Monitoring and Evaluation of Mobility Management

Practical Experience with the MOST Monitoring and Evaluation Toolkit (MOST-MET)

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This contribution gives an overview on the monitoring and evaluation process and results of the MOST project.

Monitoring and Evaluation of MM Measures was one core work package within MOST. The objectives were to develop a coherent framework for monitoring and evaluation of Mobility Management (MM) Measures that enables a cross-comparison and benchmarking of demonstration projects. To control and evaluate the methodologies and to deliver monitoring and evaluation schemes and standards for future MM projects.

Objective of MOST-MET

In order to meet this goal one consistent framework that should allow a comparable assessment for all demonstration projects was required and the MOST Monitoring and Evaluation Toolkit (MOST-MET) was developed. It was designed in the first year of MOST and given to the partners for self-assessment and also to test the MOST-MET. In the end the partners where asked for the results of the self-assessment of their MM Instruments and Services and for their experience and for feedback so that the MOST-MET could be improved before being publicised as one result of MOST.

This presentation is based on the final version of the MOST-MET with it's improvements as proposed by those who tested it during MOST.

The MOST-MET provides a step-by-step guidance through the monitoring and evaluation process. In the following, the individual steps will be shortly described to give an overview. After that the core of the MOST-MET, the Assessment Levels, will be described and results from the individual partners (that were realised based on the first version of the MET) will be shown. Finally some lessons learnt and recommendations will be given.

The MOST-MET – An Overview

Step I Mission Statement and Objective

In the first step a general Mission Statement for the planned MM approach is set in the beginning. This Mission Statement could be defined as general as "improve sustainable modes".

Based on this general Mission Statement one or several more orientated objectives (that should not counteract with the general ones) should be defined for each MM Service. These should be defined in order to be more specific in the further work progress. They should include a measurable goal and a time-span in which the goal should be reached, such as "reduction of solo car use by 10 % among employees within 1 year".

This goal is set to measure success against it and to allow to adjust the chosen measures if needed. At the end of the time span, a new goal has to be set for a new time span.

Step II Specification of Target Groups

In the second step all Target Groups that shall be addressed by the MM approach are defined (e.g. users of the public transport system, citizens addressed by the local Mobility Centre, employees addressed by their company's Mobility Plan). A short description of each Target Group will help to find similarities and distinctions, e.g. how they could be addressed, their assumed travel behaviour in terms of modal preferences and/or travel time. The more accurate these Target Groups are described the better will the MM Measured fit their requirements. The MOST-MET offers examples of Target Groups and their description.

Step III Choosing MM Instruments and Services

Based on the chosen Target Groups the required MM Instruments (Mobility Manager, Mobility Centre, Mobility Consultant etc.) and the suitable MM Services have to decided on. A detailed description of each MM Service helps to clarify what exactly is planned and where synergy effects between different services can be used.

Step IV Assessment Levels

For the assessment of MM the MOST-MET offers Assessment Levels on which monitoring and evaluation could focus.

These levels depend on the kind of Services to be assessed and the status of implementation. Levels A to C concentrate on the quality and success of MM Services like marketing, information, consulting etc. Levels D to F deal with the quality of the transport system that offers the basis on which the MM Services rely. Seeing that one major aim of MM is having an impact on the transport system in terms of reducing traffic (growth) by limiting the number, length and need of motorised vehicle trips all measures should be included in the effort to reach that goal. Levels E to H of the assessment strategy allow the assessment of the change of people's travel behaviour and finally the impacts on the transport system. These changes in travel behaviour and impacts on the transport system should be the main results of the monitoring and evaluation process described in the MOST-MET.

Seeing that MM usually develops over time it might be possible that not all levels can be applied from the beginning. After implementing MM as a new approach or after introducing new services to an existing approach one would always have to start the assessment with the knowledge of the Target Group about the new Instrument / Service. When the knowledge or awareness of the new Instrument / Service is spread and people start using it.

Hence, the Assessment Levels A to H also show the development of new Instruments / Services over the time, starting from their implementation up to their finally reached impacts on the transport system.

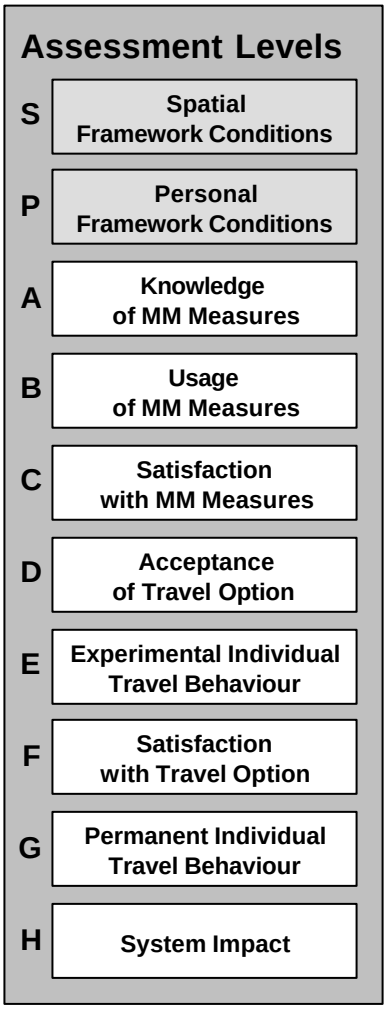

Figure 1: Assessment Levels

As the following example shows, there are different methods that can be used for the same services to examine different aspects on the various levels.

Example Car Pooling

knowing about a car pool matching scheme (interview of all employees) shows a successful marketing,

usage of the matching service (records of inquiries) shows that a number of people think about this alternative,

satisfaction with the matching service (interview of those, who contacted the matching service) shows whether or not people are satisfied with the performance of the matching service and whether or not the received information is acceptable

acceptance of the offered solutions (interviews of those, who contacted the matching service) shows whether the proposed car pool partners where contacted,

experimental individual behaviour changes (interviews of those, who contacted the matching service and counts of those who contacted the proposed car pool partners and tried car pooling) show whether those employees that accepted the proposal decided to try car pooling at least experimentally, based on the offered car pool matching service,

satisfaction with the tested travel option (interviews of those who car pooled a few times after receiving support by the car pool matching service) shows whether those employees that tried car pooling are satisfied with the new mode,

permanent individual behaviour changes (interviews of those, who car pooled a few times after receiving support by the car pool matching service) show whether those employees that tried car pooling as an alternative stuck to car pooling on a permanent basis,

system impact (calculation of the figures recorded in the levels before) gives an estimation of how many motorised vehicle trips or kilometres were saved through the offered car pool matching scheme.

According to the different aspects that altogether describe the success of the MM Services measurable objectives for each Assessment Level should be defined as shown below.

MOST experience

It should be stated that the time the users need to start using MM Services and finally change their travel behaviour strongly depends on the accompanying sticks and/or carrots. The more attractive the carrot or the more painful the stick the faster the changes in travel behaviour and hence the resulting impacts will be.

Step V Specification of Indicators

In order to be able to measure the changes that could be established by the implemented MM Services the MOST-MET requires Indicators (i.e. measurable figures that indicate changes of not directly measurable aspects). For each MM Service Indicators should be defined per Assessment Level.

MOST-MET offers examples of the various Indicators for each Assessment Level, both for city-wide / regional and site-based approaches and shows examples of survey methods for the data collection.

MOST experience

Seeing that data collection is quite expensive and sometimes done for other purposes anyway (e.g. an annual city marketing survey was also used by the Mobility Centre in **Wuppertal**), it might be helpful to use those existing surveys to place some questions instead of carrying out an extra survey.

Step VI Monitoring

Monitoring is the collection of input data that is required for the examination of the impacts a MM approach has had. It includes traffic counts and the documentation of the public opinion about innovations of MM.

This data comprises the given framework conditions, the number of user contacts, peoples travel behaviour and attitudes against various transport modes. And finally the changes in the transport system (e.g. reduction of motorised vehicle trips and kilometres and hence reduced energy consumption and emissions).

Step VII Evaluation

The evaluation of MM Services always describes the development of these measures and their (hopefully growing) impact on people's travel behaviour and the transport system. The aim of the MOST-MET is to document this development over a reasonable time-span. To document this development monitoring has to start **before** MM Measures are introduced and hence describes a before-status. The results of the before-study will later be compared with the results of the **after**-studies.

Examples for the calculation of the established reduction of motorised vehicle trips and kilometres are provided in the MOST-MET.

MOST experience

Although comparable **before** and **after** travel behaviour is not available for many partners to assess mode changes, reduced vehicle kilometres travelled and other travel impacts, a variety of data sources and self-reported results are available from about half the MOST partners. The data come from user surveys (e.g. information provided or tickets sold at Mobility Centres in **Wuppertal**), target group surveys (e.g. employees in **Málaga**, residents in **Münster**) or counts of riders of sustainable modes (e.g. PT riders in **Málaga**).

In cases where **before** data was not available anymore, retrospective questions about people's travel behaviour at a point of time before the implementation of a MM Services at least allows a general idea of the changes up to now and gives hints about the reasons for these changes.

Detailed Illustration of Assessment Level and results as established in MOST

The following overview offers a explanation of what shall be measured on the individual Assessment Levels that were used in MOST. It offers examples for measurable objectives for each Assessment Level and shows examples of results as they could be established by the MOST partners.

The overview shows the Assessment Levels as used in the final (improved) version of the MOST-MET. In the version used during the project lifetime of MOST only 5 Levels were given. Following the experience from MOST these levels were supplemented with 3 additional ones that mostly deal with the quality of the transport system or travel services and the following user acceptance and satisfaction that in the end leads to a permanent change in travel behaviour.

MET as used in MOST
Knowledge
Usage
Acceptance
Individual Behaviour
System Impact

improved MOST-MET	
MM Services	Knowledge of MM Services
	Usage of MM Services
	Satisfaction with MM Services
Travel Options	Acceptance of Travel Options
	Experimental Individual Travel Behaviour
	Satisfaction with Travel Option
Travel Behaviour	Permanent Individual Travel Behaviour
	System Impact

Figure 2: Comparison of the MOST-MET as used in MOST (left) and improvements based on findings in MOST (right)

Mobility Management Services

A	**Knowledge of Mobility Management Services**

First pre-requisite for the use of Mobility Management Instruments and Services is the knowledge of their existence. This knowledge or awareness about Mobility Management Instruments and Services can be established through marketing activities in a rather short-term scale. Hence, **Level A** is used to check whether or not people know about the local mobility management approach at all and, if so, which instruments and services are known best.

Objective (example)

30 % increase of the number of people knowing about the Mobility Centre and its Services, like PT information and booking of car sharing cars in the first year after opening the Mobility Centre.

Results in MOST

In **Wuppertal**, the Mobility Centre has seen awareness of the centre rise from 25% of residents in 1995 to almost 40% in 2000. Use has also increased during the same period among those aware from 48% to 57%.

In **Karlstad**, three-quarters of students surveyed in 2001 were aware of the MM information offered by the university Mobility Office and 49% said that their travel was influenced by the services offered.

In **Surrey**, a survey at one school (Tillingbourne) showed that 57% of parents talked about safety or travel to school during the action week

B	Usage of Mobility Management Services

Mobility Management offers Instruments and Services to the end-users. The number of people using these services give an estimation on their attractiveness and tailored supply. **Level B** is used to check whether or not people actually use Mobility Management Services and, if so, which services are used and how often.

Objective (example): *20 % increase of the number of people using the offered Services, like asking for help in finding a car pool partner in the first 6 month.*

Results in MOST:

In **Karlstad**, programme effectiveness seems to have diminished somewhat between 2001 and 2002. For example, 53% used the free PT ticket offered in 2001 and 44% in 2002. Karlstad MM staff feel this reduction in use may have been due to several factors, including the reconstruction of the main bus stop near campus and the fact that the new students were living further away and had greater access to a car.

In **Münster**, the proportion of mobility centre clients asking for specific travel advice, as opposed to static information, has risen from 55% in 1998 to 67% in 2001,

In **Rome**, the mobility consulting service has registered some 730 car poolers into 250 different carpools.

C	Satisfaction with Mobility Management Services

Only when the addressed end-users are satisfied with the offered Mobility Management Services there is a chance that they will follow the received information or advice. **Level C** is used to check the whether or not people are satisfied with the offered Mobility Management Services and how they could be improved to meet the users needs.

Objective (example): *20 % increase of the number of users that are satisfied with the Services they received, like consulting on alternatives to solo-car commuting after 1 year.*

Results in MOST:

In **Wuppertal**, a question on the satisfaction with the Mobility Centre's services has been included in the annual city survey. In 2001 it received a good mark (2.2 out of 6, with 1 being the best). In general 76 % are (very) satisfied with the services.

In **Bologna**, the customer satisfaction has been asked for over several years. The cusomer satisfaction with 'the quality of answers to requests about information and complaints' remains stable at 6.8 (out of 10, with 10 being the best) for the last 3 years.

Travel Services

D	Acceptance of Travel Options

Satisfaction with a Mobility Management Service is a pre-requisite for the acceptance of alternative travel options. But there might still be reasons against their acceptance. Especially personal circumstances might stand against objective advantages. **Level D** is used to check whether or not people accepted the proposed travel options.

Objective (example): *15 % increase of the number of people that accept the offered travel options, e.g. that are willing to join a car pool and therefore ask for potential partners after 1 year.*

Results in MOST:

In **Málaga**, some 6,100 tickets are being sold each month to the new tourist bus services.

In **Rome**, an average of 366,000 visitors, pilgrims, and residents used the new, privately operated Jubilee lines each month during the Julibee Year celebration.

E Experimental Individual Travel Behaviour

The willingness to try an alternative transport mode leads to a trial or experimental change in one's travel behaviour. **Level E** is used to check whether or not people changed their individual travel behaviour to try a (recommended) travel alternative.

Objective (example)

10 % increase of the number of people that are not only willing to try alternative modes but actually do so, at least on a trial basis, e.g. that cycle to work or join a car pool several times after 1 year.

Results in MOST

In **Surrey**, a survey at one school (Tillingbourne) showed that about 30% changed their travel behaviour for school travel during the action week.

In **Zug**, about 450 people participated in the 8 "Action-Days" (2 days for every of the 4 round-trips). Surveys showed that only 14% to 23% of participants travelled to the locations via car (most of these carpooled).
In **Limburg**, surveys undertaken at the start of the project and again during and after implementation of school pool initiatives, such as car free school days and bicycle pooling). At one school (Diepenbeek) a before survey of parents was conducted in October 2001 and an after survey in June 2002, about a month after implementation of the car free days and bicycle pooling activities to get at longer term impacts. It appears that bicycling and walking increased among pupils by 16.4% (from 26.2% to 30.5% for a relative increase of 16.4%).

In **Nottingham**, an increase in PT by 11% among the Workwise recipients of monthly (free) PT tickets can be observed, however, at the same time car use remains the same and walking decreases by 9%. *This suggests a shift from walking to PT use, which emphasises the need of projects to control for the previous modes instead of simply counting new customers.*

F Satisfaction with Travel Option

Satisfaction with a tested travel alternative is a pre-requisite for a repeated and hopefully permanent use of that alternative mode. **Level F** is used to check whether or not people are satisfied with the tested alternative transport modes and how they could be improved to meet the users' needs.

Objective (example)

10 % increase of the number of people that are satisfied with the new mode they tested, e.g. that feel a lot healthier and more relaxed after riding the bike to work after 1 year.

Results in MOST

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Travel Behaviour

G Permanent Individual Travel Behaviour

The overall aim of Mobility Management is a modal-shift towards sustainable transport modes in the long-run. **Level G** is used to check whether or not people changed their travel behaviour and, if so, what they changed (mode choice, time choice, destination choice, trip frequency etc.).

Objective (example)

5 % increase of the number of people using the alternative mode not only a few times before switching back, but stick to the tested alternative over a longer time span.

Results in MOST

At **Sandwell** health care facility, over 100 employees are taking advantage of a discounted annual public transport pass and some 40 employees took part in a scooter pilot programme; both designed to reduce the need for parking.

In **Karlstad**, 43% of staff and 7% of students, surveyed in 2002, say that they cycled to the University more often than during the past year.

In **Rome**, substantial subsidies are being provided to PT users, resulting in some 1,700 annual passes sold in the region.

In **Lund**, 9% of the residents shifted travel mode during the implementation of LundaMaTs. More than 50% of the people that shifted mode, changed from driving alone in a car to bicycle, about 45% to bus, and another 5% to carpooling.

In **Münster-Weissenburg**, surveys were undertaken in 2000 and 2002 analysing the mobility behaviour of people living in the car-free community of Weissenburg. Of the sampled inhabitants of the car-free housing complex, 27% of the licensed drivers have given up their car in response to this new kind of neighbourhood. One-third of the respondents car shared at the new development, whereas 91% said they had not used a car sharing arrangement prior to moving to Weissenburg.

H System Impact

Only permanent changes in travel behaviour will result in changes in the transport system. Either in respect to site-related traffic or in respect to the city level. **Level H** is used to check the changes in traffic flow, mode choice, emissions etc.

Objective (example)

5 % reduction of motorised vehicle kilometres travelled for the site-related traffic or city/region-wide after 2 years.

Results in MOST

In **Lund**, the survey among residents was used to estimate that a total of 3.9 million kilometres of travel had been saved by the inhabitants per year, or one percent of the total travel in the area (estimated for the entire LundaMaTs scheme). Among the specific pilot projects, the bus riders (72 persons) saved approximately 200,000 km per year (or about 2,800 km per person) and the Health Bikers saved 43,000 km per year (about 4,300 km per person) and 29,000 km the year after.

The following table shows the change in the modal-split and the corresponding reduction in car use as it could be established in Limburg, Camden and Málaga.

Partner	Target Group	Before Car Mode Share	After Car Mode Share	Reduction
Limburg	Parents/Students	68%	63%	7%
Camden	Staff	24%	21%	12%
Málaga	Employees	74%	63%	15%

Conclusions

Altogether it can be stated that MOST showed that monitoring and evaluation of MM and similar approaches that rely on soft measures is feasible. The MOST-MET is a first step to bring monitoring and evaluation into practise. But still there is more to be done to provide tailor made and maybe more specialised monitoring and evaluation tools for individual MM approaches.

Also the question of costs and benefits of MM Measures could not be dealt with in the MOST-MET but should be looked at in more detail in the future.

In MOST, as in other MM projects, most partners did not include monitoring and evaluation into their budget. Experience, especially from the US, suggest to reserve about 10 % of the total budget for monitoring and evaluation.

A reasonable number of partners provided results of their assessment effort. But the timing within MOST prevented even more accurate results. This is due to the fact that the monitoring and evaluation strategy had to be developed while the partners had to get their MM Measures started. Hence, in a number of cases before surveys could not be done and also the budget for monitoring and evaluation was not considered in full scale in the planning.

Another important aspect that should be looked at in more detail in the future is cost-effectiveness of MM Measures. The results of the MOST-MET show what could be established by MM, but this should be compared with the budget used for the MM effort.

The final recommendations for MM practitioners learnt from MOST:

Integrate the assessment of your MM measures into the overall MM process. Do not fear that the established results to not meet your own expectations and those of your stakeholders, policy makers and the public. View assessment as an important project management tool that offers valuable information on performance and the results of the implemented measures. It helps you to improve your MM performance and leads to better results in the long run. Also these assessment results should be documented and published in periodic reports. They should assist you in your future performance, provide stakeholders and funders with an account of assessment findings and recommendations for improvements and finally it should be done to satisfy you and your staff with the realised results.

Literature

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