rider saved 2,800 km per year
Rome, MM for companies	1,700 discounted annual PT passes sold; 730 carpoolers registered			

PM 10: Particulate Matter 10 parts per million; MM: Mobility Management, PT: Public Transport It should be noted that the percentage changes in mode shares or car use are based on the relative change in mode shares, as a percentage, not as the difference in percentage points. Thus a reduction in car use from 20% to 15% is a 25% reduction, not a 5 percentage point reduction The impacts were measured through the MOST-MET

It is one of the merits of MOST that it has been focussing a lot on the process side of mobility management and not on the structures.

In the beginning phase of the MOST-project, an **implementation toolkit** was set up as a step-by-step guide for the demonstrations in MOST to start up mobility management and to implement concrete MM-measures. Within this implementation toolkit, three checklists were developed: one for site-based MM applications and another one for city-wide MM applications. For both types of applications, a (third) service implementation checklist was developed on how to implement concrete MM-measures.

In this implementation toolkit, a lot of attention was given to issues such as the selection of stakeholders, identifying promoters, supporters, opponents, setting up a working group, participation of target groups, etc.

An analysis of the process details within the filled out implementation toolkits of all the MOST-demos, combined with information on the framework conditions (cf. P.A.I.R-scheme), with information of the self-assessment of the process in 5 demos (based on the EFQM-scheme) and an impact assessment (using the MOST-MET) resulted in the following MM-scheme:

Which **process elements** have been included / investigated?

- initiating the start of Mobility Management
- "selling" the concept (e.g. to potential funding bodies, decision takers, own staff)
- linking up with and gaining the support of the end-users (considering user-participation)
- coordination between all important stakeholders
- securing finances
- involving qualified personnel and possibly external experts
- creating ownership (i.e. identification with and support for the MM measures)
- setting up a plan (including baseline analysis, specification of concrete goals, strategies, responsibilities and milestones)
- realising planned activities
- controlling the process and results
- feeding back results
- revising the plan if necessary.

These tasks of the MM-scheme are described and illustrated with examples within the MOST-D7.

Which of the **process elements** contributed to **success**?

different from case to case

Which **open questions** and **research gaps** have been identified?

(1) A demand for more demonstration projects, particularly addressing ways to diminish the "mental" barriers, i.e. to plan and guarantee for autonomous mobility of disabled people and to integrate them into the transport modes and transport planning for the fully mobile users

(2) The potential of information technologies as channels for information, promotion and reservation is large and needs further attention; e.g. a virtual mobility centre (via internet, mobile phone, ...), can it take over the role of a traditional mobility with face-to-face contacts.

(3) The need for more investigations of long-term impacts of mobility management.

(4) Further investigations of costs and benefits of MM. It is difficult to attribute costs in highly integrated hard- en software measures. (e.g. difficult to measure how many extra trips with PT are made because of the existence of a Mobility centre.

(5) The EFQM-model has proven to be a good support to Mobility management. However is was tested in MOST only in 5 demonstrations. The benefits of Quality management needs further research , to develop strategies to integrate it into the whole planning and implementation process.

(6) Gain more knowledge about the way in which MM can play an important role when integrated into comprehensive transportation programmes.

Has the **transferability** of non-transport measures to transport and to content related questions within **WP A-D** been investigated?

Actually, most of the research questions that came out of MOST, have been taken up in MAX as research questions within WPB, C and D.

Has the **transferability** to other **cultural context** or other **countries** been investigated?

Yes, at the end of the project the recommendations from MOST were discussed with a selection of transport experts from different candidate countries to the EU. These experts came from Czech Republic, Hungary, Latvia, Lithuania and Poland.

The main result from these discussions was that the MOST conclusions apply to Western as well as to Eastern Partners. However the following differences have been identified:

(1) Infrastructure is neither of high quality nor sufficient to cope with the rapid growth in car ownership, strong focus is put on restructuring or reusing streets as well as tram lines and railway connections.

(2) Politicians of Eastern countries might be less considerate with respect to environmental and health impacts of motorised transportation, so awareness raising among them and being able to relate to best practices is a very important issue.

(3) Expertise and skills in soft measures like mobility management is limited, although some experts already work in this area without calling it mobility management.

(4) The financial situation is often more severe than in Western countries, which is why any additional investments - apart from those for infrastructure - are hardly funded.

The experiences in the 2 MOST case studies in Eastern Europe (region of Zlin in Czech republic and Sarajevo (Bosnia-Herzegovina supported these points of view.

WP B

This WPB analysis includes a more detailed description of MOST-MET, but also SUMO and SARA.

SUMO stands for System for Evaluation of Mobility Management Projects and is a further developed and condensed version of MOST-MET that Trivector Traffic was commissioned to write by the Swedish Road Administration (SRA). It is adapted to Swedish conditions in the field of road transport.

SARA is a data base that will accumulate results of projects aiming at travel behaviour changes that have been evaluated with help of SUMO mainly, but also other evaluation systems.

Criteria WP B 1.2 Prospective Assessment Tools

Travel awareness or mobility management MOST-MET: mobility management

or both or else?

SUMO: mobility management, but also traffic safety and projects with combination of MM and physical measures

SARA: mobility management, but also traffic safety

Level of approach?	MOST-MET/ SUMO/SARA: All fields of mobility management e.g. site-based (companies, schools, universities, hospitals), regional (mobility centres, mobility consulting), special target groups (residential areas, tourism).
What are the target groups of measured approach?	<p>MOST-MET/SUMO/SARA: The target groups depend on the mobility management approach. MOST-MET can deal with both personally known and constant target groups (as for most site-based approaches like employees at companies, pupils/students at schools, universities etc.) and for anonymous and changing groups (like citizens, tourists, visitors, patients of a hospital etc.)</p> <p>SUMO also differentiates between the direct target group – that is supposed to change their travel behaviour, and the indirect target group (eg. company management, teachers) – that is addressed in order to reach/affect the direct target group in the end. This has been done since the users of the SUMO toolkit often have problems in defining the target group of interest, I e the direct target group.</p>

nature of forecasting? MOST-MET/SUMO/SARA: No forecasting.

individual choice,
experimental,
comparative case
studies

MOST-MET/SUMO shows the changes between the situation before and after or with and without the introduction of mm measures.

Using the standardised MOST-MET/SUMO approach allows a benchmarking between various MM programmes.

SARA: The potential database SARA will steer the users to use a standardised approach and will gather results in a standardised way. In that way results from similar projects can be compared with each other and different projects can be compared with each other. Eventually, and after deeper analysis, it will be possible to predict results from different kind of projects. These deeper analysis will make it possible to estimate effects in terms of higher traffic safety and better environment in future and to give knowledge on which projects to focus on in the future.

What levels of change are considered?	MOST-MET uses the following assessment levels:
awareness, norms, behaviour intention, actual behaviour, impacts on the level of a city-wide transport system	<p>Knowledge of MM services</p> <p>Usage of MM services</p> <p>Satisfaction with MM services</p> <p>Acceptance of travel options</p> <p>Experimental individual travel behaviour</p> <p>Satisfaction with travel option</p> <p>Permanent individual travel behaviour</p> <p>Impacts on city wide transport system</p> <p>SUMO/SARA uses the same levels of change as MOST-MET, but SUMO/SARA has added an assessment level:</p> <p>Useful activities, which is the first assessment level (before Knowledge of MM services).</p> <p>Useful activities describes all the efforts done in the project, i.e. number of meetings, number of brochures, e t c.</p> <p>The added value of this assessment level is that the local project leaders actually start the data collection and thus the evaluation. It also motivates them in their work to make their efforts visible.</p>

Was the sensibility to MOST-MET/SUMO/SARA: Campaigns are understood as one set of MM measures.

change caused by campaigns and / or by measures investigated? Therefore the sensibility to change was caused by a combination of measures that seem to suit best for the individual local approaches.
Results are given in the table above.

Which indicators were used to measure change? MOST-MET/SUMO/SARA: Indicators are used according to the assessment levels as described above (knowledge, usage and satisfaction with MM services, acceptance of and satisfaction with travel option, change of travel behaviour and system impact.
MOST-MET offers a so-called basic data set that is required as a minimum of data to be collected. Using these data guarantees the intended results and the chance for benchmarking with other MM approaches.
SARA: There will be both compulsory and voluntary input to the database. If the compulsory input (compare basic data in MOST-MET) is not given, the user will not be able to come further.

Which performance measures were used as outputs? MOST-MET/SUMO/SARA:
Change of modal-split
motorised vehicles trips reduced
of motorised kilometres reduced
tons of CO2 reduced
SUMO/SARA: sometimes also changes in other emissions (NOX, HC, particles), or changes in # parking-places or available space (land). For traffic safety projects: risk reductions or changes in numbers of dead and severely injured in traffic

What is the role of initial definition of objectives (target setting), utilisation of and adaptation to baseline? MOST-MET/SUMO/SARA: uses a before-after comparison (i.e. before and after the implementation of MM measures) with follow-ups in regular intervals.
Therefore a baseline of the before situation has to be established. Based on this and the measures that are agreed according to the local situation objectives and a timeframe for reaching these objectives are defined for each assessment level.
SUMO: When the SUMO toolkit is seen as planning/steering instrument, target setting plays an important role. In the beginning of the MM project it is recommend to set objectives on the assessment level: Impacts on city wide transport system, and then **count backwards** and set targets on previous assessment levels in an iterative manner in order to design a MM project of the needed size. During the course of the project, data collection on corresponding indicators of early changes give possibility to find out if you will be able to reach Impacts on city wide transport system. If not, it will give an opportunity to change the services or terminate the MM project.

usefulness for prospective assessment vs. ex post evaluation? The MOST-MET/SUMO/SARA uses an ex-post approach. Experiences of the changes that were established by certain groups of measures for each assessment level and per field of MM (i.e. mobility centres, MM for companies, schools etc.) might be able to offer hints for a prospective assessment in the future.
are there special experiences / validation? SARA: The potential database SARA will accumulate results from different projects aiming at travel behaviour changes in a standardised way. So eventually, and after deeper analysis, it will be possible to predict results from different kind of projects. These deeper analysis will make it possible to estimate effects in terms of higher traffic safety and better environment in future and to give knowledge.

What is the target group for the toolkit (not the measures)? MOST-MET/SUMO/SARA: Management of MM Programmes for self-evaluation or third-party evaluation.
SARA: The database will be a tool for local project leaders to register their own results from SUMO evaluations. SRA is also a target group for SARA. With help of SARA SRA will be able to produce reports on different levels: The results from different projects can also be accumulated on different levels, i.e. integrated level (green commuter plans,

sustainable transport plans) and geographical levels (municipalities, regions, countrywide). SRA will also use the results from SARA to calculate the performans on their sectorial responsibility for parameters like CO2 etc.

<p>usage of the toolkit where, approx. how many users</p>	<p>A Pre-MOST-MET version has been applied in 15 sites of in the EU-project MOST:</p> <ul style="list-style-type: none"> - Limburg (BE) MM for schools - Camden (UK) MM for administration, car free day - Zug (CH) MM for weekend tourists esp. families - Málaga (ES) MM for tourists - Sandwell (UK) MM for hospital staff - Graz (AT) MM for outpatient medical centre - Bremen (DE) MM for leisure site - Karlstad (SE) MM for university students and staff - Münster (DE) MM for residential area - Málaga (ES) MM for business park - Athens (GR) car free days - Rotterdam (NL)MM for sports event - Rome (IT) MM for pilgrims during Jubilee year - Lund (SE) MM for local citizens - Rome (IT) MM for companies <p>SUMO: The Swedish Road Administration co-finances MM projects lead by local governments and county councils. During 2005 the SRA requires properly done evaluations when co-financing projects, which has lead to an increased demand for SUMO. SUMO is a model adopted by the Swedish Road Administration (SRA) in travel behaviour projects funded by them.</p> <p>So far about 80 regional coordinators from the SRA as well as several local MM-project leaders have been educated in SUMO. At least 150 SUMO evaluations have been ordered or executed by local project leaders.</p> <p>SARA: Trivector Traffic was commissioned to develop a requirement specification and a test-dummy for this database on behalf of SRA. It is now up to SRA to decide if the database should be built.</p>
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<p>complexity and user friendliness, suitability for practitioners</p>	<p>The MOST-MET is a step-by-step guidance that leads the user through the evaluation process. The complexity of the evaluation itself increases with the complexity of the MM programme.</p> <p>The MOST-MET explains the individual steps and the assessment levels. It is the users task to understand the evaluation in general and transfer it to his/her own MM programme. Here is some intellectual effort is required to set up the evaluation in the local framework conditions.</p> <p>It is meant for the usage of practitioners but some basic knowledge about evaluation is required.</p> <p>SUMO is a shorter and more user-friendly version of the MOST-MET toolkit, but the report it self is not sufficient to obtain a consensus about how to evaluate MM-projects. The evaluation will be ordered or executed by, local project leaders, many of whom having no or very little experience of evaluations. The need of education was identified rather early. The education has been crucial to get acceptance for the concept as it requires a deeper understanding of SUMO, its limits and how to use it. Trivector Traffic has given many of those training courses, and it has given Trivector a good insight in how the toolkit has been achieved, the difficult parts and how to overcome these difficulties. SRA and local governments has also given training courses. To spread the SUMO toolkit to new users several training courses, seminars and workshops for local projects leaders will be held in the coming years.</p>
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The experience about using SUMO is so far positive. Many SUMO-evaluations have been executed by local project leaders, and the overall impression is that SUMO is very useful and that the toolkit structures the evaluation in a proper way. Most useful is the toolkit when it is used already in the planning of the project. Never the less some pitfalls can be identified:

- the main objective in the project is not clear,
- difficulties in separating MM services and MM options,
- SUMO gives a structure – but there are still the same requirements on the competence of the project leader/evaluator.

WP C

Criteria WP C 1.2 Quality Management principles in transportation services

What is the theoretical basis for the chosen QM approach?	Within the MOST-project an assessment framework was developed, based on the existing framework of the European Foundation of Quality management (EFQM-.model of excellence)
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Which are important principles and elements of existing QM activity in the transport field?	<p>The main elements of this self-assessment framework as applied within MOST were:</p> <p>(1) The assessment is done by all important <u>stakeholders</u> of the project. The important stakeholders in the assessment panel are the person, responsible for the overall coordination or the Mobility Management activities in the city or at the site (be it the Mobility manager or the project initiator), someone working in the Mobility Management project on a day to day basis (e.g. the mobility co-ordinator, the mobility consultant), a representative of the target group and representatives of other key player in the Mobility Management applications such as the clients (local transport provider, local transportation authority, the site owner, etc.).</p> <p>(2) The assessment took place <u>in two rounds</u>. The first round consisted of a individual self-assessment of the management process (with a written structured questionnaire). The compilation of all self-assessments served as a basis for discussion within a round table meeting shortly after with all panel members guided by an external moderator.</p> <p>(3) Within the assessment, <u>five criteria</u> relating to the quality of the management process were looked upon in detail. These are: (1) the quality of the project co-ordination, of (2) the project design and strategy, of (3) the human resources management, of (4) the management of partnerships and finances and (5) the quality of the implementation process. These five criteria were each concretised within sub criteria relating to aspects that had already proven their importance in past Mobility Management applications (such as user orientation, communication strategy, integrative working and synergies).</p> <p>(4) <u>A scoring mechanism</u> was adopted in order to compile the results of the written survey round of all panel members and of all sub criteria. These scores (translated into plusses and minus for all criteria and sub criteria) served as a general input for the round table discussions. Next to this, for all five quality management criteria, main barriers as well as solutions to overcome them and the crucial factors of failure and success were discussed in group.</p>
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Give the size of city where the QM-standards have been applied in number of inhabitants	<p>The self-assessment took place in 5 MOST-demonstrations with varying MM-applications both site based as well as city wide applications. These cases were:</p> <ul style="list-style-type: none"> - a school in the province of Limburg adopting MM-actions (Belgium) towards parents and children, - Sandwell general hospital (UK) with a green travel plan both for visitors and employees; - the Rhododendron park in Bremen (Germany) (the planning of a recreational site) with MM-measures towards visitors - the Loja-project in Porto (setting up the city's mobility centre) - the Bus Rider project in Lund (Sweden) to enhance PT-ridership of employees
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	<p>in between two communities.</p> <p>These cases also varied in the implementation stage of the project; e.g. the Loja-project was a very young project just about to start up; while the bus rider project had detailed information on process and impacts.</p>
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Which **indicators** are used for QM in the transport field

- Five process criteria were taken up in the self assessment of Mobility management projects (cf. EFQM-based questionnaire):
- (1) the quality of the project co-ordination,
 - A. Development of a vision and mission on mobility management (MM) at the site or in the city
 - B. Convincing relevant decision makers and opinion leaders of the use of MM in order to get support
 - C. Co-ordination of partnerships and of day-to-day mobility management activities
 - (2) the project design and strategy,
 - A. User orientation: D&S based on a good analysis of the present and future needs of the target groups
 - B. Synergies.
 - C. Involvement of all relevant stakeholders in the design and the strategy (clients, target groups, others)
 - D. Setting up a good basis for monitoring and evaluation
 - (3) the human resources management,
 - A. Planning of human resources
 - B. Composition of the team of MM
 - C. Empowerment of the day-to-day-mobility management team at the site or in the city
 - (4) the management of partnerships and finances
 - A. Involvement of stakeholders
 - B. Communication strategy
 - C. Financial planning
 - D. Management of in kind support
 - (5) the quality of the implementation process.
 - A. Setting up an action plan/implementation plan
 - B. Synergies/integration
 - C. Stakeholder involvement
 - D. Users orientation of the MM-measures
 - E. Monitoring and evaluation

What kind of **certificate** has been gained for applying QM in transportation services / in MM?

no certificate

Who was responsible for the QM?

Responsible for the QM was the MOST-site manager. This person was the main contact person of the MM-project within MOST. The round table discussion among the project stakeholders was moderated by an external moderator (this was a MOST-partner who was in a neutral position wrt to the Project)

<p>What are the benefits from the application of QM processes for the city / public transport provider?</p>	<p>A comprehensive framework for the self assessment of the mobility management process, covering a range of the different aspects relating to the quality management, has made it possible to look at the management process apart from the results. In case hard results can't be measured (for different kind of reasons), a balanced overview of weaknesses as well as of strengths can be obtained. This balanced overview has proven to be a good basis for actions plans in the future.</p> <p>The self assessment of the Mobility Management process has proven its usefulness in different stages of the mobility management process in different ways: in the initial phase of the project set up, the assessment framework has served as a background for brainstorming between the project partners about future activities. In the case of the bus rider project in Lund, it has been of use for analysing the success of the bus rider project in all its aspects in a way that other partners can learn from it.</p> <p>The experiences of the five mobility management projects and their main stakeholders have showed for mobility management in general how important it is:</p> <p>(1) to involve the target group already from the planning phase of the project for several reasons; in order to gain support from/to convince financiers, decision makers, politicians, etc. but also to set up tailor made mobility services for the target group and to monitor the activities and improve the mix of services in the future;</p> <p>(2) to have a detailed action plan of all planned MM-services, with a detailed time plan, describing all activities and all responsibilities of all project partners. In the Bus rider project, this action plan convinced the public transport provider to participate, it helped to intercept a personnel change at the mobility centre during the project;</p> <p>(3) to have a working group settled in which all different viewpoints are represented and in which discussions can take place on the problems to tackle and on the strategies to handle these (a mission and vision built on consensus);</p> <p>(4) to have one person in place who can co-ordinate all the activities within the mobility management project on a day-to-day basis. This person needs the space (time, finance and official support) to take initiative to co-ordinate between all relevant partners and departments.</p>
<p>What kind and amount of resources have been used to set up and implement a QM standard?</p>	<p>Difficult to say. It was not the goal of MOST to develop a quality management standard. But in the search for a method to analyse MM-processes, this EFQM-scheme was an interesting framework for analysis and assessment. It was only adopted for 5 different cases (one out of each cluster).</p>
<p>What kind and amount of resources and costs were required to conduct / accomplish the QM process?</p>	<p>kind of resources = time investment</p> <p>(1) of the project partners and stakeholders (to fill in the individual questionnaire + to hold round table discussion)</p> <p>(2) of the external moderator to process the response of the individual questionnaire round; to moderate the discussions in the round table meeting and to draft the minutes of the discussion and draft the MM-action plan for the future</p> <p>amount of money: logistics for round table meeting</p>
<p>Describe the type of MM project and the applied MM measures where QM has been applied.</p>	<p>(see above)</p> <p>both site based and city wide MM-applications at different stage of application</p>

WP D - Integration of Planning and Mobility Management

Co-operation Concepts in Planning and Mobility Management Processes

Main source for this SSR: MOST-D9, Chapter 4.4: Site development - demonstration sites; with general remark “ Obstacle for the MOST was to find sites that exactly fitted the requirements: being in the planning phase and trying to include Mobility Management ...”. There are five demonstration sites (Bremen, Malaga, Karlstad, Muenster, Zlin), but one of them is describing predominantly “coping with problems”- situation (Malaga case) or just introducing MM concepts into new member state (Zlin case). The integration of MM into planning was not really analysed as a process-analysis, but more as measure-response analysis.

Criteria WP D

Planning Instruments

Which planning instruments (PI) / activities / measures were used or researched?	Political discussion: public authority – residents (Bremen case) Public transport improvement (Malaga, Karlstad) Car-free housing (Muenster case)
Which complementary measures played an important role?	Parking restriction (Malaga case)
Attributes of PI:	
Which country uses it?	Germany, Bremen, Spain, Malaga, Sweden, Karlstad, Germany, Muenster; Czech Republic, Zlin
Type of planning?	Transport planning (Bremen, Malaga, Karlstad), Land-use/Transport (Car-free housing, Muenster)
Level of application?	Specific site - (Bremen), Local - specific geographical constellation (technology park, university and city – Malaga) , Local - expanding university (Karlstad), local (car-free housing).
To what kind of site?	Redevelopment (Bremen), Business&University (Malaga, Karlstad), Housing (Muenster)
Is it part of specific regulation in planning process?	No; except for Muenster.
Is it mandatory / obligatory or is it voluntary and part of negotiation solutions?	Voluntary
To whom is it targeted?	Visitors (Bremen), Employees and students (Malaga, Karlstad), Residents (Muenster)
What kind of influence has PI on MM? direct, indirect	Direct in cases Bremen, Malaga, Karlstad; Indirect in Muenster.
Is it used to foster and secure MM?	Yes

Framework conditions

Which MM measures were introduced / applied or researched?	Bremen: MM for the leisure site: Combined PT ticket, leaflet, pedestrian guidance system, dynamic PT departure IS. Malaga: PT improvements and intranet – based car pooling, parking restriction. Karlstad: Mobility coordinator, mob. consultant, information package, free ticket offer, website, bike to work campaign Muenster: several mobility services were combined with “normal” habitation.
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At which **planning level** has MM been integrated? Site level.

How and at which point were the MM measures integrated in the planning process?	After the formal objections of resident (Bremen), anticipating the congestion problem (Malaga, Karlstad), coping with problem (malaga). In the case of Muenster from the beginning of planning process.
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To what extent did planning and MM processes **complement** one another, or were there **conflict** or **mismatching** with each other? MM process seems to be complement (as reported)

Which framework conditions contributed to the successful integration?	Framework conditions were not discussed or analysed in details. No standards or obligatory procedures were reported for Bremen, Malaga, Karlstad.
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Reasons for integration of planning and mobility management

What were the reasons / motives for the persons in charge or project stakeholders who took the initiative for integrating MM into planning processes?	Congestion in rush hour (Malaga), Anticipated congestions (Karlstad), objection from residents (Bremen) are the reported motives.
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What are benefits of integration, are they quantified, how were they measured?	The benefits of implemented measures were measured (with remark “ with restricted time for MOST of 3 years ...”), The modal split before and after was the dominant indicator.
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Has the **potential** of integrating planning and MM to prevent transport problems instead of coping with them been evaluated or estimated? The potential of integrating of MM into planning was commented as “can be seen as a good way to improve the chances of its success”. Some quantification took place; also some disappointments (as Karlstad) were reported.

In the case of free-housing the trip length distribution among residents was measured and also households structure and motivation to move into car-free housing.

Did a quantification of the impacts take place?

Which indicators were used?

Planning process, implementation path and stakeholders

For which target groups was the MM measure planned?	Visitors (Bremen), Employees (Malaga, Karlstad), Students (Karlstad). Housholds (Muenster)
Was the target group known early in the planning process?	Target groups were already known at the begin of the planning process.

Where there important **interdependencies** between **mandatory** and **voluntary** agreements?

The voluntary approach seems to be more important, there is no evidence of general concept behind (Malaga, Bremen, Karlstad).
The car-free housing is different approach; is an overall concept for an area (without specific regulation, of course).

Was the specific design of MM measure negotiated between stakeholders?	There is no evidence of negotiation process between stakeholders.
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Which actors are relevant to the project?	Not really reported (but there must be support from PT-authorities, for example).
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Which ways were used to include the actors and how was the involvement processes organised ?	Not reported (there is only report on how the end-users were involved – Bremen, Malaga, Karlstad cases).
Was this way of participation a success?	

Barriers and success factors

Which are the **success factors** of the project / measure?

Karlstad reported the increasing solo car use also after the implementation of measures because of the framework conditions (higher car availability etc.).
Addressing the new employees and also student before (!) they fix their “habitual” mode seems to be the success factor (before they start to work or to study) – (Malaga and also Karlstad case).

What barriers had to be overcome to integrate MM into planning?	There is mental barrier reported in case of car-free housing (“ ... it is rather difficult to convince the decision makers in housing companies about idea of MM ...”).
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2.4 Annex B – TAPESTRY: Travel Awareness, Publicity and Education Supporting a Sustainable Transport Strategy in Europe

Analysed by	Aristotle University of Thessaloniki (AUTH) Maria Peleka
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	Ilse Vleugels (M21 – for WP C related criteria)
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List of references / information source	TAPESTRY Project (D2-State of the Art Report, D3-Campaign Assessment Guidance, D5-Best Practice Guidelines, D6-Policy Recommendations, Site Assessment Reports)
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ACRONYM	TAPESTRY - Travel Awareness, Publicity and Education Supporting a Sustainable Transport Strategy in Europe
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Level:	European Project with local case studies
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Start – End Date	1/11/2000-31/10/2003
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Funding institution(s):		Country
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Name	European Commission
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Consortium / Partners:		Country
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Name	Transport & Travel Research Ltd	United Kingdom
	Transport Studies Group, University of Westminster	United Kingdom
	Hampshire County Council	United Kingdom
	Hertfordshire County Council	United Kingdom
	Langzaam Verkeer	Belgium
	Komitee Milieu en Mobiliteit or Committee for Environment and Mobility	Belgium
	Consultores Em Transportes Inovacao e Sistemas S.A.	Portugal
	Aristotle University of Thessaloniki	Greece
	Agenzia er i Transporti Autoferrotramviari Del Comune Di Roma	Italy
	Asstra-Associazione Transporti	Italy
	Citta di Torino	Italy
	Forschungsgesellschaft Mobolitat – Austrian Mobility Research	Austria
	Ayuntamietnto de Vitoria-Gasteiz	Spain
	CH2MHILL	Spain
	Uniunea Romana de Transport Public	Romania
	Gestionnaires Sans Frontieres	France
	Regia Autonoma De Transport in Comun Constanta	Romania
	Interactions Ltd	Ireland
	Communaute Urbaine de Nantes	France
	Societe D'Economie Mixte Des Transports De L'Agglomeration Nantaise	France

Centre D'Etudes sur les Reseaux, Les Transports L' Urbanisme et Les Constructions Publiques	France
T.E.MArknadskommunikation A.B.	Sweden
Gavle City, The Technical Office	Sweden
Socialdata institute fur Verkehrs- und Infrastrukturforschung GmbH	Germany

General Description of the project / case study / campaign

Common Criteria

Related to WP:	A	B	C	D
	X	X	X	

Short description of content	<p>TAPESTRY is the most recent European R&D project looking at communication programmes in the transport sector. Within TAPESTRY, campaigns have evolved to become a more complex communications management process that combines elements from traditional campaigns, product marketing approaches, image and brand-building, social and cultural events aimed at target groups and educational approaches.</p> <p>The TAPESTRY approach to communications management and assessment represents the "life cycle" of a campaign, consisting of ten interrelated stages: strategic policy objectives, non-campaign measures, campaign initiator, campaign objectives (operational targets), inputs, campaign management, outputs, external factors, campaign recall and campaign impacts.</p> <p>In the course of the project, a set of 18 pilot campaigns were developed, implemented and assessed. The assessment was carried out according to a common framework, based on the "The 7-stages of change model". The latter is a behavioural change model that combines elements of the "Stages of Change Model" and of the "Theory of Planned Behaviour". The model sets out a seven-stage process as following:</p> <ol style="list-style-type: none"> 1. Awareness of problem (i.e. aware of the issue of traffic congestion or opportunities to change models) 2. Accepting responsibility (i.e. accept personal / corporate responsibility or relevance) 3. Perception of options (i.e. perception of sustainable modes) 4. Evaluation of options (i.e. is there actually a viable alternative?) 5. Making a choice (i.e. really intend to modify behaviour?) 6. Experimental behaviour (i.e. trying out new travel choices) 7. Habitual behaviour (i.e. long-term adoption of sustainable modes) <p>Each stage of the process can be influenced not just by the campaign, but also by other external or exogenous factors. In order to operationalise the framework, TAPESTRY identified and developed descriptors, indicators and performance measures as a means of assessing the impacts, efficiency and effectiveness of the campaigns.</p> <p>At the end, the project developed useful material for communication programmes in the field of transport. This material includes the campaign assessment guidance, the best practice guidelines and the policy recommendations. Overall, TAPESTRY is considered to be a very successful project.</p>
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Main objectives TAPESTRY objectives were:

- To produce a European wide state of the art on the principles and practice of promoting sustainable transport and its assessment. The state-of-the-art report was reviewed at the end of the project to incorporate developments that have taken place during the project life.
- To develop and implement clusters of case studies, namely "intermodal", "mode repositioning" and "health and environment".
- To develop a common assessment framework for all case studies covering their life cycle. The purpose of this framework was to assist campaign initiators in the planning and targeting of their campaigns and provide a process of change scale against which the attitudinal and behavioural impacts of a campaign can be measured.
- To produce guidance, best practice and resource materials for organisations and transport professionals in the field of communication, marketing and community development.

<p>Theoretical links / hypotheses / background</p> <p>science discipline</p> <p>theoretic assumptions that have served as background and could be of use for MAX</p>	<p>Using the results of the INPHORMM project and elements of the Theory of Planned Behaviour, a new model or barometer was developed as part of TAPESTRY. The Seven Stages of Change Model aims at assisting campaign initiators in the planning and targeting of their campaigns and providing a process of change scale against which the attitudinal and behavioural impacts of a campaign can be measured. By measuring the number of people who are at each stage of the scale "before" and "after" (or when appropriate, "with" and "without") the campaign, an assessment can be made of the extend to which a campaign has moved individuals in the target groups towards changing their behaviour.</p> <p>The Seven Stages of Change Model can be considered as a comprehensive way to assess the process that leads to changing a complex behaviour, such as modal choice. However, the weakness of the theory appears to be that it relies to some extent on people acting rationally, something that may not always be the case. Also, when behaviour is habitual, the reasoning process set out in the Seven-Stage model no longer applies. Earlier research suggested that this was because mode choice based on habit is based on a rapid automatic response. By contrast, the Seven Stages of Change Model is based on the premise that a decision involves a more lengthy process of assessing the advantages and disadvantages of a given choice. In addition, this model allows but not explains the cyclical nature of behaviour change, whereby people can relapse and go back to their old behaviour.</p>
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<p>Outcomes and results</p> <p>qualitative</p> <p>quantitative</p>	<p>The behavioural model has been developed mainly to measure the change caused by campaigns. A detailed guidance, including descriptors, indicators and performance measures, has been drafted and before and after surveys have been conducted for the 18 case studies. Their results are available.</p>
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<p>Was there an empirical evidence of impacts?</p> <p>Did an evaluation take place?</p> <p>Is the methodology convincing?</p>	<p>The methodology used is based on a synthesis of previous research and theory and is comprehensive and convincing. Each case study has been evaluated according to a common assessment framework and a cross-site analysis has been produced.</p>
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<p>Weakness and Strength of chosen approach</p>	<p>Strengths: The approach followed was coherent and the implementation of case studies was based on a common and sound basis. This has permitted the cross-site analysis and the validation of the methodology for campaign assessment.</p> <p>Weaknesses: The seven-stages of change model has been accepted as valid and not tested. Also, it accepts that there is a possibility for stagnation and relapse, but does not</p>
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analyses them further.

Which process elements have been included / investigated?	Within the framework of Tapestry, a <u>Campaign Management Assessment Protocol</u> was set up. This protocol was meant to look at the quality of seven factors of the campaigning process:
Selection of stakeholders	1. Definition of/and measurable campaign objectives 2. Creation and management of the campaign team
Identifying promoters, supporters, opponents	3. Definition of target audiences 4. Strategic and operational partnerships
Organisation of process (e.g. in working groups)	5. The operational campaign programme
Including framework conditions whilst steering the process (e.g. political / cultural environment, legal conditions)	6. The briefing/working with agencies 7. Overall assessment
Participation of target groups, affected people	This protocol was based on the EU Common Assessment Framework (CAF-) Model for Quality management in the Public sector http://www.eipa.nl/CAF (See further under WPC-criteria)

WP A - New Approaches in Travel Awareness

Criteria WP A

City of Gävle School Campaign

Background information

What is / are the reason(s) / motives for this campaign ?	<p>Over the last decade, the city of Gävle has worked intensively to make people change their behaviours and use the bike more often. A number of very successful campaigns have been run, which have great impact on companies, the public and in the media. The city of Gävle was the first city in Sweden that tried to convince people to use the bike more and reduce the use of car. The project started in the mid nineties and the work carried out was a mix of physical and psychological activities. Why promote cycling in Gävle? One reason was that the City already had a very good infrastructure in terms of bike paths – a network of approximately 200 km, against 400 km of roads. It is easy to bike in Gävle. Many of the neighbourhoods are located less than 5 km from the city centre and Gävle is a flat.</p> <p>Morning road traffic to and from schools in Gävle is very heavy. Surveys show that almost every second pupil in grades one to six (ages seven to 13) is driven to school at least once a week. This generates too much traffic around the schools. Some of the kids are also very tired when the lessons start and as a result they are lethargic during the first lesson. When lots of parents drive their kids to school, this can only bring negative results:</p> <ul style="list-style-type: none">• Too many cars, make• Other parents feel that traffic safety is decreasing, which• Generates more car trips because more parents start to drive their children to school, and• Therefore they will not allow their kids to bike or walk to school.
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What are the hard /	<i>Region covered / size</i>
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<p>soft policy measures?</p>	<p>Hagaström is a typical middle-class area in the municipality of Gävle. Most people in this area own their houses, and car ownership is above average. Hagaström is approximately five km from the city centre. The school chosen has approximately 300 pupils aged between seven and 13.</p> <p><i>External factors</i></p> <p>In the autumn of 2001, there were major media articles about the problems caused by parents driving their kids to school. To a certain extent, they moved the issue higher up the agenda.</p> <p><i>Explanation of campaign message and campaign tools</i></p> <p>The main message during the campaign was: “Using environmentally-friendly modes rather than the car is good for your own health as well as the environment.” However, the message was delivered in a much better ‘package’ than the sentence above. The campaign was implemented by a variety of partners, who visited almost every class and gave presentations. Written and visual materials were used, including:</p> <ul style="list-style-type: none"> • ‘Before’ and ‘after’ questionnaires for the parents • A big European map, showing the use of environmentally-friendly modes for trips to and from the school depicted as a journey from the school around Europe (see the ‘campaign process’ section for more details). The map also showed how CO2 levels were reduced when parents no longer drove their children to school. • T-shirts and helmets for all teachers • Travel diaries for all the pupils to fill in every morning (showing how they had travelled home from school the previous day, and how that had got to school that morning). • Meetings with the school administration and teachers, and later on with parents. • Presentations - five different partners almost every class in the school. Each partner had a different subject: for example, traffic safety, the environment, health, and bicycle maintenance. • Two letters were distributed to the pupils’ parents. The first was a letter that outlined the campaign at the beginning of the new semester. The second was sent out in the middle of the campaign, and included an offer to buy cycle helmet at a reduced cost. <p>The difference between this project and the old projects was the target group: this time, the pupils were selected to be the target group. The hypothesis was that the school should engage the pupils to persuade their parents to drive less to school. The child would act almost as a catalyst.</p>
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What is the available **budget**? Around 4000 Euro plus 590 man-hours of campaign manager. Also, there were some (limited) free contributions.

Primary criteria to select

<p>What are the objectives?</p>	<p>Strategic Objective: The overall goal is to increase the use of environmental modes from 51 to 61%. Car use should decrease correspondingly from 49 to 39 %.</p> <p>Campaign Objectives: The overall goal was: to decrease the number of car trips to and from school by involving the pupils in the ‘problem’. The goal was broken down into the following areas:</p> <ul style="list-style-type: none"> • Increase the market share environmentally friendly modes to and from school. • Decrease the parents’ number of car trips to work. • Increase the school administration’s awareness and knowledge of the importance of the use of environmentally friendly modes.
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What is the **impact**? At the beginning, 19% of pupils were driven to school every day. This dropped to 1% at the end of the project. Also, 21% of pupils were driven to school 2-4 times a week, and that decreased to 13% at the end of the project.

What is the campaign message ?	The main message during the campaign was: “Using environmentally-friendly modes rather than the car is good for your own health as well as the environment.” However, the message was delivered in a much better ‘package’ than the sentence above.
Is there a transferable approach and / or methodology?	Generally speaking the approach used can be transferred to other cultures as well. However, the impacts are not secured. City of Gavle is a mature audience in terms of environmental conscious and travel awareness.
Who is the primary audience ?	Hagaström is a typical middle-class area in the municipality of Gävle. Most people in this area own their houses, and car ownership is above average. Hagaström is approximately five km from the city centre. The school chosen has approximately 300 pupils aged between 7 and 13. There are two classes in every grade, and the grades are numbered one to six.
Who is the secondary audience ?	The teachers, who were the most important ‘key players’ in such a campaign. The parents, who answered the ‘before’ and ‘after’ questionnaires. The aim was to persuade them to drive their children to school less frequently, and to start cycling to and from their own workplaces.
Does the campaign have a rational approach ?	The campaign had a rational approach, delivered in a very professional way. The material used (from the European map to letters) was accurate, professionally developed and delivered in time. The campaign consisted of various different actions, from meetings and discussions to the European map. The map was designed professionally by an advertising agency, and featured with a lot of small and funny details. Pupils, parents and teachers told the campaign manager that they were impressed by the way the map looked.
What is the campaign design ?	
Are there evaluation results available ?	Yes, they are.
<i>Secondary criteria (in-depth analysis)</i>	
Are there specific partnerships made?	The Technical Office of City of Gavle which was responsible for the whole campaign partnerships with: <ul style="list-style-type: none"> • The school of Hagaström – the school that participated in the study. • External partners: <ul style="list-style-type: none"> - The environmental office at the local authority, the Agenda 21 manager. - County Council (an expert in traffic safety and an expert in health issues) - A local cycle shop (including cycle repairs) - Brynäs IF – one of the most famous ice-hockey teams in Sweden (plays in the Swedish premier league)
Are stakeholders involved?	Yes. Both teachers and parents were involved. <ul style="list-style-type: none"> • The teachers are the most important ‘key players’ in such a campaign. When the school was chosen, the campaign manager made many personal visits in order to meet and motivate the teachers. They also received free cycle helmets from the local traffic safety association, and t-shirts from the local authority. • The parents, who answered the ‘before’ and ‘after’ questionnaires.
Are any external factors important for the success ?	In the autumn of the same year, there were major media articles about the problems caused by parents driving their kids to school. To a certain extent, they moved the issue higher up the agenda.
What is the tone of the message ?	Positive and competitive

Background information

What is / are the **reason(s) / motives** for this **campaign**? The Nantes urban area has seen a 10% increase in population in the last decade. It is assumed that this growth has led to an increase in car traffic, despite consequent investments made by the local authority (Communauté Urbaine) to develop the public transport system, in which trams represent the backbone.

The public transport company Semitan, which operates the bus and tram network under contract from the local authority, conducted research that showed that the number of customers on the trams was continuously increasing, whereas the bus network was registering a slight decrease in passenger numbers.

Under the Tapestry project, Semitan and Nantes Communauté Urbaine decided to implement a travel awareness campaign to promote a bus route in Nantes. Assessing the effectiveness of this campaign will enable guidelines to be formulated for future campaigns.

<p>What are the hard / soft policy measures?</p>	<p>The TAPESTRY campaign was to promote a specific bus route</p> <p>A personalised mailing was sent to 2450 people living along the corridor. The envelope contained:</p> <ol style="list-style-type: none"> 1. A letter signed by the Director General of Semitan, which laid out the major attributes of routes 21-23. 2. A square folding pamphlet, suggesting activities in the city centre (shopping, movies, exhibitions, a drink with friends). It also described why travelling by bus is better than by car (quicker, greater freedom of mind, more ecological and practical). It did this with the aid of 'real life' testimonials from four different types of people explaining why they used the bus. 3. A memo card providing useful information on the route itself, such as the frequency of buses and a route map. 4. A quiz game aimed at getting potential passengers to think about their bus use in the context of the slogan "what type of city dweller are you?". This was a light-hearted way to get across a serious message without appearing to be either "lecturing" or "moralising".
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What is the available **budget**? Euro 20500

Primary criteria to select

<p>What are the objectives?</p>	<p><i>Policy Level</i></p> <p>The overall objective for the Nantes urban area is to reach a 17% modal share for public transport in 2010 compared with 14.8% in 1998.</p> <p>The urban public transport company, Semitan, also has a number of policy objectives:</p> <ul style="list-style-type: none"> • To increase the number of annual passengers from 84 million to 100 million by 2010; • To run promotional and advertising campaigns aimed at changing attitudes towards public transport;
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	<ul style="list-style-type: none"> • To tackle fare evasion by modifying buses so that passengers must board at the front and present their tickets to the driver. A publicity campaign is to accompany this. <p><i>Campaign Level</i></p> <p>Campaign Objectives: Marketing objectives</p> <p>The overall marketing objective is to increase the number of people using the bus on a specific route.</p> <p>Campaign Objectives: Communication objectives</p> <p>The overall campaign – “La TAN ma ligne de ville” – was understood and well regarded by the public. The real challenge now was to convince people living in a specific geographical area to progress from simply having a positive attitude about public transport to actually making behavioural changes. Travelling by bus should be seen as being more environmentally friendly, up-to-date, and a modern way of living; in short: “THE way to get to the city centre”.</p> <p>The detailed communication objectives were:</p> <ul style="list-style-type: none"> • To encourage people to think about their own travel behaviour when going to the city centre for shopping or leisure; • To accelerate a change of behaviour by focusing on leisure and shopping journeys towards the city centre.
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What is the **impact**? The positive impacts measured concern the following:

- Ease of recall;
- Message recall;
- Increase in awareness of the impact of personal behaviour on the environment;
- Better knowledge of the comparative reliability of public transport and the car.

What is the campaign message ?	<p>The campaign presented two messages:</p> <ul style="list-style-type: none"> • A “teaser” on the envelope: “What type of city dweller are you?” • The message contained in the envelope selling the customer the benefits of routes 21 and 23 – “deux fois plus proches du centre ville” (twice as close to the city centre).
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Is there a **transferable approach** and / or methodology? The overall approach is transferable. However, an experienced campaign manager is a key-success factor for such kind of campaigns. Also, issues regarding vulnerable personal data should be treated carefully.

Who is the primary audience ?	The concept was to target people living within 300 metres of routes 21 and 23, and to promote the route for trips made towards the city centre for shopping and leisure purposes. This came up with 2450 residents, to be sent our promotional information.
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Who is the **secondary audience**? N/A

Does the campaign have a **rational approach**? Yes. The campaign material described why travelling by bus is better than by car (quicker, greater freedom of mind, more ecological and practical).

What is the campaign design? In brief, the campaign design:

- ◆ Was in line with existing communication styles;
- ◆ Developed “service information” (costs, timetables, frequency etc);
- ◆ Presented “customer benefits” of using the bus to go to the city centre (seamless, no more parking problems, it cuts pollution etc).

Are there evaluation results available?	Yes
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Secondary criteria (in-depth analysis)

Are there specific **partnerships** made? Semitan is in charge of managing all “commercial” campaigns linked to the promotion of the bus and tram network. The local authority, Communauté Urbaine, agrees the overall principles, and if necessary discussions take place between the local authority communication department, and the Semitan communication team. However, Semitan has responsibility for the details of the campaign, and for monitoring it. In the case of TAPESTRY, the Communauté Urbaine was more involved than usual in validating the messages and survey methods. In terms of constructing and assessing the campaign, Semitan subcontracted out the following aspects:

- The design of the campaign to advertising agency Nouvelle Vague, commissioned under the strategic communication plan for a three/ four year period;
- The assessment phase to consultancy G&A, to evaluate whether the campaign fulfilled TAPESTRY requirements. In parallel, an internal working group monitored the campaign. It was steered by the marketing and communications department, and included the depot manager, line managers and drivers.

Are stakeholders involved?	No
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Are any **external factors important** for the **success**? No “structural” external factors occurred during the campaign. However, this campaign was deliberately scheduled to run at the same time as the European Car-Free Day and at a time (September) when people were preparing for the new school term.

What is the tone of the message ?	Positive and Informative
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WP B

Criteria WP B 1.1 Predictive Models of Behaviour Change

TAPESTRY - Seven Stages of Change Model

What is the **purpose** of the **model(s)**? The aim of the Model is twofold: first to assist campaign initiators to in the planning and targeting of their campaigns; second, to provide a process of change scale against which the attitudinal and behavioural of a campaign can be measured. By measuring the number of people who are at each stage of the scale before and after (or when not appropriate, with and without) the campaign, an assessment can be made of the extent to which a campaign has moved individuals in the target groups towards changing their travel behaviour.

explanations about progress but also stagnation and relapse	Although, the model permits stagnation and relapse does not explain why they occur and how they can be avoided
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Is there a generalisability or specification of the models for different target groups ?	The model is quite general. However, there is a specific guidance for the implementation of the before and after surveys when the target group is children
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**Criteria WP B 1.2 Prospective Assessment Tools
Campaign Assessment Guidance CAG**

Travel awareness or mobility management or both or else?	Travel awareness: communication programmes in the transport sector.
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Level of approach?	The “Campaign Assessment Guidance” is intended to be used to assess any campaign regardless of its local specificity and/or constraints.
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framework conditions
for the approach

What are the target groups of measured approach ?	The range of target groups is as wide as the range of campaigns itself. This could be the general public or a certain group as the pupils of a certain school.
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nature of forecasting?	None. The CAG offers an ex-post comparison of the situation before and after (or with and without) the implementation of a campaign.
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What levels of change are considered?	<p>The core of the CAG is the “Seven Stages of Change Model”. The stages of change are:</p> <ol style="list-style-type: none"> 1. Awareness of problems caused by car traffic as a pre-condition to accepting the need for action to help to solve them and/or of the opportunities that exist to change travel behaviour. 2. Accepting a level of personal responsibility for the problems and the contribution to the solutions. Accepting the personal relevance or a particular message when been made aware of the opportunities they may present. 3. Perception of options has a strong influence on whether they are viewed as viable options in place of the car. The most important factors are related to the system and the society. 4. Evaluation of options. People will only consider voluntarily to change modes if they have a positive perception of the alternatives. 5. Making a choice - the establishment of the intention to change ones behaviour is seen as pre-requisite for a change. 6. Experimental behaviour – trying out a new mode for certain trips for a short time on an experimental basis is seen as last step before the establishment of a permanently performed new behaviour. 7. Habitual behaviour – this final stage is the long-term adoption of the new mode for certain trips.
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Which indicators were used to measure change ?	<p>Individual Level Impacts:</p> <ul style="list-style-type: none"> - Awareness of the problem - Accepting responsibility - Perception of options (transport system performance, social/cultural influences) - Evaluation of the options - Making a choice - Experimental/Habitual behaviour <p>System Level Impact:</p> <ul style="list-style-type: none"> - changed traffic volumes (road, bus/tram, walking, cycling), - changed pattern and level of parking activity,
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	<ul style="list-style-type: none"> - PT punctuality improved, - air quality improved, - noise level reduced, - number of accidents reduced.
Which performance measures were used as outputs ?	<p>campaign effectiveness: Did the measured outcome meet the set objectives? This is based on the individual changes according to the stages of the “Seven Stages of Change model” and the following impact on the transport system. The chosen indicators depend on the campaign objectives, they can include: changed traffic volumes (road, bus/tram, walking, cycling), changed pattern and level of parking activity, PT punctuality improved, air quality improved, noise level reduced, number of accidents reduced.</p> <p>campaign efficiency ratios: input/output; input/exposure; input/ outcome; outcome/output; outcome/exposure; output/exposure.</p>
What is the role of initial definition of objectives (target setting), utilisation of and adaptation to baseline?	<p>The CAG uses strategic policy objectives as broad general objectives as for example laid out in a local transport plan or the national government policy.</p> <p>In order to measure progress and success of a campaign, measurable objectives are used. They are formulated in terms of the stages of behaviour change.</p>
What is the target group for the toolkit (not the measures)?	Campaign management.
usage of the toolkit where, approx. how many users	<p>The toolkit has successfully been used in 18 pilot campaigns covering</p> <ul style="list-style-type: none"> - Public Transport Promotion to School Children (Rome, Italy) - Travel Awareness in Austrian Schools (Linz, Graz & Vienna, Austria) - "Week of the Soft Road User" & Public Transport Week (Flanders, Belgium) - Mobility Education in Geel and Mol (Belgium) - Individualised Marketing Viernheim (Germany) - Efficient Car Use in Belfast (UK) - Car Free Day, Trams & Buses (Nantes, France) - Greenside of the Black Seaside (Constanza, Romania) - Education & Training of Public Transport Employees (Stuttgart, Germany) - Interactive Marketing of Rural Buses (Hampshire, UK) - Dublin Bus Anti-Vandalism Campaign (Dublin, Ireland) - Targeting the Environmentally Aware (Hertfordshire, UK) - Air Quality Information & Car Pooling (Vitoria - Gasteiz, Spain) - Promoting Cycling, Walking & Public Transport for Health (Gävle, Sweden) - Walking & Cycling to School (Belfast, UK & Dublin, Ireland)
complexity and user friendliness , suitability for practitioners	<p>The CAG is a combined planning, management and assessment tool for campaigns. It covers both the process evaluation concerning the planning, implementation and running of a campaign and the impact evaluation concerning the achieved changes in beliefs, attitudes and travel behaviour of the target group members. Both are in itself very complex evaluation approaches. But here they are mingled in one evaluation approach and not separately described. For each step of the assessment many examples of useful measures are given, but for the reader it is not easy to understand which of those are important. This seems to be too complex for practitioners.</p> <p>All in all the CAG is a broad collection of what could be done rather than a step-by-step guide that seems to be suitable for the practitioner that is not embedded in a research consortium where he might receive the adequate support.</p> <p>Nevertheless, the “Seven Stages of Change” model is a worthwhile approach to assessing campaigns. This should be given further consideration for MAX.</p>

WP C

Criteria WP C 1.2 Quality Management principles in transportation services

<p>What is the theoretical basis for the chosen QM approach?</p>	<p>Within the framework of the TAPESTRY project, a Campaign Management Assessment Protocol was set up. The basic idea was that whilst an assessment of the campaign objectives, inputs, outputs and outcomes (following the Life-cycle-approach of assessment in Tapestry) gives indications of the effectiveness and efficiency of a particular campaign, it cannot explain fully why a campaign has been successful or not. Therefore, the Campaign Management assessment Protocol wants in addition look in depth at the quality of 7 factors of the campaign process (see further).</p>
<p>Which are important principles and elements of existing QM activity in the transport field?</p>	<p>The protocol has been based on and adapted from the EU Common Assessment Framework (CAF) for quality management in the public sector http://www.eipa.nl/CAF</p> <p>The protocol describes an assessment procedure based on</p> <ul style="list-style-type: none"> - A questionnaire survey asking questions to what extent 30 different steps (within the 7 criteria) were taken care of (on a scale from 0 to 5); - A scoring mechanism was used to assign a global assessment to each criterion (n=7) and to assign a global assessment on the campaign management as a whole. - For each criterion, respondents were invited to add positive and negative comments - For each criterion, the respondents are invited to add suggestions for improvement
<p>Give the size of city where the QM-standards have been applied in number of inhabitants</p>	<p>The protocol was set up for all kinds of travel awareness raising campaigns that demonstrated within the Tapestry-project.</p> <p>This protocol was provided to the Tapestry demonstrations as a supplement next to the guidelines for assessing efficiency and impacts of the campaign. The demonstrations were not obliged to adopt the campaign management assessment protocol. It was given completely on a voluntary basis.</p>
<p>Which indicators are used for QM in the transport field</p>	<p>The seven factors of the campaign process subject of the management assessment are:</p> <ol style="list-style-type: none"> 1. definition of measurable campaign objectives 2. Creation and management of the campaign team 3. Definition of target audiences 4. Strategic and operational partnerships 5. The operational campaign programme 6. The briefing/working with agencies 7. Overall assessment
<p>What kind of certificate has been gained for applying QM in transportation services / in MM?</p>	<p>No certificate was linked to adopting this protocol.</p>
<p>Who was responsible for the QM?</p>	<p>The protocol was set up as a self-assessment tool that could be adopted by the campaign management team. However the suggestion was made that an external expert or a panel of experts would best administer it, with experience in campaign implementation.</p>

What are the benefits from the application of QM processes for the city / public transport provider ?	The protocol is seen as a guide to assessing the work/business practices in the light of the success or failure of the campaign. It is set up as a tool for continuous improvement.
What kind and amount of resources have been used to set up and implement a QM standard?	There was no standard set up. This protocol was just conceived as an 'optional analysis' offered by the Tapestry team to the individual Tapestry demonstrators, next to the efficiency and effectiveness measurement of their campaigns. This protocol was a small part of the complete assessment framework set up within Tapestry.
What kind and amount of resources and costs were required to conduct / accomplish the QM process?	Only manpower input. However it should be seen as a complementary analysis next to the efficiency and impact analysis of the campaign.
Describe the type of MM project and the applied MM measures where QM has been applied.	Travel awareness campaigns demonstrating within Tapestry.

2.5 Annex B – TEEM: TDM Effectiveness Evaluation Methodology

Analysed by	Eric Schreffler - ESTC		
List of references / information source	TDM Effectiveness Evaluation Methodology (TEEM) Modeling TDM Effectiveness: Enhancements to TEEM and Case Studies for the I-405 Corridor, prepared by DKS Associates et al, Final Report, February 2005.		
ACRONYM	TDM Effectiveness Evaluation Methodology (TEEM Model)		
Level:	Puget Sound Region (Seattle, Washington)		
Start – End Date	2005		
Funding institution(s):	Washington State Department of Transportation	Country	USA
Name	Urban Planning Office		
Consortium / Partners:	Contractor: DKS Associates	Country:	USA

General Description of the project / case study / campaign

Common Criteria

	A	B	C	D
Related to WP:		X		
Short description of content	TEEM is an analytical tool for the predictive quantification of the effectiveness of TDM and land use strategies for the Central Puget Sound Region (Seattle), Washington State. It is a post-processing model drawn primarily from local data sources (incl. Washington			

State's Commute Trip Reduction (CTR) program). The model is able to provide a relative comparison of potential effectiveness for up to 20 strategies to allow the user to develop an appropriate TDM and land use program for a corridor or subarea. It supports the user in determining the most effective strategies and the total benefit TDM and land use strategies might have in meeting long-term transportation goals.

- The objectives of the TDM and Land Use Effectiveness Review Project, from which TEEM was developed, are:
- To develop a methodology that can be used to estimate existing and potential effectiveness of TDM and land use actions in key activity areas;
 - To identify existing TDM programs, land use actions, travel behavior and existing land use patterns in case study areas;
- Main objectives**
- To estimate existing effectiveness of TDM and land use actions in case study areas;
 - To estimate potential effectiveness of TDM and land use actions in case study areas and in other key activity areas;
 - To identify which TDM and land use actions will best support TDM and land use goals;
 - To identify TDM and land use goals for the case study areas and other key activity areas.

Theoretical links

TEEM is designed to pivot off of observed or baseline conditions. It allows predicts the changes in travel patterns that would most likely result from a combination of TDM and land use strategies. Therefore, data is required that describe the baseline conditions (population, employment, distribution of employees by employer size, number of person trips by mode and purpose, quantity of transit service, pedestrian and bicycle facilities) that currently exist or would exist in the future without the implementation of any strategy. Baseline data have been developed for the years 2000, 2020 and 2030.

The methodologies for all 20 strategies are designed to operate on the same baseline travel patterns. In most cases the cumulative effect from combining most strategies can be established by sequentially predicting the effect of one, then adjusting the baseline data and applying the next one (multiplicatively additive). Effects of strategies that address different markets can be combined directly (directly additive). For conflicting or synergistic strategies, correction factors are required for the combination of effects.

Outcomes and results

Based on the tested strategy levels the incremental changes in year 2030 for the five performance measures (PM Peak Period Trips, Total Daily Commute Vehicle Trips, Total Non-commute Vehicle Trips, Commute Mode Shares, Non-commute Travel) are presented plus the estimated costs of implementing the strategies. The results show the 2030 baseline level for the performance measures, the change that is expected from the strategies and the percent change from the base.

qualitative

quantitative

Was there an empirical evidence of impacts?

No evaluation of the model so far. Pilots of recommended strategies are planned, with evaluations

Did an evaluation take place?

The model includes more measures than the COMMUTER or WSTR Model, including many strategies that are best implemented by the public sector (e.g., transit service improvements, regulations, etc.).

Weakness and Strength of chosen approach

The accuracy and validity of TEEM's forecasts, as with TDM's effectiveness in general, are difficult to specify. The experiences from which forecast tools like TEEM are derived demonstrate a wide range of effectiveness. While the Commute Trip Reduction data demonstrated that the TDM programs were effective at reducing commute trips and VMT, the individual rates of effectiveness vary widely across the employers in the database. A similar disparity is also found in individual TDM strategies. A review of US experience with TDM and land use strategies revealed a broad range in the rates of strategy effectiveness in almost all categories. With such broad range in the reported experiences, it is difficult to quantify the accuracy of a TDM forecasting tool. Therefore the TEEM user is cautioned to use the results with knowledge of the variability in the data on which the model sensitivity factors (elasticities) are based.

Which **open questions** and **research gaps** have been identified? Open questions that have been identified are primarily focused on the improvement of the local application.

Which **suggestions for future research** have been made? Suggestions for future research are primarily focused on the improvement of the local application.

Opinion on transferability:
Is it transferable and why? Tool is currently limited to use in Seattle region, but other versions of similar models have been developed for other regions. The TEEM model uses locally existing travel patterns and predicts changes in travel patterns that would most likely result from a TDM or land use strategy. Therefore the local baseline conditions are needed as input for the model. Where these are given the model can be used in general. The Washington State's Commuter Trip Reduction Program provides such data for companies with more than 100 employees for the last 10 years.

Criteria WP B 1.2 Prospective Assessment Tools

Travel awareness or mobility management or both or else? Mobility Management – among 20 MM measures that can be evaluated, Marketing and Promotion is one.

Level of approach? Subarea (activity center)

framework conditions for the approach Baseline data in two broad categories: existing and forecast year travel patterns (O-D, mode, time of day, etc.) and development characteristics.

What are the **target groups** of measured approach? All travellers into and out of a study area: commuters, students, shoppers, visitors, etc. Developed to test role of TDM in major highway reconstruction project (I-405)

nature of forecasting? The model is a post-processor spreadsheet that allows trip tables to be manipulated to reflect travel behavior changes resulting from one or more of 20 TDM strategies, including non-commute and land use strategies. The revised trip tables can then be reloaded into regional travel demand model to assess the temporal and spatial distribution of the travel impacts.

What **levels of change** are considered? Travel behavior changes, in terms of vehicle trips, for subarea that can be used to estimate impact on system performance.

Was the **sensibility to change caused by campaigns** and / or by **measures** investigated? The sensitivity of model depends on the factors used for each measure.

Which **indicators** were used to **measure change**? Model uses price and service elasticities and some experiential findings to predict changes in travel behavior.

Which **performance measures** were used as **outputs**?

- PM Peak Period Trips (total and % reduction)
- Total Daily Commute Vehicle Trips
- Total Non-commute Vehicle Trips
- Commute Mode Shares
- Non-commute Travel

What is the **role** of initial definition of objectives (target setting), Objectives are not pre-specified...designed as "what if" analysis tool to compare the effectiveness of TDM as applied to various activities centers along a key corridor



utilisation of and adaptation to baseline?	
Ability to validate results of projections with actual impacts?	Results have not been validated, but evaluation planned to measure results of measures implemented in corridor.
usefulness for prospective assessment vs. ex post evaluation?	Primarily used as prospective tool.
What is the target group for the toolkit (not the measures)?	State, regional and city planners – developed to test role of TDM in major highway reconstruction project.
usage of the toolkit where, approx. how many users	Tool is currently limited to use in Seattle region, but other versions of similar models have been developed for other regions.
complexity and user friendliness , suitability for practitioners	Model is far more user friendly than the COMMUTER Model, yet the vehicle trip rate indicator is less familiar than mode shares.

2.6 Annex B – TRICS: Trip generation recording system

Analysed by	Tom Rye	
List of references / information source	www.trics.org	
ACRONYM	TRICS. Trip generation recording system.	
Level:	National – UK, although with particular emphasis on England.	
Start – End Date	Started 1989. No programmed end date.	
Funding institution(s):	TRICS Consortium	UK
Consortium / Partners:		country

Name	The TRICS Consortium is a consortium of local authorities that together collect and disseminate trip generation data for many different land uses. This information is then used in the transport assessment process. The work carried out by the TRICS Consortium is managed by JMP Consultants on behalf of the consortium.	UK
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General Description of the project / case study / campaign

Common Criteria				
	A	B	C	D
Related to WP:				
Short description of content	TRICS is a database of trip generation data from a wide variety of existing different sites (retail, employment, leisure) around the UK. Surveys are carried out to measure how many people travel to a site, by what mode, at what time of day, and when they leave. (Formerly only vehicle trips to and from sites were counted so the majority of data in the			

database is still vehicle trip only, but it is gradually being superseded by multi-modal data from newer surveys.) The purpose of the database is to provide an estimate of likely trip generation (and mode share of those trips) to/from a new development, by comparing it with trip generation from existing sites. The database allows a wide variety of filters to be applied so that the characteristics of the sites from which trip generation is calculated are as close as possible to that of the planned site. The database ultimately provides an estimated hourly number of trips generated, per 100 sq metres of floor area.

Main objectives The **transport assessment** (TA) process is carried out for all large new developments in the UK, as part of the planning process. The TA aims to estimate, and then incorporate into the development measures to mitigate the impact of, trips generated by a new development. A sound means of estimating trip generation was required and so six major local authorities in the southeast of England set up TRICS to gather data from existing developments which could be used to estimate the impact of future developments.

Theoretical links There are no theoretical bases to TRICS; it is empirical.

Outcomes and results TRICS is used extremely widely in UK transport planning, on large new developments up and down the country: it is the industry-standard for trip generation estimation. It would not be so widely accepted, were it not viewed widely as the best method available. No outcomes of its use have been measured but it is generally felt to be far more accurate than the very ad-hoc methods of trip generation estimation that were used previously.

There has been no formal evaluation of the TRICS methodology although User Guidance is prepared twice a year which aims to enhance the way in which TRICS is used, as it is possible to produce highly erroneous trip generation estimates if it is used poorly.

TRICS has carried out quite a wide range of internal research to validate its methodology and to explore problematic issues. The titles of its 22 research reports are as follows:

TRICS Report 05/1 Trip Attraction Rates of Developments with Multiple Retail and Leisure Uses

TRICS Report 04/2 Hospital Travel

TRICS Report 04/1 Does Historic Site and Survey Data Remain Valid to Use?

TRICS Report 03/1 The Effectiveness of Travel Plans

TRICS Report 02/2 Seasonality Research

TRICS Report 02/1 Relationships Between Accessibility and Parking for New Developments

TRICS Report 99/2 Research into Trip Rate Variation

TRICS Report 99/1 Transport Characteristics of Foodstores at Retail Parks

TRICS Report 97/1 Transport Characteristics of Non-Food Retail Parks

TRICS Report 95/4 Traffic & Parking at Food Retailing (Appendices)

TRICS Report 95/3 Traffic & Parking at Food Retailing

TRICS Report 95/2 Pass By & Diverted Traffic - A Resume

TRICS Report 95/1 Parking & Public Transport - The Effect on Mode Choice (2)

TRICS Report 94/1 Long Term Changes in Superstore Traffic Generation

TRICS Report 93/1 Parking & Public Transport - The Effect on Mode Choice (1)

TRICS Report 92/2 Traffic Implications of Sunday Trading

	TRICS Report 92/1 Assessment of Parking Demand
	TRICS Report 89/5 Traffic Generated from Marinas
	TRICS Report 89/4 Traffic Generation from Industrial Estates
	TRICS Report 89/3 Review of Parking Standards
	TRICS Report 89/2 Traffic Generation Studies
	TRICS Report 89/1 Traffic Generation Study of Offices & High Tech Sites

Weakness and Strength of chosen approach
 TRICS estimates average trip generation for a new site based on the number of similar existing sites in the database. Where such sites are few, trip generation estimates may be poor. There is no complex modelling involved so even where averages are based on a large number of existing site surveys, they will only give an indication of likely trip generation at the new site.

Success and failure factors
 TRICS is universally adopted within UK transport planning because nobody has been able to think of a better way of providing trip generation estimates.

Which **process elements** have been included / investigated?
 TRICS until very recently was not really concerned with process elements, merely with the provision of data.

Which of the **process elements** contributed to **success**?
 Because of the lack of emphasis on process elements, it is difficult to answer this question.

Which **open questions** and **research gaps** have been identified?
 The majority of these have already been dealt with by TRICS' research reports (see list above).

Has the **transferability** of non-transport measures to transport and to content related questions within **WP A-D** been investigated?
 Not really. This is a focused and empirically based methodology that seeks to achieve one very specific thing.

Has the **transferability** to other **cultural context** or other **countries** been investigated?
 A comparison of New Zealand, US and UK trip generation databases was carried out and can be supplied if required. It found out that all use essentially similar methodologies, indicating the transferability of TRICS.

Which result?

Opinion on transferability:
 Yes, transferable to places that have a culture/practice of transport assessments for new development similar to that in the UK.

Is it transferable and why?

Criteria WP B 1.2 Prospective Assessment Tools

Travel awareness or mobility management or both or else?
 Not directly a mobility management tool although can be used to support the implementation of site based MM through the planning system, by providing estimates of baseline mode share at a site.

Level of approach: Site based

framework conditions for the approach	Closely linked with planning system in UK – designed in particular to be used to mitigate the transport impacts of a development as part of an application for planning permission for a new or expanded site. Increasingly, such mitigation measures include travel plans.
target groups of measured approach	TRICS measures (and predicts) trip generation at a site in terms of numbers of people arriving and departing in each hour of the day, by mode, based on surveys. The database does not contain data on how many trips are made by shoppers, workers, visitors etc.
nature of forecasting	Comparative case study
levels of change considered	TRICS does not measure behaviour change at present although it is intended that it will in future contain before and after trip generation data at sites with travel plans, to measure the impact of travel plans, in terms of actual changes in behaviour (mode shift).
Was the sensibility to change caused by campaigns and / or by measures investigated?	No TRICS does not deal with this in any way. It simply counts trips made, by mode.
indicators used to measure change	Trips made to and from a site, by mode and time of day.
performance measures used as outputs	Trips generated by the site for each hour of the day, per 100 sq metres of floor area.
role of initial definition of objectives (target setting), utilisation of and adaptation to baseline	TRICS does not really use targets or objectives. It simply measures travel behaviour (trips made by mode) at existing sites in order to be able to make a basic prediction of likely travel behaviour at a similar, planned site that is not yet built.
ability to validate results of projections with actual impacts	There has been little validation of TRICS outputs. However, no better method of predicting trip generation has been found and so it is used across the UK.
usefulness for prospective assessment vs. ex post evaluation?	More useful for predictive assessment.
target group for the toolkit (not the measures)	Local authority transport and land-use planners; developers and their agents.
usage of the toolkit (where, approx. how many users)	Industry standard across UK and Ireland except in London which has its own trip generation database.
complexity and user friendliness , suitability for practitioners	Highly suited to practitioners, updated every six months, has an active user group and annual conference, widely used and very user-friendly.

Relevance to WP B

TRICS is **not** a tool that has any relevance to campaigns or awareness-raising. It is not really a model. It does not measure behaviour change, only existing behaviour, and then very simplistically; it extrapolates this measurement of behaviour into new situations (developments). It is designed for prospective (sic) assessment and is very user friendly. As more multimodal surveys are added to the database, it will become more useful for

setting objectives for mode shift since it will help to establish realistic baselines from which reasonable objectives for change (through the incorporation of MM plans into planning requirements – see WP D) can be established.

2.7 Annex B – WTEPT: Workplace Travel Plan Evaluation Tool

Analysed by Tom Rye, Napier University

List of references / information source Tool and Guidance available at <http://www.dft.gov.uk/pgp/sustainable/travelplans/work/evaluationtool/?version=1>.

ACRONYM Workplace Travel Plan Evaluation Tool.

Level: National (England)

Start – End Date Current version released 2001.

Funding institution(s):	English Government: Department for Transport (DfT), formerly DETR and DTLR.	England UK
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Consortium / Partners:	English Government	Country
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Name organisation / city...	Napier University	Scotland and England, UK
	WS Atkins	
	Open University	

General Description of the project / case study / campaign

Common Criteria

	A	B	C	D
Related to WP:				

Short description of content	A tool which evaluates a written Travel Plan (site based MM plan) to assess its likely impacts on travel behaviour.
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Main objectives	To give those working on/with Travel Plans a justified estimate of the likely impacts of a proposed plan.
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Theoretical links	There are no theoretical links.
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Outcomes and results

qualitative

quantitative

The tool predicts quantitative outcomes based on largely qualitatively described inputs chosen from checklists. Each entry in the checklist has a score attached to it; each section of the checklist has a weight attached; and the travel plan assessment is based on the total weighted score derived from the checklist. Particularly important sections of the checklist (i.e. those contributing most weight to the overall score) are resources, and measures planned to be implemented. The score of the travel plan is banded and a travel plan can only gain the highest band if it includes disincentive measures and significant public transport incentives, as these have been found to be particularly critical in effective travel plans. The bands are as follows:

Predicted reduction in employee single occupant vehicle trips to site	Range of Overall score for travel plan
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5 to 10%	41% to 80%
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Was there an empirical evidence of impacts ?	The tool is entirely based on earlier empirical evidence of the impact of travel plans, largely from the UK and Netherlands, as no UK results were available when the tool was developed.
Did an evaluation take place?	
Is the methodology convincing?	

Weakness and Strength of chosen approach Being empirically based is both a strength and a weakness.

Which **process elements** have been included / investigated? The tool takes into account many process elements such as management support, the way that implementation is planned, links with external stakeholders, how the plan is resourced and so on. Where process elements are included in the plan it scores higher in the evaluation tool.

Which of the process elements contributed to success ?	All of them.
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Which **open questions and research gaps** have been identified? An implied research gap is that of validating the results from the tool against the actual performance of travel plans once they have been implemented.

Has the **transferability** of non-transport measures to transport and to content related questions within **WP A-D** been investigated? This has not been investigated; this piece of work was focused on travel plans.

Has the transferability to other cultural context or other countries been investigated?	This was a UK piece of work so investigating transferability was really outside the scope of the work.
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Opinion on transferability: Tools similar to this have been developed in the USA. There is no reason why it could not be transferred to other countries as long as it is adapted to take into account differing framework conditions.

Criteria WP B 1.2 Prospective Assessment Tools

UK Travel Plan Evaluation Tool

Travel awareness or mobility management or both or else?	Mobility management
Level of approach:	Site based
framework conditions for the approach	Closely linked with planning system in UK – designed in particular to be used to assess travel plans (site based MM plans) when they are submitted as part of an application for planning permission for a new or expanded site.

target groups of measured approach: personally known and constant unknown and changing	Employees and pupils but not necessarily known because the tool is intended to be used to evaluate MM plans before sites open. Many planning applications especially for offices are “speculative” i.e. the final site user is not known so the tool has to be able to cope with this.
nature of forecasting	Based on comparative case studies.
levels of change considered	Travel behaviour change.
Was the sensitivity to change caused by campaigns and / or by measures investigated? Which result?	This was only investigated through comparative case studies. The Travel Plan Evaluation tool looks at the measures planned to be implemented in the MM plan and the way that they are planned to be implemented and then, based on comparative case studies that evaluated the outcomes of earlier MM plans, makes predictions as to the outcomes that will result in this case.
indicators used to measure change	Bands of change in mode share
performance measures used as outputs	Mode share.
role of initial definition of objectives (target setting), utilisation of and adaptation to baseline	An important purpose of the tool is to allow local authorities who are evaluating planning applications to get some idea of whether the targets that developers include in their site based MM plans for new developments are realistic. So the tool is in one way a “tester” of targets.
ability to validate results of projections with actual impacts	A separate scheme (TRICS travel plan evaluation – see WP D) is being set up to do this. However the vast majority of travel plans in the UK that have been secured through the planning process have not yet been in place for long enough to validate predictions with actual impacts.
usefulness for prospective assessment vs. ex post evaluation?	This is a prospective assessment tool if that means something you use beforehand.
target group for the toolkit (not the measures)	Mainly local authority planners and developers, but really anyone who is developing a travel plan (site based MM plan) – and not all MM plans are developed in the UK in response to planning conditions.
usage of the toolkit	Not known.
complexity and user friendliness , suitability for practitioners	Initial user feedback found the tool fairly easy to use. It was designed for practitioners not theoreticians or academics.

2.8 Annex B – WTRM: Worksite Trip Reduction Model and Manual

Analysed by	Eric Schreffler - ESTC
List of references / information source	Worksite Trip Reduction Model and Manual http://www.nctr.usf.edu/pdf/473-14.pdf

ACRONYM	Worksite Trip Reduction Model and Manual	
Level:	National (US)	
Start – End Date	2004	
Funding institution(s):	Florida Department of Transportation and U.S. Department of Transportation, Office of Research and Special Programs	Country: USA
Consortium / Partners:	National Center for Transit Research Center for Urban Transportation Research University of South Florida	Country: USA

General Description of the project / case study / campaign

Common Criteria

	A	B	C	D
Related to WP:		X		

Short description of content	The Worksite Trip Reduction Model predicts the extent that each incentive, disincentive, or program measure would impact vehicle volumes and parking needs at a specific worksite. It allows transportation engineers, local planners, developers, employers, and Transportation Demand Management (TDM) professionals to easily input various programs, incentives, disincentives, and worksite characteristics to obtain predictions of the change in vehicle trips from that mix of tactics. In the planning phase it allows a quick assessment of different worksite-based TDM strategies on vehicle volumes and parking impacts.
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Main objectives	To develop a Worksite Trip Reduction Model and a Manual that will estimate the impacts of various combinations of Transportation Demand Management (TDM) strategies in reducing vehicle trips.
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Theoretical links	<p>The model was built on the basis of several thousand before/after worksite trip reduction plans using data from three urban areas in the United States: Los Angeles, Tucson, and Washington State that have had trip reduction requirements on employers for many years. They required employers to submit plans to reach a particular objective such as a reduction in the level of single occupant vehicle (SOV) use. The plan provide details on worksite modal characteristics aggregated at the employer level and a listing of incentives and amenities offered by employers.</p> <p>The model building process used two approaches:</p> <ul style="list-style-type: none"> - linear statistical regression models - non-linear neural networks <p>The linear statistical regression models were used as a benchmark for the validity and accuracy of the neural net models. The linear statistical regression models minimize the sum of the error between the real and predicted data, establishing simple linear relationships between the worksite characteristics, incentives and the dependant variable 'change in VTR'. The neural networks "learn" more complex non-linear relationships. Sometimes linear regression methods were used to determine which variables the neural net would use to build its models.</p>
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Outcomes and results qualitative	The model allows its user a quick assessment of different worksite-based Transportation Demand Management strategies on vehicle volumes and parking impacts. It could be used to assess parking needs of new developments, thereby reducing the cost of parking
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quantitative construction. Employers and developers would also know what types of services and programs to offer employees, residents and tenants to decrease on-site traffic congestion and reduce their need for parking. And, finally, reduction in vehicle trips and vehicle miles traveled will improve air quality in the region.

Was there an empirical evidence of impacts?	
Did an evaluation take place?	The methodology as such is convincing although to be accurate a separate model could be developed individually for each region using employer plan data for a given region.
Is the methodology convincing?	

Weakness and Strength of chosen approach
There is not one model that has to be applied to local conditions but a new model has to be built. However, the fact that the model was built on data from several regions might mean that is more transferable than one built solely on one region.

Incomplete data effect the ability of the model to estimate the impact of particular incentives or amenities; rather it better estimates the impacts of typical packages of measures.

Which suggestions for future research have been made?	<ul style="list-style-type: none"> - improvement in the quality of the data being collected using standard definitions and common terminology - adhering to quality control procedures - access to disaggregate data (employee level) to determine individual changes in travel behavior and to be able to track down long-term effects of the programs - examine other factors that could explain more of the variance, e.g. organizational culture, management styles, total expenses incurred by the employer, employee demographics, changes in local economy
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Has the transferability to other cultural context or other countries been investigated?	A general transferability of the approach is given, but due to the nature of the model building process an individual model has to be set up according to local conditions.
Which result?	

Criteria WP B 1.2 Prospective Assessment Tools

Travel awareness or mobility management or both or else?	Mobility Management – specifically employer worksite travel planning
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Level of approach?	Site-based, but could be applied to group of worksites within an employment center (e.g., TMA area)
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framework conditions for the approach	Since the model has to be set up to fit to local conditions there seem to be no restrictions in the local framework conditions.
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What are the target groups of measured approach?	Employees/commuters
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nature of forecasting? The results are based on an empirical analysis of several thousand worksite trip reduction plans that giving details of the worksite modal characteristics aggregated at the employer level and the applied mix of incentives and amenities. Based on empirical analysis the model predicts changes in VTR for the 50 most often applied combination of incentives:

- facilities & amenities
- Guaranteed ride home programs
- flexible timing
- Marketing programs

- Ride share matching programs
- financial incentives
- Parking management
- Telecommute program
- Compressed work week program
- onsite incentives
- Non financial incentives
- commuter tax benefit incentives

The model allows its user to easily input various incentives to obtain predictions about the aggregated changes in vehicle trips (and hence on traffic volumes and parking needs) from that mix of tactics for a specific worksite.

What levels of change are considered?	Changes in vehicle trip rate on an aggregated level (per worksite)
Which indicators were used to measure change ?	The dependent variable chosen was the change in vehicle trip rate (VTR) (e.g., reduction of 4.5 vehicles per 100 employees) that correlates closely with the goals of TDM – reduce trips, decrease air pollution, decrease the need for parking – and is generally proportional to the desired result.
Which performance measures were used as outputs ?	- change in VTR
What is the role of initial definition of objectives (target setting), utilisation of and adaptation to baseline?	Initial definitions of objectives are not required. The purpose of the model is to simplify the transportation management process for all parties in the development and planning process for both residential and commercial enterprises. The software model developed from this project provides a valuable and interactive tool for anyone involved in the decision-making process for new developments and transportation programs allowing its user a quick assessment of different worksite-based Transportation Demand Management strategies on vehicle volumes and parking impacts.
Ability to validate results of projections with actual impacts?	Predictive results of model were validated using one of the three datasets to assess the predicted versus actual impacts. This comparison is included in the manual look-up tables included in the user's guide.
usefulness for prospective assessment vs. ex post evaluation ?	The model is used for precise prediction to the extent each incentive, disincentive, or program has an effect on vehicle trip rate.
What is the target group for the toolkit (not the measures)?	transportation engineers, local planners, developers, employers, and Transportation Demand Management professionals
usage of the toolkit where, approx. how many users	Available for free on NCTR/CUTR website and used in Florida. Has had limited application given predominance of COMMUTER Model
complexity and user friendliness , suitability for practitioners	There is a generalized model for any urban area. It offers an easy to use web-based version built on equally sampled data.