



Deliverable 2.3
IDENTIFICATION OF USER
REQUIREMENTS CONCERNING THE
DEFINITION OF VARIABLES TO BE
MEASURED BY THE METPEX TOOL

Publishable summary

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Summary details

The work on this deliverable 2.3 aims:

1. To identify the variables which can be used to measure the whole journey traveller experience that will impact on increased acceptance and take-up of new terrestrial transport solutions and technologies, and a more inclusive terrestrial transport system with better access for all.
2. To involve cities/agencies/operators in the process by getting early feedback on the adequacy of the tools and how the information provided will inform sustainable transport policies.
3. To define the variables that will be measured by the METPEX Tool.

The works that have been carried out in this report produced a subset of key variables derived from the comprehensive set of potential satisfaction factors that were discussed in the literature and assessed empirically and through discussions with stakeholders. The results of this task are instrumental in facilitating the design of the METPEX tool. The outputs of D2.3 will provide input to D2.4 which will consolidate the user requirements and define the variables that will be measured by the METPEX tool as well as the development of the tool itself at WP3.

Purpose

The research activity presented in this deliverable D2.3 has concentrated on:

- The identification of the travelling populations and different mobility patterns/needs that will be observed by the METPEX tool.
- Understanding the different needs for different travelling populations, based on their socio-demographic characteristics, such as household composition, income level, profession, car availability and lifestyle choices. A separate discussion on the needs and attributes of special user groups are provided. These special groups include older people, lower income groups, youth, women and people with disabilities.
- The development and piloting of a questionnaire based on the needs, quality factors and variables identified at D2.1 and D2.2 was carried out to test empirically which variables and which stages matter for different groups of travellers. These factors include physical barriers, sensory, cognitive and psychological constraints that may be faced by the

travellers. The refined questionnaire will later be tested on a small-medium scale survey on eight different cities throughout Europe.

- Understanding the variables which matter to stakeholders and identifying those which are currently missed or may be unique to one particular country.
- Synthesizing the variables that matter for different user groups and different stakeholders.

Within these D2.3 activities, some research gaps will be addressed. This includes assessing different needs for different groups of travellers in a more comprehensive manner, incorporating the complexity and inter-relationships of the whole door-to-door trip chain in influencing the individual's whole journey travel experience, and incorporating non-instrumental variables that underlie individual travel satisfactions, such as subjective well-being indicators, social norms and perceived control and qualities.

Identifying different needs of travellers

In order to develop an inclusive traveller experience measurement instrument that takes into account socio-economic, cultural, geographic and environmental factors, it is important to identify the target groups of travelling populations that will be observed by the METPEX tool and highlight the potential different needs for different traveller groups.

From the desk study activities, it was found that most of the cities involved in METPEX have a relatively balanced proportion of men and women, with a slightly higher proportion of women in Vilnius and Valencia. There is a higher proportion of younger individuals, than national average, in Vilnius, Dublin and Coventry. Coventry also has a higher proportion of minority groups, whilst Stockholm also has a higher proportion of cyclist than other observed cities. In all cities, students and pupils are a significant part of the population. Coventry and Valencia have a significant proportion of unemployed travellers, relative to their national average. Furthermore, Valencia and Rome also have a significant proportion of tourists/unfamiliar travellers. The authorities and stakeholders from all METPEX cities have been committed to accommodate the needs of special traveller groups within their cities. However, the definitions of travellers with special needs and the level of support infrastructure vary between cities.

The desk study results also highlight that different group of travellers have different priorities and different appreciations towards different service variables. For example, punctuality and reliability are likely to be on the top of commuters' priority list, whilst a safe, reliable and frequent service is extremely important for women. Whilst for older teenagers practicalities (such as cost and speed of journey) become more important in determining travel choices, for smaller children the travel mode choice is largely determined by parents. Whilst access is extremely important, lack of confidence, fear of the unknown and wary of crowding, have been the main barriers for some travellers with special needs.

Whilst guidelines and standards aimed to accommodate the different needs of different travellers have been established, there is, nevertheless, a lack of knowledge on what is really valued by different groups of travellers who used different travel modes. Thus, in this D2.3, it was decided, in order to identify factors and attributes that matters for travellers' journey satisfaction, to perform a mix of qualitative and quantitative experiment, that involves primary data collections and empirical data analysis. With this approach, the variables that matters will be tested statistically, for different socio-demographic groups.

Method

Questionnaire and experiment design: In order to identify which variables matter the most for different groups of travellers, an experiment was set up. The experiment survey consisting of a questionnaire specially developed for this purpose. The questionnaire was designed to explicitly address the door-to-door trip in order to facilitate the investigation how the overall travel satisfaction changes as a function of the satisfaction of journey elements and individual attributes. It consisted of five sections: (1) Individual attributes – socio-demographic and mobility behaviour; (2) Attitudes – travel preferences and travel-related opinions; (3) Contextual variables – temporal and weather conditions, trip purpose and subjective well-being; (4) Underlying travel aspects – familiarity, adaptation and past experience, and; (5) Travel experience factors. The latter section included an extensive list of factors designed to identify the most relevant travel experience factors in determining travellers' satisfaction at the individual trip-stage level. Service factors were tailored for each travel mode and included availability, travel time components, information provision, reliability, way-finding, comfort, appeal, safety and security, customer care, price, connectivity, ride quality, environmental impact and travel time productivity as applicable.

The experiments were carried out at eight different European cities: Bucharest (Romania), Coventry (UK), Dublin (Ireland), Rome (Italy), Stockholm (Sweden), Turin (Italy), Valencia (Spain) and Vilnius (Lithuania). Target user groups included car and public transport users, cyclists and pedestrians. Respondents were recruited at main activities centres such as universities, main public squares, shopping centres, parking lots, major intersections and interchange terminals and main streets and cycling paths. The experiment took place during April and May 2013 and with two different forms: (1) on-site or (2) in retrospective referring to a trip carried out earlier on the same day.

Stakeholder consultation: To complement the designed questionnaire, a series of interviews with relevant stakeholders were held to discuss which variables are important from their perspectives and also to identify the variables that may be missed / unique from city to city throughout Europe. On these interviews, stakeholders discussed which variables are important from their perspectives and identified variables that may be missed / unique from city to city throughout Europe. The stakeholder interviews survey was launched together with the traveller questionnaire survey on 12 April 2013, and ten cities: Bucharest, Dublin, Grevena, Rome, Stockholm, Turin, Valencia, Coventry, Vilnius and Zurich - along with one European body, the

European Disability Forum (see <http://www.edf-feph.org/>) - participated in this exercise. The interview was delivered as a structured interview with guidance questions while allowing flexibility to improvise according to the local conditions. The interview focused on stakeholders' view on the pilot survey questionnaire with questions concerning the expected contribution of the METPEX project, important travel experience factors, target user groups, common practices and policy priority areas. Furthermore, stakeholders were asked to provide suggestions concerning questionnaire format and survey design.

Analysis and Interview Results

On survey among travellers, a total of 554 responses were collected, of which 307 (55%) were collected on-site whilst 247 (45%) were collected via retrospective version of the questionnaire. Summary statistics of socio-demographic attributes indicated that the sample is heterogeneous with respect to gender, age, income and education levels, household composition and access to transport modes. 7% of respondents reported some sort of disability with mobility and visual impairments being the most common disabilities. While all age groups are represented in the sample, young adults are overrepresented and elderly are underrepresented in all survey sites.

A series of analyses on the reported trips and travel satisfactions exercised at different levels of complexity, combination of travel modes and traveller's familiarity with them. This includes cross-correlation matrices and multiple regression analyses. The salient conclusions concerning overall travel satisfaction include:

- Past experience and travellers' expectations are key determinants of traveller experience
- Certain travellers groups such as women, young and low income or unemployed travellers have distinctive determinants of satisfaction with trip stages for various travel modes.
- Satisfaction with public transport is significantly more complicated than the factors determining satisfaction on other transport modes.
- Travellers' emotional state is an important determinant of travel experience and satisfaction
- Travellers' attitudes and opinions concerning travel safety and particular travel modes were explanatory variables of travel satisfaction.

Further analysis of public transport trip stages suggests that the ease of transfer, station environment, service frequency and travel time reliability are the key determinants of travel satisfaction. In addition, waiting safety is an important determinant for women travellers. Travel safety and the relative time perception were singled out as the key determinants of satisfaction with car trip stages. In the case of women travellers, parking price is also a significant factor. Satisfaction with bike trip stages was significantly influenced by the absence of disturbances from other modes, ride quality and the availability and quality of travel information. The absence of disturbances was the only significant determinant of satisfaction with walking trip stages for all travellers.

In term of door-to-door satisfaction analysis, the results indicate that the satisfaction with the primary trip stage is strongly linked to the overall trip satisfaction while the access and egress trip stages have a very marginal contribution to the overall satisfaction. However, the satisfaction levels with access and egress trip stages are strongly related to the satisfaction with the primary trip stage and hence might indirectly be reflected through it.

Stakeholder perspectives

A total of 45 stakeholders interviews were carried out, of which 12 are planning authorities from municipal, regional and national levels, 17 public transport agencies and operators, 9 non-governmental special interest groups and 7 miscellaneous (e.g. national research institutes). The detailed description and responses of each interview are available upon request. In general, as expected, different questions were valued differently by different classes of stakeholders. *Operators* were mostly interested and concerned about the impacts of detailed level-of-service related variables on traveller experience (e.g. the use of travel information, time utilisation whilst on-board, more detailed impacts of disruptions, detailed trip pattern, etc.), whilst the *planning authorities* were more interested with wider general urban and public transport planning issues and the multi-modal travel patterns (e.g. different impacts of level-of-service for different travel modes and trip purposes). *The special interest groups* were understandably more interested with their detailed constituent's interests. They believe that very detailed questions, with more detailed features are necessary. Further, they also found personal related information such as asking age, education and disability level of the travellers to be sensitive. As for the *government's research institutes*, many of them were interested with more detailed trip patterns and behavioural variables that underlie the travellers' decision making processes in order to help them to support design the policy decisions. They are also interested in multidisciplinary issues such as the role of subjective well-being conditions, stress and the impacts of travellers' time constraints.

Conclusion

Based on these exercises, keys variables were identified based on empirical analysis and stakeholder interviews and listed on the deliverables. These variables would be the inputs to Task 2.4 and WP3 to further select variables that will be operationalize and measured by the proposed METPEX tool. The complete subset of these key variables can be seen on the report. These key variables derived from the comprehensive set of potential satisfaction factors that were discussed in the literature and assessed empirically and through discussions with stakeholders. The results of this task could also be used as guidance to reduce the number of travel aspects and trip stages that need to be measured.